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Turkish Journal of COLORECTAL DISEASE

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Aims and Scope

Turkish Journal of Colorectal Disease is an official journal of the Turkish Society of Colon and Rectal Surgery to provide epidemiologic, pathologic, diagnostic and therapeutic studies relevant to the management of small intestine, colon, rectum, anus and pelvic floor diseases. It was launched in 1991. Although there were temporary interruptions in the publication of the journal due to various challenges, the Turkish Journal of Colorectal Disease has been published continually from 2007 to the present. It is published quarterly (March, June, September and December) as hardcopy and an electronic journal at http://www.turkishjcrd.com/

The target audience of Turkish Journal of Colorectal Disease includes surgeons, pathologists, oncologists, gastroenterologists and health professionals caring for patients with a disease of the colon and rectum.

The Turkish name of the journal was formerly Kolon ve Rektum Hastalıkları Dergisi and the English name of the journal was formerly Journal of Diseases of the Colon and Rectum.

Turkish Journal of Colorectal Disease is indexed in **TÜBİTAK/ULAKBİM, Directory of Open Access Journals (DOAJ), CINAHL Ultimate, British Library, Root Indexing, Academic Keys, Idealonline, Turkish Citation Index** and **TurkMedline**.

The aim of Turkish Journal of Colorectal Disease is to publish original research papers of the highest scientific and clinical value at an international level. Furthermore, review articles, case reports, technical notes, letters to the editor, editorial comments, educational contributions and congress/meeting announcements are released.

Turkish Journal of Colorectal Disease is an independent open access peer-reviewed international journal printed in Turkish and English languages. Manuscripts are reviewed in accordance with "double-blind peer review" process for both referees and authors. The Editorial Board of the Turkish Journal of Colorectal Disease endorses the editorial policy statements approved by the WAME Board of Directors. The journal is in compliance with the uniform requirements for manuscripts submitted to biomedical journals published by the International Committee of Medical Journal Editors (NEJM 1997;336:309-315, updated 2001).

Open Access Policy

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. Open Access Policy is based on rules of Budapest Open Access Initiative (BOAI) http://www.budapestopenaccessinitiative.org/.

Permission Requests

Instructions for Authors

Instructions for authors are published in the journal and at www.turkishjcrd.com

Material Disclaimer

Authors are responsible for the manuscripts they publish in Turkish Journal of Colorectal Disease. The editor, editorial board, and publisher do not accept any responsibility for published manuscripts.

If you use a table or figure (or some data in a table or figure) from another source, cite the source directly in the figure or table legend.

The journal is printed on acid-free paper.

Financial expenses of the journal are covered by Turkish Society of Colon and Rectal Surgery.

Editorial Policy

Following receipt of each manuscript, a checklist is completed by the Editorial Assistant. The Editorial Assistant checks that each manuscript contains all required components and adheres to the author guidelines, after which time it will be forwarded to the Editor in Chief. Following the Editor in Chief's evaluation, each manuscript is forwarded to the Associate Editor, who in turn assigns reviewers. Generally, all manuscripts will be reviewed by at least three reviewers selected by the Associate Editor, based on their relevant expertise. Associate editor could be assigned as a reviewer along with the reviewers. After the reviewing process, all manuscripts are evaluated in the Editorial Board Meeting.

Turkish Journal of Colorectal Disease's editor and Editorial Board members are active researchers. It is possible that they would desire to submit their manuscript to the Turkish Journal of Colorectal Disease. This may be creating a conflict of interest. These manuscripts will not be evaluated by the submitting editor(s). The review process will be managed and decisions made by editor-in-chief who will act independently. In some situation, this process will be overseen by an outside independent expert in reviewing submissions from editors.

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Amaç ve Kapsam

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahi Derneği'nin resmi dergisidir. Bu dernek; ince barsak, kolon, rektum, anüs ve pelvik taban hastalıkları gibi hastalıkların yönetimi ile ilişkili epidemiyoloijk patolojik, tanısal ve tedavi edici çalışmalar yapar. Derneğimiz 1991'de kurulmuştur. Çeşitli zorluklar nedeniyle geçici aksaklıklar olsa da Türk Kolon ve Rektum Hastalıkları Dergisi 2007'den bu yana aralıksız olarak basılmaktadır ve 3 ayda bir olmak üzere (Mart, Haziran, Eylül, Aralık) basılı dergi ve elektronik olarak (http://www.turkishjcrd.com/) yayımlanır.

Derginin hedef kitlesini; cerrahlar, patologlar, onkologlar, gastroenterologlar ve kolorektal hastalarına hizmet veren profesyoneller oluşturur. Derginin amacı; uluslararası düzeyde en yüksek bilimsel ve klinik değeri olan orijinal çalışmaları yayınlamaktır. Bunlara ek olarak derleme (review) makaleleri, olgu sunumları, teknik notlar, editöre mektuplar, editöryal yorumlar, eğitim yazıları ve kongre/toplantı duyuruları yer almaktadır.

Derginin Türkçe eski adı; Kolon ve Rektum Hastalıkları Dergisi ve İngilizce eski adı; Journal of Diseases of the Colon and Rectum'dur.

Kolon ve Rektum Hastalıkları Dergisi, **TÜBİTAK/ULAKBİM, Directory of Open Access Journals (DOAJ), CINAHL Ultimate, British Library, Root Indexing, Academic Keys, Idealonline, Türk AtıfDizini** ve **TürkMedline**'de indekslenmektedir.

Türk Kolon ve Rektum Hastalıkları Dergisi, İngilizce ve Türkçe olarak yayımlanan; bağımsız, hakemli, uluslararası bir dergidir. Eserler, hem hakemler hem de otörler tarafından "çift kör hakem denetimi (peer review)" yöntemi ile değerlendirilir. Türk Kolon ve Rektum Hastalıkları Dergisi'nin Editör Kurulu, World Association of Medical Editors (WAME) politikalarına bağlı olarak yürütülmektedir. Bu dergi, Uluslararası Tıp Dergisi Editörler Komitesi (NEJM 1997;336:309-315, updated 2001) tarafından bildirilen, biyomedikal dergilere gönderilen makalelerin uyması gereken standartlara uygunluk göstermektedir.

Açık Erişim Politikası

Bu dergi bilginin yer değiştirmesi ve toplum içinde bilgiye özgürce ulaşma olanağı sağlamak üzere açık erişime imkan vermektedir. Açık Erişim İlkesi "Budapeşte Açık Erişim Girişimi (BOAI)" http://www.budapestopenaccessinitiative.org/ kurallarına dayanmaktadır.

İzinler

Derginin mali giderleri Türk Kolon ve Rektum Cerrahi Derneği tarafından karşılanmaktadır.

Yazarlar için Kılavuz

Yazarlar için kılavuz hem yayınlanan dergide hem de "http://www.turkishjcrd.com" web sayfasında bulunmaktadır.

Telif Hakkı Devri

Yazarlar Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınladıkları yazılardan kendileri sorumludurlar. Editör, editör kurulu ve yayıncı hiçbir sorumluluk kabul etmemektedir. Başka bir kaynaktan tablo ya da figür (veya tablo/figürden bir veri) kullandıysanız, direkt olarak tablo ya da figürü kaynak gösteriniz.

Dergi asitsiz kağıda basılmaktadır.

Derginin mali giderleri Türk Kolon ve Rektum Cerrahi Derneği tarafından karşılanmaktadır.

Editöryal Politika

Her yazının alınmasını takiben, bir kontrol listesi Editör Yardımcısı tarafından tamamlanır.

Editör yardımcısı, her yazıyı gerekli öğeleri sağladığı ve yazar kılavuzuna uyumu açısından kontrol eder, ardından editöre iletir. Editör değerlendirmesinin ardından her bir yazı için editör yardımcısı tarafından gözlemciler (reviewers) belirlenir. Genelde, her bir yazıyı ilgili uzmanlıkları göz önüne alınarak atanmış en az 3 gözlemci inceler. Yardımcı editör de diğer gözlemcilerle birlikte gözlemci olarak atanabilir. Gözlemci incelemesinin ardından yazılar editör kurul toplantısında değerlendirilir.

Türk Kolon ve Rektum Hastalıkları Dergisi'nin editör ve editör kurulu üyeleri aktif araştırmacılardır. Kendi araştırmalarının da Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınlanmasını pek ala arzu edebilirler. Bu durum çıkar sorunları doğurabilir. Bu yazılar, yazıyı yazan editör(ler) tarafından değerlendirilemez. Bu gibi durumlarda bu süreç, (editörlerin yazı başvurularında) yazıların uzman olan bağımsız kişiler tarafından incelenmesiyle aşılabilir.

Abonelik Bilgileri

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahisi Derneği üyelerine, Dünya'da ve Türkiye'deki kütüphanelere ücretsiz dağıtılmaktadır. Yayınlanmış tüm sayılar ücretsiz olarak şu linkte mevcuttur (http://www.turkishjcrd.com/).

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Instruction for Authors

GENERAL INFORMATION

Turkish Journal of Colorectal Disease (TJCD) is the journal of Turkish Society of Colon and Rectal Surgery. The mission of the Journal is to advance knowledge of disorders of the small intestine, colon, rectum, anus and pelvic floor. It publishes invited review articles, research articles, brief reports and letters to the editor, and case reports that are relevant to the scope of the journal, on the condition that they have not been previously published elsewhere. Basic science manuscripts, such as randomized, cohort, cross-sectional, and case control studies, are given preference. Invited reviews will be considered for peer review from known experts in the area.

Manuscripts should be prepared according to ICMJE guidelines (www.icmje.org). All manuscripts are subject to editorial revision to ensure they conform to the style adopted by the journal. There is a double blind kind of reviewing system.

Reviewed and accepted manuscripts are translated from Turkish to English by the Journal through a professional translation service. Prior to printing, the translations are submitted to the authors for approval or correction requests, to be returned within 7 days. If no response is received from the corresponding author within this period, the translation is checked and approved by the editorial board.

Accepted manuscripts are published in both Turkish and English languages.

All manuscripts submitted to the Turkish Journal of Colorectal Disease are screened for plagiarism using the 'iThenticate' software. Results indicating plagiarism may result in manuscripts being returned or rejected.

Turkish Journal of Colorectal Disease does not charge any article submission or processing charges.

The abbreviation of the Turkish Journal of Colorectal Disease is "TJCD", however, it should be denoted as "Turk J Colorectal Dis" when referenced.

EDITORIAL POLICIES

All manuscripts will be evaluated by the scientific board for their scientific contribution, originality and content. Authors are responsible for the accuracy of the data. The journal retains the right to make appropriate changes on the grammar and language of the manuscript. When suitable the manuscript will be sent to the corresponding author for revision. The manuscript, when published, will become the property of the journal and copyright will be taken out in the name of the journal

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In the cover letter the authors should state if any of the material in the manuscript is submitted or planned for publication elsewhere in any form including electronic media. A written statement indicating whether or not "Institutional Review Board" (IRB) approval was obtained or equivalent guidelines followed in accordance with the Helsinki Declaration of 2013 update on human experimentation must be stated; if not, an explanation must be provided. The cover letter must contain address, telephone, fax and the e-mail address of the corresponding author.

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The ORCID (Open Researcher and Contributor ID) number of the correspondence author should be provided while sending the manuscript. A free registration can create at http://orcid.org.

Online Submission

Only online submissions are accepted for rapid peer-review and to prevent delay in publication. Manuscripts should be prepared as word document (*.doc) or rich text format (*.rtf). After logging on to the web www. journalagent.com/krhd double click the "submit an article" icon. All corresponding authors should be provided a password and an username after providing the information needed. After logging on the article submission system with your own password and username please read carefully the directions of the system to provide all needed information in order not to delay the processing of the manuscript. Attach the manuscript, all figures, tables and additional documents. Please also attach the cover letter with "Assignment of Copyright and Financial Disclosure" forms.

Manuscript Preparation Guidelines

Turkish Journal of Colorectal Disease follows the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (International Committee of Medical Journal Editors: Br Med J 1988;296:401-5).

Upon submission of the manuscript, authors are to indicate the type of trial/research and statistical applications following "Guidelines for statistical reporting in articles for medical journals: amplifications and explanations" (Bailar JC III, Mosteller F. Ann Intern Med 1988;108:266-73).

Preparation of research articles, systematic reviews and meta-analyses must comply with study design guidelines:

CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group. The CONSORT statement revised recommendations for improving the quality of reports of parallel group randomized trials. JAMA 2001; 285:1987-91) (http://www.consort-statement.org/);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009; 6(7): e1000097.) (http://www.prisma-statement.org/);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA,

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Glasziou PP, Irwig LM, et al., for the STARD Group. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. Ann Intern Med 2003;138:40-4.) (http://www.stard-statement.org/);

STROBE statement, a checklist of items that should be included in reports of observational studies (http://www.strobe-statement.org/);

MOOSE guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting Meta-analysis of observational Studies in Epidemiology (MOOSE) group. JAMA 2000; 283: 2008-12).

Text Formatting

Manuscripts should be submitted in Word.

Use a normal, plain font (e.g., 10-point Times Roman) for text.

Use the automatic page numbering function to number the pages.

Do not use field functions.

Use tab stops or other commands for indents, not the space bar.

Use the table function, not spreadsheets, to make tables.

Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Title Page

All manuscripts, regardless of article type, should start with a title page, containing:

The title of the article;

The short title of the article

The initials, names and qualifications of each author;

The main appointment of each author;

The name(s) of the institution(s) of each author;

The name and email address of the corresponding author;

Full disclosures of potential conflicts of interest on the part of any named author, or a statement confirming that there are no conflicts of interest;

The word count excluding abstract, references, tables, figures and legends;

The place and date of scientific meeting in which the manuscript was presented and it's abstract published in the abstract book, if applicable.

Article Types

Original Articles

This category includes original research including both clinical and basic science submissions. The work must be original and neither published, accepted, or submitted for publication elsewhere. Any related work, either SUBMITTED, in press, or published from any of the authors should be clearly cited and referenced.

All clinical trials must be registered in a public trials registry that is acceptable to the International Committee of Medical Journals Editors (ICMJE). Go to (http://www.icmje.org/faq.html). Authors of randomized controlled trials must adhere to the CONSORT guidelines, available at: www.consort-statement.org, and provide both a CONSORT checklist and flow diagram. We require that you choose the MS Word template at www.consort-statement.org for the flow chart and cite/upload it in the manuscript as a figure. In addition, submitted manuscripts must include the unique registration number in the Abstract as evidence of registration.

All authors are expected to abide by accepted ethical standards for human and animal investigation. In studies that involve human subjects or laboratory animals, authors must provide an explicit statement in Materials and Methods that the experimental protocol was approved by the appropriate institutional review committee and meets the guidelines of their responsible governmental agency. In the case of human subjects, informed consent, in addition to institutional review board approval, is required.

Original Articles should not exceed 3000 words (excluding abstract, references, tables, figures and legends) and four illustrations.

Original Articles should be organized as follows:

Abstract: The abstract must contain fewer than 250 words and should be structured as follows:

Aim: What was the purpose of the study?

Method: A brief description of the materials - patients or subjects (i.e. healthy volunteers) or materials (animals) - and methods used.

Results: What were the main findings?

Conclusion: What are the main conclusions or implications of the study?

Keywords: Below the abstract provide up to 6 key words or short phrases. Do not use abbreviations as keywords.

Introduction: State concisely the purpose and rationale for the study and cite only the most pertinent references as background.

Materials and Methods: Describe your selection of the observational or experimental subjects clearly (patients or experimental animals, including controls). Provide an explicit statement that the experimental protocols were approved by the appropriate institutional review committee and meet the guidelines of the responsible governmental agency. In the case of human subjects, state explicitly those subjects have provided informed consent. Identify the methods, apparatus/product** (with manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well known, describe substantially modified methods, including statistical methods, give reasons for using them, and evaluate their limitations;

Results: Present the detailed findings supported with statistical methods. Figures and tables should supplement, not duplicate the text; presentation of data in either one or the other will suffice. Emphasize only your important observations; do not compare your observations with those of others. Such comparisons and comments are reserved for the discussion section.

Discussion: State the importance and significance of your findings but do not repeat the details given in the Results section. Limit your opinions to those strictly indicated by the facts in your report. Compare your finding with those of others. No new data are to be presented in this section.

Acknowledgments: Only acknowledge persons who have made substantive contributions to the study. Authors are responsible for obtaining written permission from everyone acknowledged by name because readers may infer their endorsement of the data and conclusions. Begin your text of the acknowledgment with, "The authors thank…".

Authorship Contributions: The journal follows the recommendations of the ICMJE for manuscripts submitted to biomedical journals. According to these, authorship should be based on the following four criteria:

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; and

Drafting the work or revising it critically for important intellectual content; and

Final approval of the version to be published; and

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

All other contributors to the paper should be credited in the 'Acknowledgments' section.

References: The author should number the references in Arabic numerals according to the citation order in the text. Put reference numbers in parenthesis in superscript at the end of citation content or after the cited author's name. Use the form of "Uniform Requirements for manuscript abbreviations in Turk Bilim Terimleri" (http:/www.bilimterimleri.com).

Journal titles should conform to the abbreviations used in "Cumulated Index Medicus".

Journals; Last name(s) of the author(s) and initials, article title, publication title and its original abbreviation, publication date, volume, the inclusive page numbers.

Example: 1. Dilaveris P, Batchvarov V, Gialafos J, Malik M. Comparison of different methods for manual P wave duration measurement in 12-lead electrocardiograms. Pacing Clin Electrophysiol 1999;22:1532-1538.

Book chapter; Last name(s) of the author(s) and initials, chapter title, book editors, book title, edition, place of publication, date of publication and inclusive page numbers of the extract cited.

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Example: 1. Schwartz PJ, Priori SG, Napolitano C. The Long QT Syndrome. In: Zipes DP, Jalife J, eds. Cardiac Electrophysiology. From Cell to Bedside. Philadelphia; WB Saunders Co. 2000:597-615.

Tables: All tables are to be numbered using Arabic numerals. Tables should always be cited in text in consecutive numerical order. For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption. Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Figures: Figures should work under "Windows". Color figures or grayscale images must be at least 300 dpi. Figures using "*.tiff", "*.jpg" or "*.pdf" should be saved separate from the text. All figures should be prepared on separate pages. They should be numbered in Arabic numerals. Each figure must have an accompanying legend defining abbreviations or symbols found in the figure. Figures could be submitted at no additional cost to the author.

Units of Measurement and Abbreviations: Units of measurement should be in Systéme International (SI) units. Abbreviations should be avoided in the title. Use only standard abbreviations. If abbreviations are used in the text, they should be defined in the text when first used.

Permissions: Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors.

Invited Review Articles

Abstract length: Not to exceed 250 words.

Article length: Not to exceed 4000 words.

Reference Number: Not to exceed 100 references.

Reviews should include a conclusion, in which a new hypothesis or study about the subject may be posited. Do not publish methods for literature search or level of evidence. Authors who will prepare review articles should already have published research articles on the relevant subject. The study's new and important findings should be highlighted and interpreted in the Conclusion section. There should be a maximum of two authors for review articles.

Case Reports

Abstract length: Not to exceed 100 words.

Article length: Not to exceed 1000 words.

Reference Number: Not to exceed 15 references.

Case Reports should be structured as follows:

Abstract: An unstructured abstract that summarizes the case.

Introduction: A brief introduction (recommended length: 1-2 paragraphs).

Case Report: This section describes the case in detail, including the initial diagnosis and outcome.

Discussion: This section should include a brief review of the relevant literature and how the presented case furthers our understanding to the disease process.

References: See under 'References' above.

Acknowledgments.

Tables and figures.

Technical Notes

Abstract length: Not to exceed 250 words.

Article length: Not to exceed 1200 words.

Reference Number: Not to exceed 15 references.

Technical Notes include description of a new surgical technique and its application on a small number of cases. In case of a technique representing a major breakthrough one case will suffice. Follow-up and outcome need to be clearly stated.

Technical Notes should be organized as follows:

Abstract: Structured "as above mentioned".

Indications

Method

Comparison with other methods: advantages and disadvantages, difficulties and complications.

References, in Vancouver style (see under 'References' above).

Acknowledgments.

Tables and figures: Including legends.

Letters to the Editor

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 10 references

We welcome correspondence and comment on articles published in Turkish Journal of Colorectal Disease. No abstract is required, but please include a brief title. Letters can include 1 figure or table.

Video Article

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 5 references

Briefly summarize the case describing diagnosis, applied surgery technique and outcome. Represent all important aspects, i.e. novel surgery technique, with properly labelled and referred video materials. A standalone video vignette, describing a surgical technique or interesting case encountered by the authors.

Requirements: The data must be uploaded during submission with other files. The video should be no longer than 10 minutes in duration with a maximum file size of 350Mb and 'MOV, MPEG4, AVI, WMV, MPEGPS, FLV, 3GPP, WebM' format should be used. Documents that do not exceed 100 MB can be uploaded within the system. For larger video documents, please contact iletisim@galenos.com.tr All videos must include a narration in English. Reference must be used as it would be for a Figure or a Table. Example: ".....To accomplish this, we developed a novel surgical technique (Video 1)." All names and institutions should be removed from all video materials. Video materials of accepted manuscripts will be published online.

Letters to the Editor

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 10 references

We welcome correspondence and comment on articles published in Turkish Journal of Colorectal Disease. No abstract is required, but please include a brief title. Letters can include 1 figure or table.

Editorial Comments

Article length: Not to exceed 1000 words.

Reference Number: Not to exceed 10 references.

Editorials are exclusively solicited by the Editor. Editorials should express opinions and/or provide comments on papers published elsewhere in the same issue. A single author is preferred. No abstract is required, but please include a brief title. Editorial submissions are subject to review/request for revision, and editors retain the right to alter text style.

Ethics

This journal is committed to upholding the integrity of the scientific record. As a member of the Committee on Publication Ethics (COPE) the journal will follow the COPE guidelines on how to deal with potential acts of misconduct.

Authors should refrain from misrepresenting research results which could damage the trust in the journal, the professionalism of scientific authorship, and ultimately the entire scientific endeavor. Maintaining integrity of the research and its presentation can be achieved by following the rules of good scientific practice, which include:

The manuscript has not been submitted to more than one journal for simultaneous consideration.

The manuscript has not been published previously (partly or in full), unless the new work concerns an expansion of previous work (please provide transparency on the re-use of material to avoid the hint of text-recycling ("self-plagiarism").

A single study is not split up into several parts to increase the quantity of submissions and submitted to various journals or to one journal over time (e.g. "salami-publishing").

No data have been fabricated or manipulated (including images) to support your conclusions.

No data, text, or theories by others are presented as if they were the author's own ("plagiarism"). Proper acknowledgments to other works must be given (this includes material that is closely copied (near verbatim), summarized and/or paraphrased), quotation marks are used for verbatim copying of material, and permissions are secured for material that is copyrighted.

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Consent to submit has been received explicitly from all co-authors, as well as from the responsible authorities - tacitly or explicitly - at the institute/organization where the work has been carried out, before the work is submitted.

Authors whose names appear on the submission have contributed sufficiently to the scientific work and therefore share collective responsibility and accountability for the results.

In addition: Changes of authorship or in the order of authors are not accepted after acceptance of a manuscript.

Requesting to add or delete authors at revision stage, proof stage, or after publication is a serious matter and may be considered when justifiably warranted. Justification for changes in authorship must be compelling and may be considered only after receipt of written approval from all authors and a convincing, detailed explanation about the role/deletion of the new/deleted author. In case of changes at revision stage, a letter must accompany the revised manuscript. In case of changes after acceptance or publication, the request and documentation must be sent via the Publisher to the Editor-in-Chief. In all cases, further documentation may be required to support your request. The decision on accepting the change rests with the Editor-in-Chief of the journal and may be turned down. Therefore authors are strongly advised to ensure the correct author group, corresponding author, and order of authors at submission.

Upon request authors should be prepared to send relevant documentation or data in order to verify the validity of the results. This could be in the form of raw data, samples, records, etc.

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If the article is still under consideration, it may be rejected and returned to the author.

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The author's institution may be informed.

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Statement on the welfare of animals: The welfare of animals used for research must be respected. When reporting

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experiments on animals, authors should indicate whether the international, national, and/or institutional guidelines for the care and use of animals have been followed, and that the studies have been approved by a research ethics committee at the institution or practice at which the studies were conducted (where such a committee exists).

For studies with animals, the following statement should be included in the text before the References section:

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If articles do not contain studies with human participants or animals by any of the authors, please select one of the following statements:

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Informed Consent

All individuals have individual rights that are not to be infringed. Individual participants in studies have, for example, the right to decide what happens to the (identifiable) personal data gathered, to what they have said during a study or an interview, as well as to any photograph that was taken. Hence it is important that all participants gave their informed consent in writing prior to inclusion in the study. Identifying details (names, dates of birth, identity numbers and other information) of the participants that were studied should not be published in written descriptions, photographs, and genetic profiles unless the information is essential for scientific purposes and the participant (or parent or guardian if the participant is incapable) gave written informed consent for publication. Complete anonymity is difficult to achieve in some cases, and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of participants is inadequate protection of anonymity. If identifying characteristics are altered to protect anonymity, such as in genetic profiles, authors should provide assurance that alterations do not distort scientific meaning.

The following statement should be included: Informed Consent: "Informed consent was obtained from all individual participants included in the study."

If identifying information about participants is available in the article, the following statement should be included:

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Turkish Journal of Colorectal Disease does not charge any article submission or processing charges.

THE REVIEW PROCESS

Each manuscript submitted to The Turkish Journal of Colorectal Disease is subject to an initial review by the editorial office in order to determine if it is aligned with the journal's aims and scope, and complies with essential requirements. Manuscripts sent for peer review will be assigned to one of the journal's associate editors that has expertise relevant to the manuscript's content. All accepted manuscripts are sent to a statistical and English language editor before publishing. Once papers have been reviewed, the reviewers' comments are sent to the Editor, who will then make a preliminary decision on the paper. At this stage, based on the feedback from reviewers, manuscripts can be accepted, rejected, or revisions can be recommended. Following initial peer-review, articles judged worthy of further consideration often require revision. Revised manuscripts generally must be received within 2 months of the date of the initial decision. Extensions must be requested from the Associate Editor at least 2 weeks before the 2-month revision deadline expires; The Turkish Journal of Colorectal Disease will reject manuscripts that are not received within the 3-month revision deadline. Manuscripts with extensive revision recommendations will be sent for further review (usually by the same reviewers) upon their re-submission. When a manuscript is finally accepted for publication, the Technical Editor undertakes a final edit and a marked-up copy will be e-mailed to the corresponding author for review and to make any final adjustments.

REVISIONS

When submitting a revised version of a paper, the author must submit a detailed "Response to the reviewers" that states point by point how each issue raised by the reviewers has been covered and where it can be found (each reviewer's comment, followed by the author's reply and line numbers where the changes have been made) as well as an annotated copy of the main document. Revised manuscripts must be submitted within 30 days from the date of the decision letter. If the revised version of the manuscript is not submitted within the allocated time, the revision option may be canceled. If the submitting author(s) believe that additional time is required, they should request this extension before the initial 30-day period is over.

ENGLISH LANGUAGE EDITING

All manuscripts are professionally edited by an English language editor prior to publication.

AFTER ACCEPTANCE

All accepted articles are technically edited by one of the Editors. On completion of the technical editing, the article will be sent to the production department and published online as a fully citable Accepted Article within about one week.

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Authors will be asked to transfer copyright of the article to the Publisher (or grant the Publisher exclusive publication and dissemination rights). This will ensure the widest possible protection and dissemination of information under copyright laws.

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Publication of color illustrations is free of charge.

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The purpose of the proof is to check for typesetting or conversion errors and the completeness and accuracy of the text, tables and figures. Substantial changes in content, e.g., new results, corrected values, title and authorship, are not allowed without the approval of the Editor.

After online publication, further changes can only be made in the form of an Erratum, which will be hyperlinked to the article.

ONLINE EARLY

The Turkish Journal of Colorectal Disease publishes abstracts of accepted manuscripts online in advance of their publication in print. Once an accepted manuscript has been edited, the authors have submitted any final corrections, and all changes have been incorporated, the manuscript will be published online. At that time the manuscript will receive a Digital Object Identifier (DOI) number. Both forms can be found at www.journalagent.com/krhd. Authors of accepted manuscripts will receive electronic page proofs directly from the printer, and are responsible for proofreading and checking the entire manuscript, including tables, figures, and references. Page proofs must be returned within 48 hours to avoid delays in publication.

CORRESPONDENCE

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Yazarlara Bilgi

GENEL BİLGİ

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahisi Derneği'nin dergisidir. Derginin misyonu; ince bağırsak, kolon, rektum, anüs ve pelvik taban bozuklukları hakkındaki bilgiye katkı sağlamaktır. Dergi daha önce başka bir yerde yayınlanmamış olması koşuluyla, derginin kapsamı ile ilgili ve talep üzerine yazılan derleme makaleleri, araştırma makaleleri, kısa raporlar ve editöre mektuplar ve olgu sunumlarını yayınlamaktadır. Randomize, kohort, kesitsel ve vaka kontrol çalışmaları gibi temel bilim yazılarına öncelik verilir. Alanında bilinen uzmanlarca talep üzerine yazılan derlemeler dikkate alınacaktır.

Yazılar ICMJE yönergelerine göre (http://www.icmje.org/) hazırlanmalıdır. Tüm yazılar dergi tarafından benimsenen stile uygunluk sağlamak için editöryal kontrol ve düzeltmelere tabi tutulmaktadır. Derginin çift kör bir değerlendirme sistemi vardır. Değerlendirilen ve kabul edilen yayınlar Türkçeden İngilizceye veya İngilizceden Türkçeye derginin profesyonel çeviri hizmeti aracılığıyla tercüme edilir. Yayınlanmadan önce, çeviriler onay veya düzeltme istekleri için yazarlara gönderilir ve 7 gün içinde geri dönüş talep edilir. Bu süre içinde yanıt alınamazsa, çeviri kontrol ve yayın kurulu tarafından onaylanır.

Kabul edilen yayınlar hem Türkçe hem de İngilizce olarak yayınlanır.

Türk Kolon ve Rektum Hastalıkları Dergisi'ne gönderilen tüm yayınlar 'iThenticate' yazılımı kullanılarak intihal açısından taranır. İntihal saptanan durumlarda yayın iade veya reddedilir.

Türk Kolon ve Rektum Hastalıkları Dergisi, makale gönderme veya işlem ücreti adı altında herhangi bir ücret talep etmemektedir.

Türk Kolon ve Rektum Hastalıkları Dergisi'nin kısaltması "TJCD"dir, ancak, refere edildiğinde "Turk J Colorectal Dis" olarak kullanılmalıdır.

YAYIN POLİTİKASI

Tüm makaleler bilimsel katkıları, özgünlük ve içerikleri açısından bilimsel komite tarafından değerlendirilecektir. Yazarlar verilerinin doğruluğundan sorumludurlar. Dergi gerekli gördüğü yerlerde dil ve uygun değişiklik yapma hakkını saklı tutar. Gereğinde makale revizyon için yazara gönderilir. Dergide basılan yayın derginin malı haline gelir ve telif hakkı "Türk Kolon ve Rektum Hastalıkları Dergisi" adına alınmış olur. Daha önce herhangi bir dilde yayınlanmış makaleler dergide yayınlanmak üzere kabul edilmeyecektir. Yazarlar bir başka dergide yayınlanmak üzere olan makaleyi teslim edemez. Tüm değişiklikler, yazar ve yayıncının yazılı izin alındıktan sonra yapılacaktır. Tüm makalelerin tam metinleri derginin www.journalagent.com/krhd web sitesinden indirilebilir.

YAZAR KILAVUZU

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Açıklama bildirimi

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Bilgilendirilmiş Onam

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Çıkar çatışmaları: Yazarlar, finansal, kurumsal, danışmanlık şeklinde ya da herhangi bir çıkar çatışmasına yol açabilecek başka ilişkiler de dahil olmak üzere yayındaki ilgili tüm olası çıkar çatışmalarını belirtilmelidir. Herhangi bir çıkar çatışması yoksa da bu da açıkça belirtilmelidir. Tüm finansman kaynakları yazının içinde belirtilmelidir. Finansman kaynakları ve ilgili tüm çıkar çatışmaları yazının başlık sayfasında "Finansman ve Kaynak Çatışmaları:" başlığı ile yer almalıdır.

Üst Yazı

Yazarlar, yazının içinde malzemenin elektronik ortam da dahil olmak üzere herhangi bir başka bir yerde yayımlanmak üzere gönderilmediğini veya planlanmadığını üst yazıda belirtmelidir. Yine "Kurumsal Değerlendirme Kurulu" (KDK) onayı alınıp alınmadığı ve 2013 yılı Helsinki Bildirgesi'ne eşdeğer kılavuzların izlenip izlenmediği belirtilmelidir. Aksi takdirde, bir açıklama temin edilmelidir. Üst yazı; adres, telefon, faks ve ilgili yazarın e-posta adresini içermelidir.

Makale Yazım Kuralları

Tüm makaleler online başvuru sistemi üzerinden teslim edilmelidir. Yazarlar web sitesi www.journalagent.com/krhd adresinde oturum açtıktan sonra internet üzerinden yazılarını sunmalıdır.

Makale gönderimi yapılırken sorumlu yazarın ORCID (Open Researcher ve Contributor ID) numarası belirtilmelidir. http://orcid.org adresinden ücretsiz olarak kayıt oluşturabilir.

Online Başvuru

Gecikmeyi önlemek ve hızlı hakemlik için sadece çevrim içi gönderimler kabul edilir. Yazılar word belgesi (*.doc) veya zengin metin biçimi (*.rtf) olarak hazırlanmalıdır. www.journalagent.com/krhd adresinde web oturumu açtıktan sonra "Makale gönder" ikonuna tıklayın. Tüm yazarlar, gerekli bilgileri sisteme girdikten sonra bir şifre ve bir kullanıcı adı alır. Kendi şifre ve kullanıcı adınız ile makale gönderme sistemine kayıt olduktan sonra yazının işleme alınmasında bir gecikme olmaması için gerekli tüm bilgileri sağlamak için sistemin yönergelerini dikkatlice okuyunuz. Makaleyi ve tüm şekil, tablo ve ek dökümanları ekleyiniz. Ayrıca üst yazı ve "Telif Hakkı ve Finansal Durum" formunu ve yazının tipine göre aşağıda belirtilen kılavuzların kontrol listesini ekleyiniz.

Makale Hazırlama Kuralları

Türk Kolon ve Rektum Hastalıkları Dergisi "Biyomedikal Dergilere Gönderilen Makaleler için Gerekli Standartları" izler. (International Committee of Medical Journal Editors: Br Med J 1988; 296: 401-5).

Yazarlar yayınlarını gönderirken, çalışmalarının türünü ve uygulanan istatistik yöntemlerini "Tıbbi Dergilere Gönderilen Makaleler için İstatistiksel Raporlama Rehberi"ne uygun olarak belirtmelidir (Bailar JC III, Mosteller F. Ann Intern Med 1988;108:266-73).

Araştırma makalesi, sistematik değerlendirme ve meta-analizin hazırlanması aşağıdaki çalışma tasarımı kurallarına uymak zorundadır; (CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group.

The CONSORT statement revised recommendations for improving the quality of reports of parallel group randomized trials. JAMA 2001; 285:1987-91) (http://www.consort-statement.org/);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009; 6(7): e1000097.) (http://www.prisma-statement.org/);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al., for the STARD Group. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. Ann Intern Med 2003;138:40-4) (http://www.stard-statement.org/);

STROBE statement, a checklist of items that should be included in reports of observational studies (http://www.strobe-statement.org/);

MOOSE guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting Meta-analysis of observational Studies in Epidemiology (MOOSE) group. JAMA 2000; 283: 2008-12).

Metin Biçimlendirme

Yazılar Word programı ile hazırlanarak teslim edilmelidir.

- Metin için normal, düz yazı tipi kullanın (örneğin, 10 punto Times Roman).

- Sayfa numarası için otomatik sayfa numaralandırma işlevini kullanın.

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- Alan fonksiyonları kullanmayın.

- Girintiler için sekme durakları (Tab) kullanın, ara çubuğu ve diğer komutlar kullanmayın.

- Tablo yapmak için diğer işlevleri değil, elektronik tablo fonksiyonunu kullanın.

- Dosyanızı .docx formatında (Word 2007 veya üstü) ya da .doc formatında (eski Word sürüm) kaydedin.

Giriş sayfası

Tüm yazılar, makale türü ne olursa olsun, aşağıdakileri içeren bir başlık sayfası ile başlamalıdır:

- Makalenin başlığı;

- Makalenin kısa başlığı;

- Yazarların isimleri, isimlerinin baş harfleri ve her yazarın akademik ünvanı;

- Her yazarın görevi;

- Her yazarın kurumu;

- Yazarın adı ve e-posta adresi;

- Herhangi bir yazarın olası bir çıkar çatışması olduğunu teyit eden bir ifade, aksi takdirde çatışma olmadığını belirtir bir açıklama;

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- Varsa yayının yayınlanmış olduğu bilimsel toplantının tarihi, yeri ve varsa kongre özet kitabındaki özeti.

Makale Tipleri

Orijinal Makaleler

Bu kategori, klinik ve temel bilimde orijinal araştırmaları içerir. Yayın orijinal olmalı ve başka bir dergide yayınlanmış/gönderilmiş ya da kabul edilmiş olmamalıdır. Yazarlar, herhangi biri tarafından bir dergiye gönderilmiş, baskıda veya basılmış ilgili herhangi bir çalışmaya atıfta bulunmak istiyorlarsa açıkça atıfta bulunulmalı ve kaynak gösterilmelidir.

Tüm klinik çalışmalar, Uluslararası Tıp Dergisi Editörler Komitesince (ICMJE) kabul gören bir kayıt sistemine kayıtlı olmalıdır. Bunun için http://www.icmje.org/faq.html adresine müracaat edin. Randomize kontrollü çalışmaların yazarları da, www.consort-statement.org adresinden başvurulabilen CONSORT kılavuzuna uymalıdır ve yayınlarıyla birlikte CONSORT kontrol listesi ve akış diyagramı tebliğ edilmelidir. Akış şeması olarak www.consort-statement.org adresinde bulunan MS Word şablonunun kullanılması ve bunun yayının içinde bir alıntı veya bir figür olarak yerleştirilmesi gereklidir. Buna ek olarak, sunulan yayınlar her yayına spesifik verilen özel kayıt numarasını içermelidir.

Tüm yazarların, insan üzerindeki çalışmalar ve hayvan deneylerinde etik standartlara uymaları beklenmektedir. İnsan üzerindeki veya laboratuvar hayvanları içeren çalışmalarda, yazarların yayının Gereç ve Yöntem kısmında deney protokolünün ilgili kurumsal inceleme komitesi tarafından onaylandığını ve sorumlu devlet kurumu kurallarına uyduğunu açık bir dille açıklamaları gereklidir. İnsan üzerindeki çalışmalarda kurumsal inceleme kurulu onayına ek olarak, aydınlatılmış onam da bulunmalıdır.

Orijinal Makaleler (özet, kaynaklar, tablolar, rakamlar hariç) 3000 kelime ve dört figürü aşmamalıdır.

Orijinal Makaleler aşağıdaki gibi organize edilmelidir:

Özet: Özet 250 kelimeyi geçmemeli ve şunları içermelidir;

Amaç: Çalışmanın amacı nedir?

Yöntem: Kullanılan yöntem ve materyaller (örneğin hayvanlar) veya hastalar ya da konu (sağlıklı gönüllüler gibi) hakkında kısa bir açıklama içermelidir.

Bulgular: Ana bulgular nelerdir?

Sonuç: Çalışmanın ana sonuçları ve etkileri nelerdir?

Anahtar kelimeler: Özetin altında en az 3 anahtar kelime veriniz. Kısaltmaları anahtar kelime olarak kullanmayınız.

Giriş: Açık bir dille çalışmanın amaç ve gerekçesini belirtin ve çalışmanın arka planını açıklarken sadece en önemli kaynaklardan alıntı yapın.

Gereç ve Yöntem: Gözlemsel veya deneysel deneklerin (hastalar, deney hayvanları veya kontrol grupları dahil) seçim şeklini açıklayın. Deney protokolünün ilgili kurumsal inceleme komitesi tarafından onaylandığını ve ilgili devlet kurumu kurallarına uyduğunu açık bir dille açıklayın. İnsan çalışması durumunda, tüm şahısların aydınlatılmış onamlarının alındığını açık bir dille belirtin. Yöntem, cihaz ve ürünleri tanımlayın (Parantez içinde üretici firma adı ve adresi)** Uygulanmış olan tüm prosedürler, diğer çalışmacıların aynı deneyi tekrar edebilecekleri detay ve netlikte anlatılmalıdır. İstatistiksel yöntemler de dahil olmak üzere yerleşik ve yaygın olarak bilinen çalışma yöntemleri için kaynaklar belirtilmelidir. Yayınlanmış ancak yaygın olarak bilinmeyen yöntemler için ise kaynaklar ve kısa tanımlamalar verilmelidir. Kullanma sebepleri ve limitasyonları belirtilmelidir.

Bulgular: İstatistiksel yöntemlerle desteklenmiş bulgularınızı ayrıntılı olarak sunun. Şekil ve tablolar metni tekrar değil, takviye etmelidir. Verilerin hem metinde hem figür olarak verilmemesi gerekir. Metin veya figürden birisi olarak verilmesi yeterlidir. Sadece kendi önemli izlenimlerinizi belirtin. Kendi izlenimlerinizi diğerlerininkiyle karşılaştırmayın. Bu tür karşılaştırma ve yorumlar tartışma bölümünde yapılmalıdır.

Tartışma: Bulgularınızın önem ve anlamını vurgulayın ancak bulgular kısmında verilenleri tekrarlamayın. Fikirlerinizi yalnızca bulgularınızla kanıtlayabildiklerinizle sınırlı tutun. Bulgularınızı diğerlerininkiyle karşılaştırın. Bu bölümde yeni veriler bulunmamalıdır.

Teşekkür: Sadece çalışmaya ciddi katkılarda bulunmuş kişilere teşekkür edin. Yazarlar ismen teşekkür ettikleri herkesten yazılı izin almak zorundadır. Teşekkür kısmına "Yazarlar ….teşekkür eder" şeklinde başlayın.

Yazarlık ve Katkı Sağlayanlar: Dergi, biyomedikal dergilere gönderilen yayınlara yönelik ICMJE tavsiyelerini izler. Buna göre "yazarlık" aşağıdaki dört kritere dayalı olmalıdır:

Yazar;

- Yayının konsept veya dizaynına, çalışmanın verilerinin elde edilmesine, analizine ve yorumlanmasına önemli katkılar veren; ve

- İşi hazırlayan veya entellektüel içerik açısından eleştirel biçimde gözden geçiren; ve

- Yayınlanacak son şekli onaylayan; ve

- Çalışmanın her bir bölümünün doğruluğu ve bütünlüğü ile ilgili sorunları uygun bir şekilde inceleyen ve çözüm sağlayan sorumlu kişidir.

Bu şartların hepsini sağlamayan diğer tüm katılımcılar yazar değil, "Teşekkür" bölümünde anılması gereken katkı sağlamış kişilerdir.

Kaynaklar: Kaynakları 1'den başlayarak Arap rakamları ve alfabetik sıra ile verin. Kaynak numaraları cümle sonunda noktadan sonra üstte küçük rakamlar şeklinde (superscript) yazılmalıdır. Kısaltmalar için gerekli standartları http:/www.bilimterimleri.com adresinde bulunan Türk Bilim Terimleri Kılavuzu'ndan edinin.

Dergi başlıkları "Cumulated Index Medicus" kısaltmalarına uygun olmalıdır.

Dergiden: Yazar/yazarların soyadı ve adının ilk harfi, makale başlığı, dergi başlığı ve derginin özgün kısaltması, yayın tarihi, baskı, kapsayıcı sayfa numaralarını içermelidir.

Örneğin: 1. Dilaveris P, Batchvarov V, Gialafos J, Malik M. Comparison of different methods for manual P wave duration measurement in 12-lead electrocardiograms. Pacing Clin Electrophysiol 1999;22:1532-1538.

Kitap Bölümü: Yazar/yazarların soyadı ve adının ilk harfi, bölüm başlığı, kitap editörleri, kitap başlığı, basım, yayın yeri, yayın tarihi, kapsadığı sayfa numaralarını içermelidir

Örneğin: 1. Schwartz PJ, Priori SG, Napolitano C. The Long QT Syndrome. In: Zipes DP, Jalife J, eds. Cardiac Electrophysiology. From Cell to Bedside. Philadelphia; WB Saunders Co. 2000:597-615.

Tablolar: Tüm tablolar Arapça sayılarla numaralandırılmalıdır. Tüm tablolardan metin içerisinde numara sırası ile bahsedilmelidir. Her tablo için tablonun içeriği hakkında bilgi veren bir başlık verin. Başka yayından alıntı olan tüm tabloları tablonun alt kısmında kaynak olarak belirtin. Tabloda dipnotlar tablonun altında, üst karakter olarak küçük harflerle verilmelidir. İstatistiksel anlamlı değerler ve diğer önemli istatistiksel değerler yıldız ile işaretlenmelidir.

Şekiller: Şekillerin "Windows" ile açılması gerekir. Renkli şekiller veya gri tonlu görüntüler en az 300 dpi olmalıdır. Şekiller ana metinden ayrı olarak "*.tiff", "*.jpg" veya "*.pdf" formatında kaydedilmelidir. Tüm şekil ayrı bir sayfada hazırlanmalı ve Arap rakamları ile numaralandırılmalıdır. Her şekilde kendisindeki işaret ve sembolleri açıklayan bir alt yazı olmalıdır. Şekil gönderme için yazardan hiçbir ek ücret alınmaz.

Ölçü Birimleri ve Kısaltmalar: Ölçü birimleri System International (SI) birimleri cinsinden olmalıdır. Kısaltmalardan başlıkta kaçınılmalıdır. Sadece standart kısaltmalar kullanın. Metinde kısaltma kullanılırsa ilk kullanıldığı yerde tanımlanmalıdır.

İzinler: Yazarlar yayınlarına önceden başka bir yerde yayınlanmış şekil, tablo, ya da metin bölümleri dahil etmek isterlerse telif hakkı sahiplerinden izin alınması ve bu izin belgelerinin yayınla beraber değerlendirmeye gönderilmesi gerekmektedir. Böyle bir belgenin eşlik etmediği her materyalin yazara ait olduğu kabul edilecektir.

Davetli (Talep üzerine yazılan) Derlemeler

Özet uzunluğu: 250 kelimeyi aşmamalıdır.

Makale uzunluğu: 4000 kelimeyi aşmamalıdır.

Kaynak sayısı: 100 kaynağı aşmamalıdır.

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Derlemeler, üzerine konuyla ilgili yeni bir hipotez ya da çalışma oturtulabilecek bir sonuç içermelidir. Literatür taraması metodlarını veya kanıt düzeyi yöntemlerini yayınlamayın. Derleme makaleleri hazırlayacak yazarların ilgili konuda önceden araştırma makaleleri yayımlamış olması gerekir. Çalışmanın yeni ve önemli bulguları sonuç bölümünde vurgulanır ve yorumlanmalıdır. Derlemelerde maksimum iki yazar olmalıdır.

Olgu Sunumları

Özet uzunluğu: 100 kelimeyi aşmamalıdır.

Makale uzunluğu: 1000 kelimeyi aşmamalıdır.

Kaynak sayısı: 15 kaynağı aşmamalıdır.

Olgu Sunumları aşağıdaki gibi yapılandırılmalıdır:

Özet: Olguyu özetleyen bir yapılandırılmamış özet (gereç ve yöntem, bulgular, tartışma gibi bölümlerin olmadığı).

Giriş: Kısa bir giriş (tavsiye edilen uzunluk: 1-2 paragraf).

Olgu Sunumu: Bu bölümde ilk tanı ve sonuç da dahil olmak üzere olgu ayrıntılı olarak anlatılır.

Tartışma: Bu bölümde ilgili literatür kısaca gözden geçirilir ve sunulan olgunun, hastalığa bakışımızı ve yaklaşımımızı nasıl değiştirebileceği vurgulanır.

Kaynaklar: Vancouver tarzı, (yukarıda 'Kaynaklar' bölümüne bakınız).

Teşekkür

Tablolar ve şekiller

Teknik Notlar

Özet uzunluğu: 250 kelimeyi aşmamalıdır.

Makale uzunluğu: 1200 kelimeyi aşmamalıdır.

Kaynak Sayısı: 15 kaynağı aşmamalıdır.

Teknik Notlar, yeni bir cerrahi tekniğin açıklanmasını ve az sayıda olguda uygulanmasını içermektedir. Büyük bir atılım/değişikliği temsil eden bir tekniğin sunulması durumunda tek bir olgu yeterli olacaktır. Hastanın takip ve sonucu açıkça belirtilmelidir.

Teknik Notlar aşağıdaki gibi organize edilmelidir:

Özet: Aşağıdaki gibi yapılandırılmalıdır:

Amaç: Bu çalışmanın amacı nedir?

Yöntem: Kullanılan yöntemlerin, hastalar ya da sağlıklı gönüllülerin veya hayvanların tanımı, malzemeler hakkında kısa bir açıklama.

Bulgular: Ana bulgular nelerdir?

Sonuç: Bu çalışmanın ana sonuçları ve etkileri nelerdir?

Endikasyonları

Yöntem

Diğer yöntemlerle karşılaştırılması: Avantaj ve dezavantajları, zorluklar ve komplikasyonlar.

Kaynaklar: Vancouver tarzı (yukarıda 'Kaynaklar' bölümüne bakınız)

Teşekkür

Tablolar ve şekiller; alt yazıları dahil

Video Makale

Makale Uzunluğu: 500 kelimeyi aşmamalıdır.

Kaynak Sayısı: 5 kaynağı aşmamalıdır.

Tanıyı, uygulanan cerrahi tekniği ve sonucu açıklayarak olguyu kısaca özetleyiniz. Uygun şekilde adlandırılmış ve referans edilmiş video materyalleri ile tüm önemli noktaları, örn; yeni cerrahi tekniği, belirtiniz. Materyaller, yazarların cerrahi tekniğini anlattıkları veya karşılaştıkları ilginç vakalardan oluşmalıdır.

Teknik Gereklilikler: Veriler, makale yükleme sırasında diğer dosyalarla birlikte eklenmelidir. Video süresinin 10 dakikayı geçmemesi kaydıyla dosya boyutu maksimum 350 MB olmalı ve 'MOV, MPEG4, AVI, WMV, MPEGPS, FLV, 3GPP, WebM' formatlarından biri kullanılmalıdır. 100 MB'yi aşmayan video dokümanları sisteme yüklenebilir. Daha büyük video dokümanları için lütfen iletisim@galenos.com.tr adresinden bizimle iletişime geçiniz. Tüm video seslendirmeleri İngilizce olmalıdır. Video atıfları, Şekil veya Tablo atıfları ile aynı biçimde kullanılmalıdır. Örneğin; "….Bunu gerçekleştirmek için, yeni bir cerrahi teknik geliştirdik (Video 1)." Video materyallerinde isim ve kurumlar yer almamalıdır. Kabul edilen makalelerin video materyalleri online yayınlanacaktır.

Editöre Mektuplar

Makale uzunluğu: 500 kelimeyi aşmamalıdır.

Kaynak Sayısı: 10 kaynağı aşmamalıdır.

Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınlanan makaleler hakkında yorumlar memnuniyetle kabul edilir. Özet gerekli değildir, ancak lütfen kısa bir başlık ekleyiniz. Mektuplar bir şekil veya tablo içerebilir.

Editöryal Yorumlar

Makale uzunluğu: 1000 kelimeyi aşmamalıdır.

Kaynak Sayısı: 10 kaynağı aşmamalıdır.

Editöryal yorumlar sadece editör tarafından kaleme alınır. Editöryal yorumlarda aynı konu hakkında başka yerlerde yayınlanmış yazılar hakkında fikir veya yorumlar belirtilir. Tek bir yazar tercih edilir. Özet gerekli değildir, ancak lütfen kısa bir başlık ekleyiniz. Editöryal gönderimler revizyon/gözden geçirme talebine tabi tutulabilir. Editörler, metin stilini değiştirme hakkını saklı tutar.

Etik

Bu dergi, bilimsel kayıtların bütünlüğünü korumayı tahhüt etmektedir. Yayın Etik Komitesi (COPE) üyesi olarak, dergi olası olumsuz davranışlarla nasıl başa çıkılacağı konusunda Yayın Etik Komitesi (COPE) kılavuzlarını takip edecektir.

Yazarlar araştırma sonuçlarını yanlış sunmaktan; derginin güvenilirliğine, bilimsel yazarlık profesyonelliğine ve en sonunda tüm bilimsel çabalara zarar verebileceğinden dolayı, sakınmalıdır. Araştırma bütünlüğünün sürdürülmesi ve bunun sunumu, iyi bilimsel uygulama kurallarını takip ederek başarılır. Bu da şunları içerir:

- Yazılı eser değerlendirilmek üzere eş zamanlı birden fazla dergiye gönderilmemelidir.

- Yazılı eser daha önceki bir eserin geliştirilmesi olmadıkça, daha önce (kısmen ya da tamamen) yayınlanmamış olmalıdır. [Metnin yeniden kullanıldığı imasından kaçınmak için tekrar kullanılabilir materyallerde şeffaflık sağlayın ("self-plagiarism""kişinin kendinden intihali")].

- Tek bir çalışma; sunum miktarını arttırmak için birçok parçaya bölünmemeli ve zaman içinde aynı ya da çeşitli dergilere gönderilmemelidir. (örneğin "salam-yayıncılık" "salamizasyon").

- Veriler, sonuçlarınızı desteklemek için fabrikasyon (uydurma) ya da manüple edilmiş olmamalıdır.

- Yazarın kendine ait olmayan hiçbir veri, metin veya teori kendininmiş gibi sunulmamalıdır (intihal). Diğer eserlerin kullanımı, (eserin birebir kopyalanması, özetlenmesi ve/veya başka kelimeler kullanarak açıklanmasını da içeren) ya telif hakkı korunacak şekilde izin alınarak ya da tırnak işareti içinde birebir kopyalanarak uygun onay ile kullanılmalıdır.

Önemli not; Türk Kolon ve Rektum Hastalıkları Dergisi intihal taramak için bir program (iThenticate) kullanmaktadır.

- Eser sunulmadan önce sorumlu makamlardan ve çalışmanın yapıldığı enstitü/kuruluşlardan-zımnen veya açıkça-onay alınmasının yanı sıra tüm yazarlardan açıkça onay alınmış olmalıdır.

- Sunulan eserde yazar olarak ismi olanların, bilimsel çalışmaya yeterince katkısı olmuş olmalıdır ve ortak mesuliyet ve sorumluluğu olmalıdır.

Bununla beraber:

- Yazarlık veya yazarların sıra değişiklikleri eserin kabulünden sonra yapılamaz

- Yazının revizyon aşamasında, yayın öncesi veya yayınlandıktan sonra yazar isim eklenmesi veya çıkarılması istemi; ciddi bir konudur ve geçerli sebepler olduğunda değerlendirilebilir. Yazar değişikliği gerekçesi; haklı gerekçeli, inandırıcı ve sadece tüm yazarların yazılı onayı alındıktan sonra; ve yeni/silinmiş yazarın rolü silme hakkında ikna edici ayrıntılı bir açıklama ile kabul edilebilir. Revizyon aşamasında değişiklik olması halinde, bir mektup revise edilmiş yayına eşlik etmelidir. Yayına kabul edildikten veya yayınlandıktan sonra değişiklik olması halinde, bu istek ve gerekli dökümantasyonun yayıncı yoluyla editöre gönderilmesi gerekmektedir. Gerek görüldüğünde bu isteğin gerçekleşmesi için daha fazla doküman talep edilebilir. Değişikliğin kabul veya red kararı dergi editörü insiyatifindedir. Bu nedenle, yayının gönderilmesi aşamasında yazar/yazarlar; gönderecekleri ilgili yazar grubunun isim doğruluğundan sorumludur.

- Yazarlardan sonuçların geçerliliğini doğrulamak amacıyla verilerin ilgili belgelerinin istenmesi halinde bu verileri göndermek için hazır bulundurulmalıdır. Bunlar, ham veri, örnekler, kayıt vb. şeklinde olabilir.

Görevi kötüye kullanma ya da suistimal şüphesi halinde dergi COPE yönergeleri izleyerek bir soruşturma yürütecektir. Soruşturmanın ardından, iddia geçerli görünüyorsa, yazara sorunu gidermek için bir fırsat verilecektir.

Usulsüzlük, şüphe seviyesinde kaldığında; dergi editörü aşağıdaki yollardan birine başvurabilir;

- Makale halen şüpheli ise, reddedilip yazara iade edilebilir.

- Makele online yayınlanmış ise; hatanın mahiyetine bağlı olarak ya yazım hatası olarak kabul edilecek ya da daha ciddi durumlarda makale geri çekilecektir.

- Hatalı yayın ve geri çekme durumlarında açıklayıcı not yayınlanır ve yazarın kurumu bilgilendirilir.

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İnsan ve Hayvan Araştırmaları

İnsan Hakları Beyannamesi

İnsan katılımlı araştırmalar; 1964 Helsinki Deklarasyonu'na ve sonrasında yayımlanan iyileştirici ilkelere uygun olmalıdır ve yazarlar tarafından kurumsal ve/veya ulusal etik kurul komitelerine başvurulup onay alınmış olduğu beyan edilmelidir.

Araştırmanın 1964 Helsinki Deklarasyonu veya kıyaslanabilir standartlara göre yürütülmesi ile ilgili şüphe durumunda, yazarlar bu durumun nedenlerini açıklamak zorundadır ve bağımsız etik kurulları veya diğer değerlendirme kurulları aracılığıyla şüphelerin giderilmesi gerekmektedir.

Aşağıda belirtilen durumlar yazı içerisinde "Kaynaklar" bölümünden önce yer almalıdır:

Etik Kurul Onayı: "Çalışmada insanlara uygulanan tüm prosedürler kurumsal ve ulusal araştırma kurullarının etik standartlarına, 1964 Helsinki Deklarasyonu'na ve sonrasında yayımlanan iyileştirici ilkelere uygun olmalıdır."

Retrospektif çalışmalarda, aşağıda belirtilen cümle yer almalıdır.

"Bu tür çalışmalarda yazılı onam gerekmemektedir."

Hayvan Hakları Beyannamesi

Araştırmalarda kullanılan hayvanların refahına saygı gösterilmelidir. Hayvan deneylerinde, yazarlar hayvanların bakımında ve kullanımında uluslararası, ulusal ve/veya kurumsal olarak oluşturulmuş kılavuzlara uymalıdır ve çalışmalar için kurumdaki veya çalışmanın yapıldığı veya yürütüldüğü merkezdeki (eğer böyle bir merkez varsa) Klinik Araştırmalar Etik Kurulundan onay alınmalıdır.

Hayvanlar ile yürütülen çalışmalarda, aşağıda belirtilen durumlar yazı içerisinde 'Kaynaklar' bölümünden önce yer almalıdır:

Etik Kurul Onayı: "Hayvanların bakımı ve kullanımı ile ilgili olarak uluslararası, ulusal ve/veya kurumsal olarak oluşturulmuş tüm kılavuzlara uyulmuştur."

Eğer uygun bulunduysa (komitenin bulunduğu merkezde): "Hayvan çalışmalarında yapılan tüm uygulamalar kurumsal veya çalışmanın yürütüldüğü merkez tarafından belirlenmiş etik kurallara uyumludur."

Eğer makale insan ya da hayvan katılımlı bir çalışma değilse, lütfen aşağıda yer alan uygun durumlardan birini seçiniz:

"Bu makalenin yazarları insan katılımlı bir çalışma olmadığını bildirmektedir."

"Bu makalenin yazarları çalışmada hayvan kullanılmadığını bildirmektedir."

"Bu makalenin yazarları insan katılımlı veya hayvan kullanılan bir çalışma olmadığını bildirmektedir."

Bilgilendirilmiş Onam

Bütün bireyler ihlal edilemeyecek kişisel haklara sahiptir. Çalışmada yer alan bireyler, elde edilen kişisel bilgilere, çalışmada geçen görüşmelere ve elde edilen fotoğraflara ne olacağı konusunda karar verebilme hakkına sahiptir. Bundan dolayı, çalışmaya dahil etmeden önce yazılı bilgilendirilmiş onam alınması önemlidir. Bilimsel olarak gerekli değilse ve katılımcılardan (veya katılımcı yetkin değilse ebeveynlerinden veya velilerinden) basılması için yazılı onam alınmadıysa, katılımcılara ait detaylar (isimleri, doğum günleri, kimlik numaraları ve diğer bilgileri) tanımlayıcı bilgilerini, fotoğraflarını ve genetik profillerini içerecek şekilde yazılı formda basılmamalıdır. Tam gizlilik sağlanmasının zor olduğu durumlarda, bilgilendirilmiş onam formu şüpheyi içerecek şekilde düzenlenmelidir. Örneğin fotoğrafta katılımcıların göz kısmının maskelenmesi gizlilik açısından yeterli olmayabilir. Eğer karakteristik özellikler gizlilik açısından değiştirilirse, örneğin genetik profilde, yazar yapılan değişikliğin bilimsel olarak sorun oluşturmadığından emin olmalıdır.

Aşağıdaki ifade belirtilmelidir:

Bilgilendirilmiş Onam: "Çalışmadaki tüm katılımcılardan bilgilendirilmiş onam alınmıştır."

Eğer makalede katılımcıların tanımlayıcı bilgileri yer alacaksa, aşağıdaki ifade belirtilmelidir:

"Makalede kişisel bilgileri kullanılan tüm katılımcılardan ayrıca bilgilendirilmiş onam alınmıştır."

DEĞERLENDİRME SÜRECİ

Türk Kolon ve Rektum Hastalıkları Dergisi'ne gönderilen tüm yazılar, sisteme yüklendikten sonra ilk önce editöryal kurul tarafından derginin amaç ve hedeflerine uygunluk ve temel şartları sağlama yönünden değerlendirilecektir. Yazılar, konusunda uzman dergi hakemlerine değerlendirilmek üzere gönderilecektir. Tüm kabul edilen yazılar yayımlanmadan önce, istatistik ve İngiliz dili konusunda uzman editörler tarafından değerlendirilecektir. Sayfaların ilk gözden geçirilmesinden sonra, hakem yorumları ön karar vermek için Editör'e gönderilecektir. Bu aşamada, ilk değerlendirmede bulunanların düşüncesi doğrultusunda, yazı kabul edilebilir, reddedilebilir veya yazıda düzeltme yapılması istenebilir. İlk değerlendirme sonrasında değerli bulunan makaleler için genellikle düzeltme istenir. Düzeltilen makaleler ilk karardan sonraki 2 ay içerisinde tekrar dergiye gönderilmelidir. Süre uzatmaları yardımcı editörden 2 aylık süre bitmeden en az 2 hafta önce talep edilmelidir. Türk Kolon ve Rektum Hastalıkları Dergisi tarafından, 2 aylık düzeltme süresi sona erdikten sonra, yazı kabul edilmeyecektir. Düzeltme yapılan yazılar sisteme tekrar yüklendikten sonra değerlendirilmek üzere (genellikle ilk değerlendirmeyi yapan hakeme) gönderilecektir. Sonuç olarak yayımlanma kararı verildikten sonra, baskı öncesi Teknik Editör tarafından son kez değerlendirilecektir ve iletişim kurulacak olan yazara gözden geçirme ve son düzenlemeleri yapmak üzere işaretlenmiş bir nüshası elektronik ortamda gönderilecektir.

DÜZELTME SONRASI GÖNDERİLMESİ

Revize edilmiş bir versiyonu gönderirken yazar, yorumcular tarafından ele alınan her konuyu ayrıntılı olarak açıklamalı ve nokta nokta ayrıntılı olarak "yorumlara yanıt" sunmalıdır ve ardından belgenin açıklamalı kopyası bulunmalıdır (her yorumcunun yorumu nerede bulunabilir, yazarın cevap ve satır numaraları gibi yapılan değişiklikler).

Bunun yanı sıra ana revize yazı, kabul mektubu tarihinden itibaren 30 gün içinde teslim edilmelidir. Yazının revize edilmiş versiyonunun tanınan süre içinde verilmemesi durumunda, revizyon seçeneği iptal edilebilir. Yazar(lar) ek sürenin gerekli olduğunu düşünüyorsa, ilk 30 günlük süre bitmeden, uzatmayı talep etmelidir.

İNGİLİZCE YAZIM

Tüm yazılar yayımlanmadan önce profesyonel olarak "English Language Editor" tarafından değerlendirilmektedir.

KABUL SONRASI

Tüm kabul edilen makaleler editörlerden biri tarafından teknik açıdan değerlendirilecektir. Teknik inceleme tamamlandıktan sonra, makale ilgili birime gönderilerek yaklaşık bir hafta içerisinde tamamen atıf yapılabilir "Kabul Edilmiş Makale" şeklinde online olarak yayınlanacaktır.

Telif Hakkının Devri

Yayımlayan dergiye (veya basım ve yayma haklarının ayrı olduğu yapılarda ayrı olarak) makalenin telif hakkının devri gerekmektedir. Telif yasaları gereği bilginin yayılması ve korunması daha güvenli olarak sağlanacaktır.

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Online olarak yayımlandıktan sonra yapılacak değişikliklerde, Erratum üzerinden form oluşturulup makaleye erişim sağlayacak bağlantı oluşturulması gerekmektedir.

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Kabul edilmiş yazının baskı için tümü hazırlanırken online olarak özet hali yayımlanır. Kabul edilen yazı kontrolden geçtikten sonra, yazarlar son düzeltmeleri yaptıktan sonra ve tüm değişiklikler yapıldıktan sonra yazı online olarak yayımlanacaktır. Bu aşamada yazıya DOI (Digital Object Identifier) numarası verilecektir. Her iki forma da www.journalagent.com/krhd adresinden ulaşılabilecektir. Kabul edilen yazının yazarları elektronik ortamdaki sayfaları çıktı olarak aldıktan sonra proofreading yapmak, tüm yazıyı, tabloları, şekilleri ve kaynakları kontrol etmekle sorumludur. Baskıda gecikme olmaması için 48 saat içinde sayfa kontrolleri yapılmış olmalıdır.

YAZIŞMA

Tüm yazışmalar dergi editöryal kuruluna ait aşağıdaki posta adresi veya e-mail adresi ile yapılacaktır.

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Turkish Journal of
COLORECTAL DISEASE

Contents/İçindekiler

Turkish Journal of
COLORECTAL DISEASE

Editorial

Esteemed Readers of the Turkish Journal of Colorectal Disease,

We proudly continue to raise our journal to the standards you expect and deserve, and are pleased to present this new issue. With your support, the number and quality of articles submitted to the journal are both increasing.

Starting with this issue, we have also added a new format to the journal. Like other prestigious publications concerning colorectal disease, we have also improved our infrastructure to enable the publication of video vignettes. I hope that you will welcome this development with interest. In the near future, a brief guide will be published on the journal's webpage on how to submit video vignettes.

Another important decision is our intent to print one or two reviews in each issue. We believe this change will greatly add to the value of the journal.

Awaiting you in this issue are two reviews, six original articles, and four case reports. We hope you enjoy reading all of these interesting studies.

In this issue, you will find a philosophical approach to decision making in oncologic patients. On the other hand, we included a study of the efficacy of Aesculus hippocastanum in hemorrhoidal disease.

In addition, there are a total of six original articles, one of which was experimental. The experimental study investigates the efficacy of the Calendula officinalis herbal extract in the prevention of adhesions, an issue which has been the focus of much research but has yet to be solved definitively. We also present an important scientific study assessing quality of life after ileostomy/colostomy surgery that concludes with results we think you will find interesting.

We also hope you enjoy reading a study investigating cancer perceptions among the relatives of patients who undergo surgery for colorectal cancer. Another article presenting approaches to anal incontinence due to sphincter tears associated with multiple/challenging births, which is a very serious problem in our country and abroad, will also make a significant contribution to the literature. Furthermore, we hope that a study investigating predictive factors for the incidence of surgical site infections will facilitate the review of clinical policies regarding the prevention of these infections, which we still have not been able to eliminate.

We wish you a relaxing holiday as we begin the summer term this month, and look forward to seeing you again in September with more new and valuable studies.

Best regards...

Tahsin Çolak, MD
Editor-in-Chief

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REVIEW

Decision Making in Surgical Oncology

Cerrahi Onkolojide Karar Verme

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ABSTRACT

As can be seen from ancient Egyptian writings, cancer has been a major health problem for at least 3.500 years. Significant progress has been achieved in the battle against cancer in conjunction with increased knowledge and technological developments. However, cancer remains one of the leading causes of deaths worldwide. In the last century, as genetics and histopathological studies have fostered our understanding of the nature of the disease, oncology has become a subdiscipline within some of the major medical branches, i.e. surgical oncology. Several studies have been conducted on the decision-making process in cancer patients and it has been emphasized that correct decision-making is essential for proper management of the disease. In this article, we aimed to create a foundation based on what we already know on this important issue, to understand the difficulties of the decision-making process, and to emphasize the developments needed to overcome these difficulties.

Keywords: Decision-making, surgery, decision support systems

ÖZ

Eski Mısır yazmalarından anlaşıldığı üzere kanser en azından 3,500 yıldır önemli bir sağlık sorunudur. Artan bilgi birikimi ve teknolojik yeniliklerle birlikte kansere karşı yapılan mücadelede önemli başarılar elde edilmiştir. Ancak kanser tüm dünyada ölümlerin hala önde gelen nedenlerindendir. Son yüzyılda genetik ve histopatolojik çalışmalarla hastalığın doğası daha iyi anlaşılırken, onkoloji kimi anabilim dallarında cerrahi onkoloji örneğinde olduğu gibi bir bilim dalı olmuştur. Kanser hastalarında karar verme süreci üzerinde çeşitli çalışmalar yapılmış doğru karar vermenin hastalığın iyi yönetimi için gerekli olduğu üzerinde durulmuştur. Bu makalede amacımız bilinenlerden hareketle bu önemli konuda ilave çalışmaların yapılması için zemin oluşturmak, karar alma sürecinin zorluklarını anlama ve bunları aşma konusunda kat edilmesi gereken bir yolun varlığına vurgu yapmaktır.

Anahtar Kelimeler: Karar verme, cerrahi, karar destek sistemleri

Introduction

Deciding about cancer, especially about cancer treatment, may seem like a simple matter. It may be reasonable to choose the treatment that prolongs the life most or the one that maximizes the quality of life if there is no difference between the treatments in terms of life expectancy. However, studies show that decision-making in oncology is not as simple as it seems. The whole process should be managed properly. Prevention, screening, diagnosis, treatment, survival, and the last stage of life are the stages in this process, which are difficult to decide upon.[1] One out of every 150 hospitalized patients is lost due to complications; 40% of the complications are seen in surgical patients and half of the surgical complications are preventable.[2,3] The decision-making process must be well managed to minimize these complications and other undesirable consequences. The process consists of sequential decisions (Figure 1). Fox et al.[4] identified approximately 65 separate decision-points in diagnosis, screening, treatment, and follow-up periods during the health care of patients with breast cancer. This demonstrates the complex structure of the decision process in surgical oncology. At each decision point, if the process does not ideally progress, the cost of the marginal errors can finally become dramatic. On the one hand observation of oncological principles and development of patient-specific treatments have increased the survival rates, but on the other hand, the difficulties in decision-making become more frequent. Beyond that, there are always complicated situations where it is necessary to make the right decision to maximize the benefit of the patient from the treatment.[5]

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One of the aspects of surgical oncology that distinguishes it from other disciplines dealing with the treatment of serious diseases is that both the physician and the patient know that the cancer is often fatal. The possibility of the patient's death can affect the clinician, leading to the most controversial medical, surgical, technical and ethical debates in cancer management and decision making. Moreover, the definition of the patient's benefit can show individual differences in medical and surgical oncology. It is important for the patient at what cost the benefit of the surgery is obtained, which is related to cost, pain, risk, sequelae, and duration of possible physical impairment that may occur, the preferred lifestyle, the requirements of mindfulness, and the quality of life remaining. As a matter of fact, one out of three elderly patients are operated within the last year of their life, most of them in the last month.[6] Surgery has a risk of damage. The term "primum nil nocere", which means "first do no harm", is often used when discussing medical interventions with a low chance of benefit. In fact, it contains a paradox. Because surgery damages at first then heals. Surgery has its own risks and complications; it disrupts body integrity and is highly invasive. It's a field prone to human error. The surgeon sometimes has to decide in uncertain conditions.[7] Many physicians have not received adequate training on uncertainties, and the reactions shown in such cases may have negative clinical consequences.[8,9,10] Accordingly, medicine can be seen as a decision-making art without sufficient knowledge.[11] On the other hand, the patient-physician relationship is based on trust and this relationship can not be reduced to a contract. As implied by Gregory and McCullough[12] in 18th century, the physician must know exactly what is beneficial for the patient and keep the patient's interests above his or her own interests. While the decisions about how a patient is treated are related to the science, those about who should be treated are related to the ethical and moral values. The surgeon's decision-making skill has some grounds. The surgeon will be more advantageous in determining surgical strategy if more data is available. Theoretical and practical knowledge is valuable.

Figure 1. Care pathway for patients with breast cancer

The surgeon's anticipation and experience with similar situations are important. In this sense, decision-making is a judgment made in the light of knowledge, experiences, and evaluations.[12]

Decision Making Process

As in many areas of medicine, decisions are often taken in uncertain situations in surgical oncology. These decisions, which are taken independently of the severity, urgency, and necessity of the disease, have certain characteristics. Despite varying degrees of uncertainty regarding the medical condition of the patient, decisions are made in accordance with well-defined, reasonable preferences. An example of this is the decision on making surgery without a histopathological diagnosis in a patient with a tumor of the pancreatic head. The outcome of this decision is uncertain. For example, will the patient live? Is pain reduction worth the risk of surgical mortality? Decisions must be made although all these points have their own unknowns. In fact, the postponement of the decision or the preservation of the present situation is a judgment that also has consequences.[13] The surgeon takes into account the patient's preferences and directives, even if the decisions of the surgeon in unpredictable situations are likely to be accepted by the patient in advance. As a matter of fact, an unexpected finding can be reached during surgery or an iatrogenic injury can occur. Inadequacies can restrict existing alternatives. For example, a synchronous tumor may be missed in a patient operated urgently for ileus symptoms due to a sigmoid colon tumor. Surgical oncology has different decision moments. Alternative treatment options such as follow-up, medical treatment, less invasive surgical options or percutaneous techniques should be presented to the patient in the preoperative period.[2] When the surgical plan is discussed, it should be decided whether the surgery will be elective or urgent. For example, gastrointestinal bleeding findings in a patient with gastric cancer. It is not possible for a patient to participate in the decision process under general anesthesia during surgery. The surgeon must make the best decision for the benefit of the patient by taking into account the existing guidelines, recommendations, and expectations. However, unexpected situations or intraoperative findings may not be discussed in depth with the patient or his/her relatives. In addition to the postoperative need for early diagnosis and management of complications, the necessity of extraordinary methodologies should be considered. In cases where death is unavoidable, some practices with uncertain benefits may cause difficulties in decision-making.[14] The correctness of the decision in surgical oncology is provided by the integration of experience and anticipation in the light of current evidence on the subject. These features

are essential when obtaining information and applying this information to clinical problems. The components of knowledge are complex and require anticipation and judgment. According to Marshall[15], evidence, intuition, experience, anticipation and obedience lie in the foundation of knowledge. The logical understanding that goes from piece to whole lies on the basis of the evidence-based surgery. This understanding, which was first described by the clergy and mathematician Thomas Bayes, is based on the application of the initiative, observation, and probability principles. The strongest evidence obtained with this logic is randomized controlled studies. On the other hand, the results of 1/6 of the important randomized controlled trials published in the early 1990s were found to be contradictory in the subsequent studies, whereas it was seen that the effect size of the other 1/6 was exaggerated.[16] On the contrary, the lack of evidence from randomized controlled trials does not invalidate supportable results. Indeed, there is no such evidence for parachutes, and even the most ardent supporters of evidence-based medicine are unlikely to jump from a plane without a parachute.[17] On the other hand, the deduction is the most frequently used tool to make personalized decisions with the understanding that diseases do not manifest uniformly in all patients. Because the surgeon rarely has enough data from randomized controlled trials when taking difficult medical decisions. Even with data, the surgeon has to adapt the results to patient's special conditions, which is especially true in surgical oncology. Another instrument used by the surgeon to make decisions is the professional experience. The level of experience mediates decisions in some areas. The available information is synthesized and integrated with the specific constraints, values, and skills of the surgeon. Experience is a mechanism used to adapt treatment approaches to the needs and values of each patient. Foresight, one of the hallmarks of senior surgeons, is actually a forward projection of previous knowledge, experience, and comprehension skills. The characterization of the expert opinion is expressed as a quick pattern recognition and complex commands. Obedience is the non-critical adoption of the suggestions of the teachers and predecessors. There are different approaches to decision making in surgical oncology. Although the paternal model has often been criticized, it often describes the relationship between the surgical oncologist and the patient. This model usually puts the patient in a passive and dependent position in front of a surgeon who is the expert in the field. The knowledge provided by healthcare professionals is the basis for informed decision making. In this model, it is assumed that an informed patient is in a better position for decision making. However, this is often not the case in the cancer treatment process. This model reduces the surgical oncologist to an information provider by restricting his role in the decision-making process. Besides, often the patient is harmed even if he is legally competent and can not make the right decision about his health; and the asymmetrical structure of the knowledge is one of the biggest disadvantages. The model, in which the professionals are considered proxies, assume that the patient-physician relationship is based on trust and takes into account that the physician will give the best decision for patient's health and well-being. The co-decision process model considers the patient's preferences, needs, and values. In all clinical decisions, the values of the patient are guaranteed. This definition emphasizes the importance of the surgical oncologist and the patient acting jointly to achieve the best possible result.[18] Indeed, there are investigations that indicated that the level of patient involvement in the decision making process is related to a reduction in patient's regret.[19,20,21,22,23,24,25]

Indeed, the patient-surgeon relationship is based on trust but should not be seen as a contract. As Gregory and McCullough[26] expresses, the physician must understand patient's concerns. Maintaining and protecting the benefit of the patient should be the first priority of the physician and surgeon's interest should be in the second place.[26] The notion that the surgeon is patient's proxy is applicable in the following situations. In a patient-surgeon relationship and also in surgical training and research, protecting and maintaining the patient's interest should be the primary concern of surgical oncologist. These primary concerns hold the surgeon's personal concerns behind and bring them into the second place in a systematic view. Individual concerns are restricted and not allowed to cause evils from the selfishness of the surgeon's professional character. The patient-surgeon relationship is placed on a legal and ethical ground with the informed consent and perfected. The sufficient and willful attitude of the patient is a prerequisite to obtaining consent. The patient should understand the surgeon's explanation and the recommendations presented to him. The patient's attitude towards acceptance or rejection in the decision-making process, the manner in which it is expressed, the enrollment and the authorization procedures of the patient are the next steps. The surgical oncologist should not present the patient with a spectrum of surgical options by no means and should not be forced to contradict the standards of knowledge, belief, and care as long as there are no generally accepted practices. Decisions in surgical oncology are made more frequently with a multidisciplinary approach, which is one of the decision-making models. As a matter of fact, when the data are re-examined with a multidisciplinary approach, it is stated that decisions are changed by 22-42%.[27,28,29] The decision-making process, however, is not firmly established and is

often not aware of the patient's preferences, lifestyle, and choices. Consequently, decisions related to treatment, although scientifically excellent, do not benefit the patient.[30] This is especially true for oncology patients and the prevalence of regret is higher in studies on oncology patients. As a matter of fact, in the review of 73 studies evaluating regret primarily (57.5%) in oncologic patients, the average prevalence of patient regret was found to be 14.4% even though it varied among studies.[31] Health care is a process and there are many decision points in this process. Evaluating the treatment options, making recommendations, and expressing the benefits and risks require more than a knowledgeable and experienced surgeon. What is needed is a team including doctors, nurses and even physiotherapists and social workers. This makes the decision-making chain complex. Multidisciplinary decisions taken in surgical oncology can be configured using "system approach". Here, in the input-process-output model of team performance, the components have both technical and non-technical characteristics. This model, applied in the aviation industry, has been extensively investigated in studies on teamwork. Information, equipment, the participation of team members, expert opinion as an element of multidisciplinary meetings, information processing, free discussion, leadership, teamwork ethics constitute the process. The outputs include documentation and application of the decision, as well as consensus decisions, communication with the patient and the general practitioner.[1,32] Error rates can be reduced using well-designed error reduction systems based on system theory. System theory indicates that events, objects, places, and methods do not exist independently, but are intertwined as interdependent components of complex systems.[33,34,35] Nowadays, the transition from the "wise person" to the understanding of multidisciplinary team is obvious in medical decision making. Our horizons changed from local and narrow visions to regional, national and international spheres. Several methods, such as the Delphi method or its modifications used beyond the simple questionnaire-based studies in carrying the knowledge from expert opinion to consensus decisions, have been developed for structural communication and are generally used for future predictions.[36] Two examples of the Delphi method includes the international conference on "Multidisciplinary Rectal Cancer Treatment: Looking for a European Consensus" and the panel of Canadian Hepato-Pancreatico-Biliary Society on hepatic resection in metastatic colorectal cancers.[37,38] There are also moments when decisions are made individually, as in the case of a decision in the operating rooms. The decision-making process in the operating room is a critical, cognitive, necessary, and obligatory non-technical skill. The surgical oncologist will face difficult decision-making processes in the operating room and should be ready to make the best decision for patient's benefit.[39] Procedures in surgical oncology are characterized by time pressure, change of purpose, increased risk, high level of uncertainty, inadequate data availability, unexpected conditions and problems.[40] If surgery is performed without a serious complication, taking an action that can change the development of events does not make sense. But when faced with a sudden and unexpected situation (bleeding, unexpected findings, increased risk, accidents, difficulties, etc.), the surgeon will be forced to change the course of action. The first step is to be aware of the changes in the managed conditions, and this awareness is closely related to the cognitive follow-up of the steps in the surgical procedure. The second step after the detection of a problem by the surgeon in the course of the events is the identification of the problem, risk assessment, the assessment of the situation considering time constraints. Decision making strategy can adopt one or more mechanisms in a time frame: intuitive, rule-based, analytical, or creative. The goal is to solve the problem as soon as possible with minimal harm to the patient.

Ethical Tools in Surgical Decision Making

The surgical oncologist should use tools that address clinical difficulties and contribute to the decision making process in the management of these events and form a framework for ethical analysis. McCullough et al.[41] suggests a four-step approach in this regard. In the first step, the facts of the case are defined. The first condition for reasonable ethical analysis based on sound reasoning is the provision of all the data and facts of the identified clinical case as well as all treatment alternatives. It is appropriate to be aware of patient's facts and preferences. The second step is ethical analysis. Elements that should be considered in the ethical analysis are trust, equity, respect for autonomy, philanthropy principles. The third step is the ethical debate. This discussion answers the following questions: Are the reasons clearly expressed? Are there other reasonable options for the case? In the fourth step, power and authority issues are remarkable. The surgeon is an authority in terms of knowledge, education, and expertise. At the same time, the patient is the decision-maker on what will be done to his body.

In this sense, empathy, compassion, loyalty, honesty, usefulness, non-harm, autonomy and fairness are ethical principles related to clinical medicine.[42] Jonsen et al.[42] proposed a model with 4 headings, also known as "4 boxes", which can be applied to oncology patients to solve problems in clinical care. This shows the mutual interaction between ethical principles and concrete clinical situations.

This model refers to diagnostic and therapeutic options for solving problems at the point of medical indications and reflects useful and non-harmful principles. It expresses the choice of the patient in terms of the patient's preferences and refers to the prestige of the autonomy. Harmlessness and respect to autonomy principles are taken into account as the quality of life before and after medical and surgical interventions. Finally, in this model, the conditions and sources of each specific case are defined with a reference to justice and correctness. The question "What would you do if you were in my place?" is frequently heard in oncology clinics. This question symbols the desire to get the best in the form of an expert suggestion. It is important here that recommendations given as decisions are always given in the context of personal values that are not similar to those of the patient.[43] The decisions that have to be made in these and similar situations are as much of a medical concern as the disease itself. While the fight against cancer continues on every platform, decisions must be made most correctly in the right place at the right time.

Ethics

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Surgicaland Medical Practices: M.Y., Ö.A., Concept: M.Y., Design: M.Y., Data Collection or Processing: M.Y., Ö.A., Analysis or Interpretation: M.Y., Literature Search: M.Y., Ö.A., Writing: M.Y.

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COMMENTARY

Aesculus Hippocastanum (Aescin, Horse Chestnut) in the Management of Hemorrhoidal Disease: Review

Hemoroidal Hastalığın Tedavisinde Aesculus Hippocastanum (Aescin, At Kestanesi) Kullanımı: Derleme

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ABSTRACT

Medical treatment is very important in the relief of symptoms and pain related to hemorrhoidal disease, even in advanced cases with absolute surgical indication. Medical remedies containing components such as flavonoids, diosmin, calcium dobesilate, oxerutin, and horse chestnut (Aesculus hippocastanum, Hippocastanaceae family) are commonly used in the medical management of hemorrhoidal disease. The primary active constituent found in horse chestnut seed extract, aescin, is a mixture of triterpene saponins present in two forms, alpha and beta, which are distinguished by their water solubility and melting points; other constituents include bioflavonoids (quercetin and kaempferol), proanthocyanidin A2 (an antioxidant), and the coumarins fraxin and aesculin. The antiedematous, antiinflammatory and venotonic properties observed are due exclusively to aescin. Its venotonic effect was shown to be mediated by its sensitizing activity on ion channels in the vessel wall, especially to calcium, which results in an increase in contractility. It has also been proposed that enhanced release of prostaglandin F2 antagonizes the vasodilatory effects of histamine and serotonin, and venous wall damage is reduced by antagonizing proteoglycan degradation, which aids in the preservation of connective tissue integrity. Horse chestnut extract, which owes its antiseptic, venotonic, vasoprotective, and antiinflammatory properties to its aescin content, has emerged as an important agent that can facilitate the treatment of every stage of hemorrhoidal disease. In this review, we investigated these effects as well as its more recently studied apoptotic and antioxidant effects in light of experimental and clinical studies published in the literature.

Keywords: Hemorrhoid, horse chestnut, aescin, aesculus hippocastanum, medical treatment

ÖZ

Cerrahi tedavi indikasyonu olan ileri derecede hemoroidler de dahil olmak üzere tüm hemoroid çeşitlerinin semptomatik tedavisi ve ağrı sağaltımında medikal tedavi büyük önem taşımaktadır. Hemoroidin medikal tedavisinde, flavonoid, diosmin, kalsiyum besilat, okserutin, at kestanesi, vb. maddeleri içeren ilaçlar yaygın olarak kullanılmaktadır. At kestanesi, içeriğinde yer alan aescin'in (Aesculus hippocastanum, hippocastanaceae ailesi) suda çözünürlük ve erime noktasına göre birbirinden ayırdedilen alfa ve beta triterpene saponin karışımından oluştuğu; bunun dışındaki bileşenlerin ise bioflavonoidler (quercetin ve kaempferol), proanthocyanidin A2 (bir antioksidan) ve coumarinler (fraxin ve aesculin) olduğu gösterilmiştir. Antiödematöz, antienflamatuvar ve venotonik etkileri triterpene saponin içeriğine bağlanmaktadır. Venöz damar duvarındaki iyon kanallarında, özellikle kalsiyuma, duyarlılığı artırarak kontraksiyonu artırdığı ve tonik etkisini gösterdiği ispatlanmıştır. Ayrıca, ven duvarında artan prostaglandin F2 salınımı ile histamin ve serotonin'in vazodilatatör etkisinin antagonize edildiği; üstelik doku mukopolisakkarid katabolizmasında azalmaya yol açarak bağ doku entegritesini korumaya da yardım ettiği ileri sürülmektedir. Bu çalışmada, hemoroidal hastalığın her evresinde tedaviye yardım edebilecek önemli bir ajan olarak ortaya çıkan at kestanesinin aescin içeriğine bağlı antieksüdatif, venotonik, venoprotektif ve antienflamatuvar özellikleri ile, son zamanlarda üzerinde çalışılmakta olan, apoptotik ve antioksidatif özellikleri, literatürde yer alan deneysel ve klinik çalışmalar eşliğinde irdelenmiştir.

Anahtar Kelimeler: Hemoroid, at kestanesi, aescin, aesculus hippocastanum, medikal tedavi

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Introduction

Hemorrhoidal disease is an anorectal condition involving symptomatic enlargement and distal displacement of the normal anal cushions. The term hemorrhoid is derived from a combination of the Greek words haima (blood) and rhoos (flow), and awareness of the condition and efforts to manage it date back centuries. Hemorrhoidal disease can affect over 30% of the population at any stage of life and affects both sexes.[1] The main theories regarding its development include abnormal dilation of the hemorrhoidal plexuses originating from branches of superior and middle hemorrhoidal veins, excessive distension of arteriovenous anastomoses adjacent to the anal cushions, distal displacement and prolapse of the anal pads, and destruction of the surrounding connective tissue over time. Genetic factors, anatomical structure, diet, constipation, and factors that increase intra-abdominal pressure (excessive straining, multiple pregnancy, chronic cough) have been implicated in its etiology. Age-related deformation of the supporting connective tissue becomes more evident starting in the third decade. Symptoms may include venous distension, erosion, bleeding, and thrombosis.[2] Hemorrhoids are classified according to location (internal/external/mixed) and degree of prolapse (grade 1-4).[2] External hemorrhoids originate from the inferior hemorrhoidal plexus, are covered by modified squamous epithelium, and form below the dentate line; they may become thrombotic or ulcerated. Internal hemorrhoids originate from the superior or middle hemorrhoidal plexus and are covered by mucosa. In grade 1 hemorrhoids, the vessels in the anal canal increase in number and size, and may cause anal bleeding during defecation. Grade 2 and 3 hemorrhoids prolapse from the anal canal upon defecation, but grade 3 hemorrhoids require manual reduction. Grade 4 hemorrhoids are prolapsed and irreducible.[3] Hemorrhoids may also arise both above and below the dentate line, which are called mixed (interno-external) hemorrhoids. Following history-taking and clinical, digital rectal, and rectosigmoidoscopic examinations, a definitive diagnosis is made and the treatment phase begins. Medical treatment is critical in relieving the symptoms and pain caused by hemorrhoidal disease at all stages, including advanced cases with absolute surgical indication. Constipation relief medications, dietary restriction with a fiber-rich diet, and sitz baths are often suggested to alleviate symptoms. Increasing fiber and water intake, reducing consumption of oily and spicy foods, practicing anal hygiene, avoiding straining while defecating, and avoiding medications that cause constipation and diarrhea are also important.[4] The efficacy of topical creams, ointments, and suppositories used to reduce edema and pain is debated.[5] However, medications containing substances such as flavonoids, diosmin, calcium dobesilate, oxerutin, and horse chestnut are widely used in the medical treatment of hemorrhoids.[6] A meta-analysis by Alonso-Coello et al.[7] comparing patients who did and did not take flavonoids showed that the use of flavonoids reduced the incidence of anal bleeding and pain by 65% and recurrence by 47%. The venotonic effect of flavonoids was first exploited in venous insufficiency and edema. Micronized purified flavonoid fraction (MPFF) consisting of 90% diosmin and 10% hesperidin has been used in the treatment of hemorrhoids. Micronization of the particles was shown to accelerate their effect, and some randomized trials suggested that it decreased bleeding by 67%, pain by 65%, and itching by 35%, with a 47% reduction in recurrence.[2] In other studies it was claimed that MPFF also reduced bleeding and pain after hemorrhoidectomy.[8] Following these studies, horse chestnut extract (aescin), which has been used as an herbal product for centuries, gained attention as a part of an increasingly widespread treatment approach using vasoactive drugs, due to its anti-hemorrhagic and anti-inflammatory effects. In fact, the utility of horse chestnut in hemorrhoid treatment was demonstrated clinically in other studies conducted long before the Alonso-Coello et al.[7] study highlighting the effects of flavonoid drugs. In a placebo-controlled study including 80 patients, those treated with 40 mg aescin (horse chestnut extract) 3 times a day showed improvement in hemorrhoid symptoms and endoscopic findings; bleeding was reduced by 94% after two weeks of treatment, while 81% of patients had a marked decrease in symptoms within 6 days.[9] In that study, the patients showed fairly high drug tolerance, and the effect of aescin against hemorrhoidal bleeding and edema was determined to be highly significant. The anti-edema and anti-inflammatory properties of aescin and its relationship with the hypothalamic-pituitary-adrenal axis were discovered and published long before the abovementioned studies.[10] Horse chestnut (Aesculus hippocastanum, Hippocastanaceae family) possesses antiseptic and venotonic effects due to its aescin content.[9,10] Its vasoprotective and anti-inflammatory properties have also been the subject of research. The molecular effect of aescin in chronic venous insufficiency, hemorrhoids, and postoperative edema has been associated both *in vitro* and *in vivo* with the restoration of venous tension via facilitation of ion transport through channels in the vessel walls.[11] In order to understand the mechanisms of these actions, one must first focus on the molecular structure of aescin. Aescin, the primary active compound in horse chestnut extract, is a mixture of two forms of triterpene saponin, alpha and beta, which are distinguished by their solubility in water and melting point. Other

components of horse chestnut include bioflavonoids (quercetin and kaempferol), proanthocyanidin A2 (an antioxidant) and coumarins (fraxin and aesculin).[12] Lorenz and Marek[13] first recognized the anti-edematous and vasoprotective properties of horse chestnut extract in 1960 and attributed them to another active agent, aesculin. Similarly, in a study conducted in 2001, Sirtori[14] attributed the anti-edematous, anti-inflammatory, and venotonic effects of aescin to the triterpene saponin component. It has been demonstrated in animal studies that it exerts its tonic effect by increasing the sensitivity of ion channels in the venous vessel wall, particularly to calcium.[15,16] These studies also showed that increased release of prostaglandin F2 in the venous wall antagonized the vasodilator activity of histamine and serotonin 5-hydroxytryptamine and suggested that it also contributes to the preservation of connective tissue integrity by reducing catabolism of tissue mucopolysaccharides.[17] The triterpene saponin content of aescin contains the antioxidant proanthocyanidin A2. As we understand more about the role of oxidative stress and free radical mechanisms in the etiopathogenesis of various diseases, recent studies in this area have started to focus on the antioxidant properties of horse chestnut. Kucukkurt et al.[18] determined that horse chestnut has antioxidant properties that inhibit free radicals, lipid peroxidation, and lysosomal enzymes. Based on the hemorrhoidal symptomatic relief provided by aescin-containing horse chestnut tea used in the Turkish community, they investigated its effects on the blood and tissue antioxidant defense system of male rats *in vivo*. The authors measured oxidative stress markers malonyl dialdehyde, reduced glutathione, and superoxide dismutase as well as catalase levels in blood and tissue samples of male rats who received aescin extract (100 mg/kg) mixed with either standard feed or high-fat feed for 5 weeks. Aescin was shown to have protective effects against oxidative stress even in rats eating high-fat feed and under high oxidative stress. In a 2013 study by Güney et al.[19], aescin significantly increased apoptosis, which has a vital role in clearing damaged cells, in an H-ras transformed 5RP7 cell line. Considering the role of oxidative stress and apoptosis in inflammation, the antioxidant and apoptotic effects of aescin are gaining value. In addition to these effects, a recent study also suggested that aescin extract chemosensitized human pancreatic cancer cells by inhibiting the nuclear factor kappa B signaling pathway.[20] That study emphasized the role of aescin's aforementioned apoptotic activity. In pharmacokinetic studies on aescin, the active component had a half-life of approximately 17 hours when taken orally, and blood levels remained above 5 ng/mL even 24 hours after intake. Because it is formulated as a retard tablet, the active agent is released slowly and maintained at therapeutic blood concentrations for a longer time. In a comparative bioavailability study including solutions containing horse chestnut seed extract, the retard tablet formulation provided a maximum blood concentration only 5% lower but maintained efficacy in the blood for longer. This pharmacokinetic profile enables extended activity at low doses. The prolonged action of the drug and its anti-edematous and anti-inflammatory properties suggested that it may be beneficial during recovery following hemorrhoid surgery, and its use for this indication is rapidly increasing.[14,21] Side effects have been reported at rates of 0.6-3% in clinical trials, and mostly consist of dizziness, headache, pruritus, and gastrointestinal symptoms.[22,23] In summary, horse chestnut extract, which possesses antiseptic, venotonic, vasoprotective, and anti-inflammatory properties due to its aescin content, is emerging as an important agent that can facilitate the treatment of hemorrhoidal disease at every stage. Moreover, its apoptotic and antioxidant properties, which have received more attention recently, also make this herbal medicine worth further investigation.

Ethics

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.Ü., Concept: F.E., Design: F.E., Data Collection or Processing: E.Ü., Analysis or Interpretation: E.Ü., F.E., Literature Search: E.Ü., Writing: E.Ü., F.E.

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TECHNICAL POINT

Anal Sphincteroplasty and Counter-Clockwise Gracilis Muscle Transposition by Using Transperineal Ischioanal Fossa Access in a Male Patient with Fecal Incontinence Who Undergone to Low Anterior Resection for Rectal Cancer

Rektum Kanseri Nedeni ile Low Anterior Rezeksiyon Uygulanmış Fekal İnkontinanslı Erkek Hastada Transperineal İskioanal Fossa Erişimi Kullanılarak Anal Sfinkteroplasti ve Counter-Clockwise Grasilis Kas Transpozisyonu

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ABSTRACT

Fecal incontinence is a clinical condition that negatively affects the patient's social and psychological life, and presents a surgical challenge due to dissatisfactory postoperative outcomes. Here we discuss the case of a 72-year-old male patient who underwent intersphincteric low anterior rectal resection for low rectal cancer one year earlier and developed complete fecal incontinence. We achieved good postoperative results in this patient by performing transperineal anal sphincteroplasty and counter-clockwise gracilis muscle transposition.
Keywords: Fecal incontinence, gracilis muscle transposition, ischioanal fossa, rectal cancer, low anterior resection

ÖZ

Fekal inkontinans, hastanın sosyal ve psikolojik hayatını olumsuz etkileyen ve hoşnutsuz postoperatif sonuçlara bağlı olarak, cerrahi güçlüklerden birini oluşturan klinik bir durumdur. Bir yıl önce alt rektum kanseri nedeni ile intersfinkterik low anterior rezeksiyon uygulanmış olan, komplet fekal inkontinanslı 72 yaşındaki bir erkek hastada transperineal anal sfinkteroplasti ve counter-clockwise rotasyon tarzında grasilis kas transpozisyonu uygulayarak iyi postoperatif sonuçlar elde ettik.
Anahtar Kelimeler: Fekal inkontinans, grasilis kas transpozisyonu, iskioanal fossa, rektal kanser, low anterior rezeksiyon

Introduction

We performed combined anal sphincteroplasty and counter-clockwise rotation manner gracilis muscle transposition procedure by transperineal access to provide the ischioanal fossa access in a male patient suffered from complet fecal incontinence (FI) for one year following low anterior rectal resection operation. Operation was performed in Lloyd-Davies lithotomy position. Ischioanal fossa access was provided by vertical transperineal incision. Surgical anal canal exposition between the puborectal and superficial external anal sphincteric muscles in the extrashincteric plane was achieved by transperineal surgical access. After the completion of the surgical anal exposition in the extrasphincteric plane, a ventral defect and muscular fibers weakness of the external anal sphincteric musculature were detected, which is thought to developed as a result of the

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excessive anal dilatation performed in previous surgery. The retracted ends of the ruptured and weakened external anal sphincteric muscles were found, and repaired one by one along the torn line by using no 0 Vicryl U-sutures (Figure 1). The right side gracilis muscle was prepared by protecting its proximal neurovasculer bundle, and transposed to ischioanal fossa in counter-clockwise rotation manner around of external anal sphincteric musculature via a subcutaneous tunnel (Figure 2). After completion of the gracilis transposition around the surgical anal canal in 360 degree in counter-clockwise manner, it was fixed to levator ani muscle, subcutaneous external anal sphincteric muscles, peripheral tissues and itself. An aspirative drain was placed to ischioanal fossa, and layers were closed. In his postoperative period, the patient was found to have continence to solid stools, and to have occasionally incontinence to liquid stools and gas. In early postoperative period, pelvic magnetic resonance imaging showed that the surgical anal canal was completely surrounded by the transposed gracilis muscle, and the regression of the increased anorectal angle into normal limits (Figure 3).

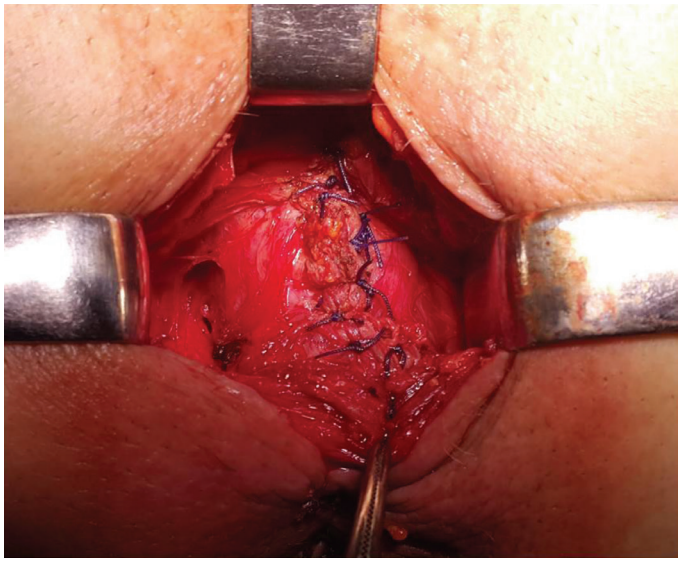

Figure 1. The external anal sphincteric musculature reparation along the torn line in a male patient with fecal incontinence

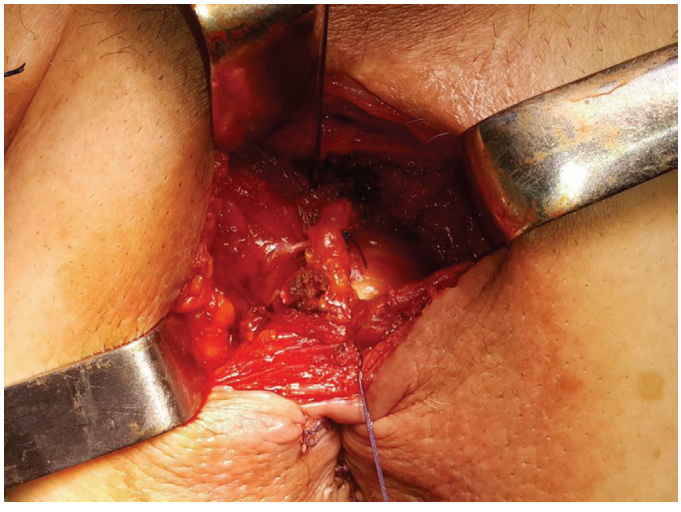

Figure 2. Counter-clockwise manner transposition of the gracilis muscle around the external sphincteric musculature in the ischioanal fossa in a male patient with fecal incontinence

Discussion

FI is a clinical condition mostly seen in women. Anal sphincteric damage and neurological disorders are the major causes of FI. Anterior anal sphincteric damages arisen from vaginal delivery is the most common reason of the FI in females. Iatrogenic injuries due to the surgical procedures including the anorectal region are the other common causes of FI, e.g. anal fistula, hemorrhoid, anal fissure or rectal cancer operations. Another cause of FI is direct perineal traumas. Anterior sphincteroplasty is the most common surgical method performed for anal sphincteric reconstruction. Adynamic and dynamic muscle transposition techniques are the other most common used surgical procedures in the fecal incontinence surgery. The external anal sphincteric musculature is embryologically derived from ectoderm, and composed of striated muscles. It should not be considered as a part of the bowel wall. Internal anal sphincteric muscle derived from endoderm is composed of smooth muscles, and it can be considered as a continuation of the bowel wall. While the conscious continence is provided by the external anal sphincteric musculature, internal anal sphincteric muscle provide the unconscious

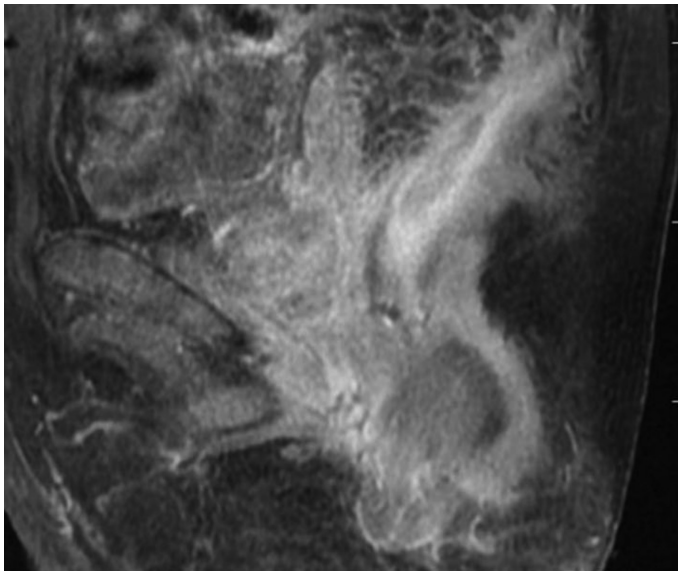

Figure 3. Early postoperative sagittal magnetic resonance imaging shows counter clock-wise manner transposed gracilis muscle around the surgical anal canal, and anorectal angle reconstruction

continence. The external anal sphincteric musculature and the sublevator part of the lower rectum including internal anal sphincteric muscle are configurated as two nested muscular tubes in the ischioanal fossa, and this formation named as the surgical anal canal. The surgical anal canal can be considered as intertwined two muscular tubes. It should be noted that external anal sphincteric musculature has a vertically situated coil-like shape surrounding the distal part of the lower rectum in the ischioanal fossa. Ischioanal fossa has a wedge-shaped cavity between the levator ani muscle and perineum. It is covered with obturator fascia and filled with lipomatous tissue. Ischional fossa contains of the surgical anal canal. It also hosts the pudendal neurovasculer bundles. Ischioanal fossa does not contain of the mesorectal tissue. When a surgical exposition is provided for rectal cancer surgery in the ischioanal fossa by using anterior or posterior perineal approach, the surgical dissection is in the extrasphincteric plane.[1,2] The main aim of the perineal access use in our technique is to provide of the extrasphincteric rectal dissection in the ischioanal fossa. We have performed such a similar operation in female patients suffered from FI depending to anal sphincteric damage by using transvaginal access to provide surgical exposition in ischioanal fossa.[3] Perineal access provided us surgical exposition in extrasphincteric plane fossa without comprimising of the perineal muscles and pudendal nerves in the ischioanal fossa. Ischioanal fossa access gives full liberalisation possibility of the surgical anal canal between puborectal and superficial external anal sphincteric muscles in the extrashincteric plane. While the ischioanal fossa access can be provided by using transvaginal route in female patients, transperineal route can used in male patient. Consequently, ishioanal fossa should be considered as an appropriate area in surgical treatment of FI.[4] In this way, it can be easily provided a good surgical exposition on the anal sphincteric muscles to find their retracted ends and to repair them separetely and completely along the torn line. Thus, the infrastructure of the gracilis muscle transposition to completely surround the external anal sphincteric muscles has been done also. In our technique, gracilis muscle was transposed to ischioanal fossa to completely surround the external anal sphincteric musculature, it was not transposed only around of the distal part of the external anal sphincteric musculature as in classical gracilis transposition operation[5]. The main aim of the counter-clockwise manner gracilis muscle transposition in our technique is to provide of the reconstruction of the anorectal angle which is widened in the patients suffered from FI by pulling the rectum towards to pubic bone. It should be noted that ischioanal fossa is an appropriate surgical area which is need to be reached in the fecal incontinence surgery.

Ethics

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Concept: A.N.Y., Design: A.N.Y., Data Collection or Processing: A.N.Y., E.S., M.Ç., Analysis or Interpretation: A.N.Y., E.S., M.Ç., Literature Search: A.N.Y., E.S., M.Ç., Writing: A.N.Y., E.S.

Conflict of Interest: No conflict of interest was declared by the authors.

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RESEARCH ARTICLE

Predictive Factors for the Development of Surgical Site Infection After Colorectal Cancer Surgery

Kolorektal Kanser Cerrahisi Sonrası Cerrahi Alan Enfeksiyonu Gelişimi için Prediktif Faktörler

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ABSTRACT

Aim: In this study, we aimed to determine the predisposing factors and cut-off values for surgical site infection in patients who were operated for colorectal cancer.

Method: We retrospectively analyzed data of 86 patients who were operated for colorectal cancer in our general surgery department in between 2015 and 2017. Age, gender, body mass index, American Society of Anesthesiologists (ASA) score, presence of chronic pulmonary disease, hematocrit (Hct) levels, albumin level, surgery duration, disease location (colon or rectum), presence or absence of ileostomy or colostomy in operation, presence of hyperglycemia, and surgeon volume were evaluated for associations with the development of superficial or deep surgical site infection.

Results: All parameters were found to be significant for the development surgical site infection except sex and body mass index. Cut-off values were 63.5 years for age, 167.5 minutes for surgery duration, 3.05 g/dL for albumin, and 33.15% for Hct.

Conclusion: We believe that the probability of surgical site infection after colorectal cancer surgery is high in patients who are older than 63.5 years, who had surgery longer than 167.5 minutes, and whose albumin level was below 3.05 g/dL and Hct was below 33.15% preoperatively. If patients operated for colorectal cancer are hyperglycemic, are in the ASA 3 risk group, undergo diverting ostomy during the surgery, have chronic lung diseases, or have rectal or classification stage 3 cancer, they should be evaluated in consideration of the above cut-off points, keeping in mind that these patients are at a high risk of developing superficial or deep surgical site infection, and they should monitored carefully for signs and symptoms of infection.

Keywords: Colorectal cancer, surgical site infection, predictive value

ÖZ

Amaç: Bu çalışmada kolorektal kanser nedeniyle opere edilen hastalarda cerrahi alan enfeksiyonu gelişmesine predispozisyon yaratan faktörler ve kesim değerleri ortaya konmak istenmiştir.

Yöntem: 2015-2017 yılları arasında hastanemiz genel cerrahi bölümünde kolorektal kanser nedeniyle acil ya da elektif olarak opere edilmiş 86 hastaya ait datalar retrospektif olarak incelendi. Hastalara ait; yaş, cinsiyet, vücut kitle indeksi, Amerikan Anestezistler Derneği (ASA) skoru, kronik akciğer hastalığı varlığı, hematokrit (Hct) seviyeleri, albümin düzeyi, operasyon süresi, hastalığın lokalizasyonu (kolon ya da rektum), operasyonda kolostomi ya da ileostomi açılıp açılmadığı, hiperglisemi varlığı, cerrah volümünün; yüzeyel ya da derin cerrahi alan enfeksiyonu gelişimini etkileyip etkilemediğinin değerlendirilmesi amaçlandı.

Bulgular: Cinsiyet ve vücut kitle indeksi dışında kalan tüm parametrelerin cerrahi alan enfeksiyonu gelişmesinde anlamlı olduğu tespit edildi. Yaş için; 63,5, operasyon süresi için; 167,5 dakika, albümin için; 3,05 ve Hct için de; 33,15 kesim değeri olarak bulundu.

Sonuç: Altmış üç buçuk yaşın üzerinde, ameliyatı 167,5 dakikadan daha uzun süren, ameliyat öncesi albümin değeri 3,05'in ve Hct değeri 33,15'in altında olan hastalarda ameliyat sonrası cerrahi alan enfeksiyonu gelişme ihtimalinin yüksek olduğunu düşünmekteyiz. Eğer kolorektal kanser nedeniyle opere edilecek hastalar; diyabetik, ASA 3 risk grubunda, ameliyat sırasında saptırıcı ileostomi ya da kolostomi açılmış, kronik akciğer hastalığına sahip, kanser rektumda yerleşmiş ve postop yapılan sınıflamada hastalığın evre 3 olduğu tespit edilmiş ise yukarıdaki kesim değerleri ile beraber değerlendirilerek hastada yüzeyel ya da derin cerrahi alan enfeksiyonu gelişme ihtimalinin yüksek olduğunu akılda tutmak ve enfeksiyona ait belirti ve bulguları iyi değerlendirmek gerektiğini düşünüyoruz.

Anahtar Kelimeler: Kolorektal kanser, cerrahi alan enfeksiyonu, prediktif değer

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Introduction

Surgical site infection (SSI) is the most common complication following respiratory, cardiovascular, and thromboembolic complications, and is the most important cause of increased morbidity and mortality.[1] The main sources are the normal skin, mucosal, and intestinal flora as well as surgical personnel, the operating room, and all equipment used during surgery. The incidence is about 1.9-3.4% in developed countries,[2] and slightly higher in Turkey (about 4.1%).[3] SSI is one of the complications that cause significant morbidity after colorectal surgery, and occurs postoperatively at rates as high as 20-30%.[4,5,6] Superficial and deep SSIs are the result of different pathogenesis and risk factors, and are directly related to surgical procedures.[2,7] Each technique employed in surgical procedures evokes a different inflammatory response.[8,9] Deep SSI has more serious consequences and may require reoperation, whereas superficial SSI generally leads to an extended hospital stay.[10,11] Numerous factors are shown to be associated with SSI development, including diabetes[12], smoking[13,14], systemic steroid use[15], obesity (being 20% heavier than ideal weight), age,[16,17,18] malnutrition,[19,20] and use of perioperative blood and blood products.[21,22] Furthermore, it has been proposed that the development of superficial SSI is linked to factors such as high body mass index (BMI) and the presence of ostomy,[23,24] while deep SSIs are related more to blood transfusion, history of abdominal surgery, and poor nutrition.[23,25] Other factors identified in the literature as associated with SSI are American Society of Anesthesiologists (ASA) score, wound class,[26] surgery duration[27], BMI[28], presence of chronic diseases,[28] video-assisted procedures,[28] smoking,[29] blood transfusion, and preoperative bathing.[30] Due to the severe consequences of SSIs, it is necessary to develop strategies for preventing these infections. These strategies facilitate the identification of risk factors and the implementation of interventions aimed at minimizing such postoperative complications. In this study, we aimed to determine whether factors such as age, gender, BMI, ASA score, presence of chronic lung disease, presence of hyperglycemia, hematocrit (Hct) and albumin levels, location of disease (colon or rectum), surgery duration, colostomy or ileostomy during the operation, and surgeon volume are associated with rates of SSI among patients who underwent colorectal surgery.

Materials and Methods

The data of 86 patients who underwent emergency or elective surgery for colorectal cancer in the general surgery unit of our hospital between 2015 and 2017 were analyzed retrospectively. We evaluated whether there were any associations between superficial and deep SSI development and gender, BMI, ASA score, presence of chronic lung disease, age, Hct levels, albumin level, surgery duration, location of disease (colon or rectum), whether colostomy or ileostomy was performed during the operation, presence of hyperglycemia, and surgeon volume. Patients who were under antibiotic therapy for any reason starting before surgery and continuing afterward were excluded from the study. Chronic lung disease was defined as the need for continuous treatment or medication use due to any lung disease. Hyperglycemia was defined as a preoperative fasting blood glucose level over 180 mg/dL. Surgeon volume was considered high for the surgeons performing only colorectal surgeries and low for general surgeons. Empiric preoperative antibiotics were administered as 2 g of second generation cephalosporin, combined with an agent effective against anaerobes if perforation was observed in laparotomy. Antibiotherapy continued for 24 hours after surgery. The preoperative antibiotic dose was administered following anesthesia induction and immediately before cutaneous incision. An additional dose of antibiotics was given in operations longer than 3 hours. SSI was presumed in patients who exhibited one of the following symptoms or findings in the skin, subcutaneous tissues, or abdomen within 30 days after surgery: purulent drainage, bacterial growth in tissue or fluid samples, and local symptoms of infection (pain, redness, sensitivity). Patient-related and surgery-related factors were identified for patients who developed SSI.

Statistical Analysis

Chi-square analysis was used to evaluate associations between SSI development and categorical (qualitative) variables such as gender, ASA score, hyperglycemia, presence of stoma, chronic lung disease, surgeon volume, tumor-containing segment, having an emergency or elective surgery, and cancer stage. Independent Samples t test was used to analyze whether the means of continuous variables such as age, BMI, surgery duration, albumin level, and Hct level differed significantly according to infection status. Cut-off values for the quantitative variables were determined using receiver operating characteristic (ROC) curve analyses based on the infection status. The data were analysed using SPSS 20.0 software and the analyses were made at a confidence level of 95%.

Results

The incidence of SSI among patients who underwent surgery for colorectal cancer in our center was 24.41%. Of these patients, 61.9% were males and 38.1% were females. ASA score was 3 for 61.9% and 4 for 14.3% of the patients. Hyperglycemia was present in 76.2% and chronic lung disease in 71.4% of these patients. A diverting stoma (ileostomy/colostomy) was created during surgery in 76.2% of the cases. High-volume surgeons performed 71.4% and low-volume surgeons 28.6% of procedures that resulted in

SSI. The tumor was located in the rectum in 81% and in the colon in 19% of the patients. Tumor, node, metastasis (TNM) stage was stage 3 for 61.9% and stage 4 for 23.8% of the patients with SSI. The patients' demographical data are presented in Table 1. Mean age, surgery duration, and albumin and Hct levels differed significantly between patients with and without SSI ($p<0.05$), but there was no significant difference in mean BMI ($p>0.05$) (Table 1). The patients with SSI had higher mean age and surgery duration but significantly lower mean albumin and Hct levels than patients who did not develop infection ($p<0.05$). Patients who were over 63.5 years of age, underwent surgery longer than 167.5 minutes, and had preoperative albumin level below 3.05 g/dL and Hct level below 33.15% were at higher risk of developing SSI. Cut-off values for these parameters are shown in Table 2. ROC curve analyses for age, surgery duration, and hemoglobin and Hct levels are given in Figures 1, 2, 3, 4.

Table 1. Patient's demographic datas

		SSI				p
		No (n=65)		Yes (n=21)		
		n	%	n	%	
Gender	Male	35	53.8%	13	61.9%	0.349
	Female	30	46.2%	8	38.1%	
ASA score	1	3	4.6%	1	4.8%	**0.023***
	2	37	56.9%	4	19.0%	
	3	20	30.8%	13	61.9%	
	4	5	7.7%	3	14.3%	
Hyperglycemia	No	42	64.6%	5	23.8%	**0.001***
	Yes	23	35.4%	16	76.2%	
Ostomy	No	57	87.7%	5	23.8%	**0.000***
	Yes	8	12.3%	16	76.2%	
Chronic lung disease	No	56	86.2%	6	28.6%	**0.000***
	Yes	9	13.8%	15	71.4%	
Surgeon volume	Low	9	13.8%	15	71.4%	**0.000***
	High	56	86.2%	6	28.6%	
Tumor-containing segment	Rectum	6	9.2%	17	81.0%	**0.000***
	Colon	59	90.8%	4	19.0%	
Emergency surgery	No	57	87.7%	5	23.8%	**0.000***
	Yes	8	12.3%	16	76.2%	
Elective surgery	No	6	9.2%	16	76.2%	**0.000***
	Yes	59	90.8%	5	23.8%	
TNM Stage	1	18	27.7%	0	0.0%	**0.000***
	2	42	64.6%	3	14.3%	
	3	4	6.2%	13	61.9%	
	4	1	1.5%	5	23.8%	
		Mean ± SD		Mean ± SD		
Age (years)		55.2±10.2		68.9±12.2		**0.000***
Body mass index		27.8±3.9		29.4±3.2		0.098
Surgery duration (min)		154.3±29.2		184.3±35.7		**0.000***
Albumin (g/dL)		3.3±0.3		2.8±0.3		**0.000***
Hematocrit (%)		36±4.4		28.9±4		**0.000***

SSI: Surgical site infection, ASA: American Society of Anesthesiologists, TNM: Tumor, nod, metastasis, SD: Standard deviation

*p<0.05

Table 2. Cut-off values for age, surgery duration, albumin, and hematocrit

	Area	Standard error	p	95% Confidence interval		Cut-off value
				Lower limit	Upper limit	
Age	0.825	0.058	0.000*	0.711	0.938	63.5
Surgery duration	0.760	0.069	0.000*	0.625	0.896	167.5
Albumin	0.142	0.052	0.000*	0.041	0.243	3.05
Hematocrit	0.107	0.040	0.000*	0.029	0.186	33.15

*p<0.001

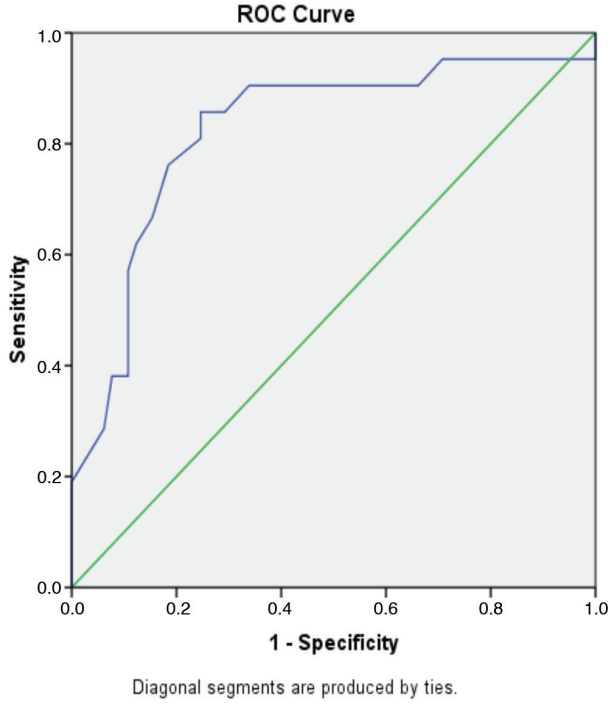

Figure 1. ROC analysis for age

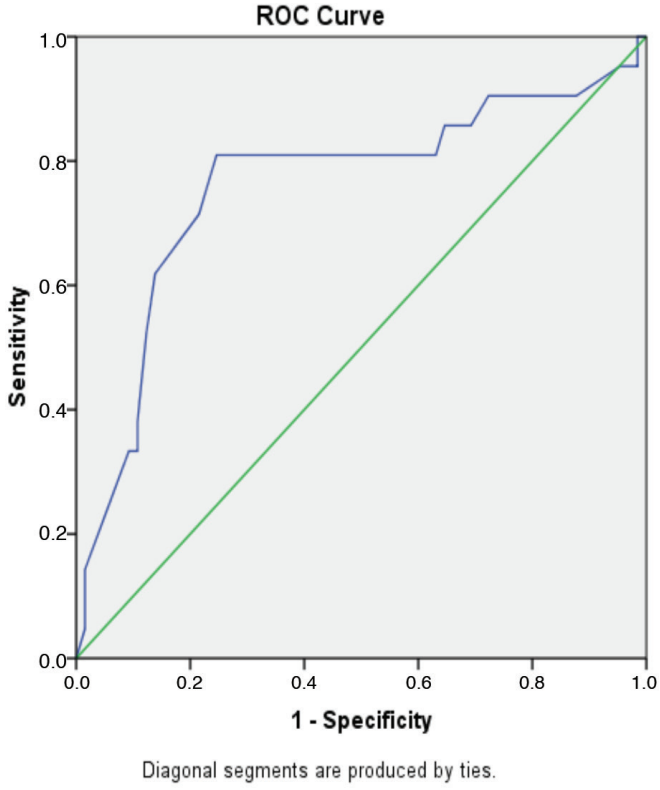

Figure 2. ROC analysis for operation time

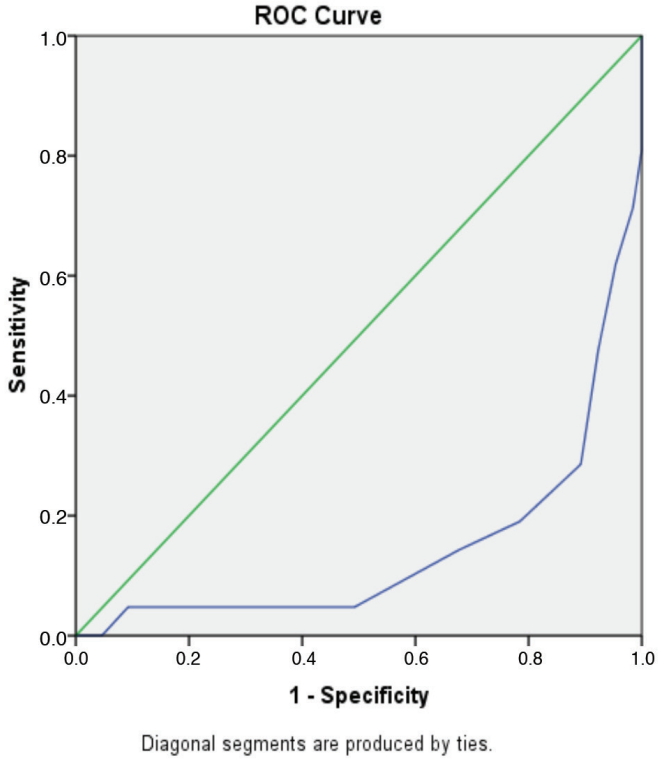

Figure 3. ROC analysis for albumin

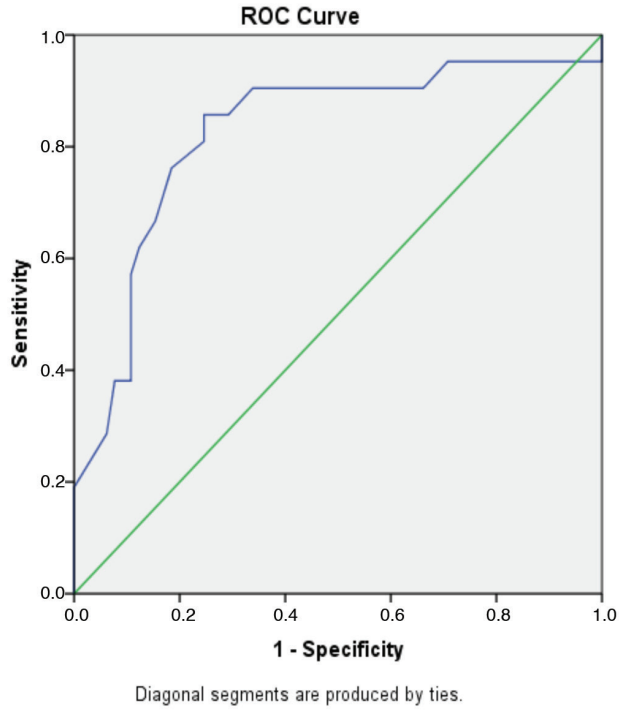

Figure 4. ROC analysis for hematocrit

Discussion

In this study we aimed to determine which factors were significantly related to SSI development among a group of patients who were operated for colorectal cancer and retrospectively identified as having developed superficial or deep SSI. With the exception of gender and BMI, we found that all investigated parameters were associated with SSI development after colorectal cancer. The general infection rate among patients we operated for colorectal cancer was 24.41%, consistent with the literature. The development of SSI after colorectal surgery is a common and expected complication. Bacterial contamination occurring during bowel resection may cause infection. The bacterial load is particularly high in the large intestine compared to the upper gastrointestinal system, and contamination of the surgical site may result in infection. Development of SSI is directly associated with the patient, the disease, and the surgical procedure.[30,31] Anatomic location of the cancer is one of the most important predictive factors. Konishi et al.[32] stated that the risk of superficial or SSI is higher in rectal cancer than in colon cancer. Diverting ostomy is more common in patients with rectal cancer than colon cancer, the tumor is closer to the anal verge, and the operation is generally longer. Therefore, bacterial contamination occurs more frequently in rectal cancer surgeries.[33,34] This was also true in our patients with SSI, 81% of whom were operated

for rectal cancer and 19% for colon cancer. We noted a significant correlation between SSI development and the tumor containing segment. Poor blood glucose control has been associated with negative perioperative results such as metabolic dysfunction, infection, insufficient wound healing, and higher mortality. The American Diabetes Association suggests a perioperative blood glucose level between 80 and 180 mg/dL.[35] Hyperglycemia affects blood flow and tissue oxygenation, leading to endothelial dysfunction and prolonged inflammatory response and disrupting normal wound healing,[36] and is associated with SSI.[37] We observed that a large proportion (76.2%) of patients with SSI had perioperative blood glucose higher than 180 mg/dL. Therefore, we believe there is significant correlation between infection development and hyperglycemia.

Studies indicate that patients with advanced colorectal cancer (TNM stage 3 or 4) have an independent risk factor for SSI development.[38,39] This may be related to the extent of lymph node dissection. Although disease stage was reportedly not a risk factor for SSI in some studies[40], we found that 61.9% of patients with SSI were at TNM stage 3 and 23.8% were at TNM stage 4 in our study. Therefore, we believe there is significant correlation between infection development and advanced disease. Some authors have argued that surgeon volume is inversely correlated with SSI development.[41] This means that the incidence of SSI is higher after operations performed by surgeons with less experience in colorectal cancer operations, or in other words, by surgeons who do not perform colorectal cancer surgery exclusively. This may be attributed to less experienced surgeons requiring longer to perform the same procedures or deviating from the standard techniques during surgery. Consistent with the literature, we found that a large proportion (71.4%) of the patients who developed SSI were operated by surgeons with a lower volume of such cases compared to those who were operated by surgeons performing only colorectal surgeries (28.6%). Therefore, we believe surgeon volume is significantly associated with infection development. Lower serum albumin, ASA scores of 3 or 4, and chronic lung diseases are patient-related factors that increase the risk of SSI. These factors lead to poor tissue perfusion in the skin or deep tissues and thereby to SSI development.[42,43] Serum albumin is one of the best indicators of nutritional status and is directly related to postoperative complications.[44] Hypoalbuminemia delays wound healing by inhibiting collagen synthesis and causing granuloma formation.[45] In our study group, we determined an albumin cut-off value of 3.05 g/dL for patients who developed SSI. Our results suggest that patients with albumin levels below this point have significantly higher risk of developing SSI. The ASA classification is a useful evaluation system in which patients are preoperatively classified, and anesthesia approaches and monitoring methods in particular are determined accordingly. Higher ASA score corresponds to an increase in comorbid diseases and is directly related to the complications in the early postoperative period.[44,46,47,48] ASA 3 corresponds to patients with compensated systemic disease, meaning diseases that limit patients' activities but are not debilitating, such as hypovolemia, latent cardiac insufficiency, history of myocardial infarction, advanced diabetes, and limited pulmonary function. In our patient group, the risk of developing SSI was significantly higher among those with ASA 3. Chronic lung diseases reflect conditions with chronic hypoxemia. Chronic obstructive pulmonary disease (COPD) is characterized by chronic inflammation of the airways, parenchyma, and pulmonary vasculature. In advanced COPD, peripheral airway obstruction, parenchymal destruction, and pulmonary vessel abnormalities reduce the gas exchange capacity of the lungs, causing hypoxemia and later hypercapnia. These physiopathologic mechanisms result in delayed wound healing and SSI. We noted that patients with SSI had a significantly higher rate of chronic lung diseases. Obesity is known to play a role in the etiology of colon cancer.[49,50] The World Health Organization classifies BMI as underweight (BMI below 18.5), normal weight (BMI 18.5-24.9), overweight/preobesity (25-29.9), and obesity grade 1 (30-34.99), 2 (35-39.99), and 3 (above 40).[51] BMI below 20 and above 30 is believed to be a risk factor for SSI development. Amri et al.[52] have stated that BMI does not cause an increase in parameters such as complication rates after colorectal surgery, length of hospital stay, and reoperation and may only increase wound-related complications. However, in the present study we found that mean BMI was not significant associated with development of infection ($p>0.05$).

Colorectal cancers are common among the elderly population. The incidence increases dramatically after the age of 50. Some studies have indicated that older patients undergo colorectal cancer surgery more frequently than younger patients.[53] Conversely, some studies report that superficial or deep SSI risk is lower in older patients. This has been attributed to patient awareness.[54] However, the results of our study showed that SSI development risk was higher in patients over a cut-off point of 63.5 years of age compared to those who were younger. This may be related to the more frequent need for emergency surgery in patients over this age. Longer surgery time means more surgical trauma and higher chance of intestinal contamination. There are studies reporting that operations lasting longer than 180 minutes pose an independent risk factor for the development of superficial and deep SSI.[55,56] In our study, the cut-off value for surgery duration was similar, at 167.5

minutes, and superficial and deep SSIs were significantly more common following operations that lasted longer than this time.

Stomas protect distal colonic anastomosis. Stoma-related complications may emerge when opening or closing the stoma. Various studies have indicated that diverting ostomy is a risk factor for morbidity, mortality, and SSI development.[57] In a study by Ricciardi et al.[58] including 79.775 patients, SSI developed in 10.2% of the patients with stoma and was significantly more common among patients with stoma than those without. Studies comparing ileostomy and colostomy have shown significantly higher infection rates among patients with colostomy;[59] however, we did not compare ileostomy and colostomy in our group of patients. In our study group, it was found that 76.2% of the SSI patients required a diverting stoma. Therefore, we believe that there is a significant association between infection development and the opening of diverting stoma. Bayar et al.[60] reported that postoperative SSI occurred at a significantly higher rate among patients who underwent emergency colorectal cancer surgery. In the present study, 12.3% of patients without infection underwent emergency surgery versus 76.2% of those who developed infection. There was a significant relationship between colorectal surgeries performed as emergency procedures and rate of infection ($p<0.05$). In a prospective study by Itatsu et al.[61] including 1980 patients, the SSI rate after elective colorectal surgery was 11.7%. In a study by Tang et al.[62], this rate was 10%. In our series, 76.2% of the patients who developed infection had undergone emergency surgery, which was consistent with numerous other studies in the literature. In recent years, laparoscopic surgery has been providing better results in terms of cosmesis and patient satisfaction, and it is reasonable to anticipate that this approach will also reduce rates of postoperative SSI. In one study comparing laparoscopic and open procedures, the incidence of SSI was about 6%.[40] A limitation of our study is that we analyzed only SSIs in the colorectal cancer patients who had open surgeries, and therefore no comparison could be made with SSI rates after laparoscopic surgery. Our results suggest that patients who are older than 63.5 years of age, have a preoperative albumin value below 3.05 g/dL, have and a preoperative Hct value below 33.15%, and are operated for longer than 167.5 minutes have a higher risk of developing postoperative SSI. If patients operated for colorectal cancer are hyperglycemic, are in the ASA 3 risk group, undergo diverting ostomy during the surgery, have chronic lung diseases, or have rectal or TNM stage 3 cancer, they should be evaluated in consideration of the above cut-off points, keeping in mind that these patients are at a high risk of developing superficial or deep SSI, and they should monitored carefully for signs of infection. The study was retrospective, nonrandomized, and based on a single center.

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Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

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Authorship Contributions

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RESEARCH ARTICLE

Depression, Anxiety, Sexual Dysfunction and Quality of Life in Patients with Ileostomy or Colostomy

İleostomi veya Kolostomisi Olan Hastaların Depresyon, Anksiyete, Cinsel İşlev Bozukluk Düzeyleri ve Yaşam Kaliteleri Düzeylerinin Saptanması

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ABSTRACT

Aim: Despite improved cure rates with oncological treatment, stomas (colostomy, ileostomy) are still a commonly used surgical procedure for the treatment of colorectal cancer patients. The aim of this study was to evaluate depression, anxiety, sexual dysfunction, and quality of life in patients with ileostomy and colostomy.

Method: The study was planned as a case-control, retrospective study. Survivors of colorectal cancer who underwent surgery with ostomy (ileostomy or colostomy) at one center were included in the study. The control group consisted of healthy volunteers. Depression, anxiety, and quality of life after treatment were assessed using validated questionnaires: the Beck Depression inventory, Beck Anxiety inventory, and Short-Form 36, respectively. Sexual function was measured using the validated questionnaires Arizona Sexual Experiences scale and Golombok-Rust inventory of Sexual satisfaction.

Results: A total of 50 patients (patient group) completed the questionnaires. The control group comprised 50 healthy volunteers. The mean anxiety score Beck Anxiety inventory was significantly higher in the patient group than in the control group (p=0.04). The mean Arizona Sexual Experiences scale score was significantly higher in the patient group than in control group (23.0±4.2 vs. 14.1±6.5, respectively; p=0.01). According to Golombok-Rust inventory of Sexual satisfaction, infrequent sexual intercourse was significantly more common among the patient group than in the control group (p=0.01). The patient group had significantly lower self-reported mental health and physical well-being than the control group (p=0.01 and 0.03).

Conclusion: It was found that patients who had ileostomy or colostomy had higher rates of anxiety symptoms, less sexual pleasure, more abstinence from sexual intercourse, and lower quality of life compared to healthy individuals.

Keywords: Depression, anxiety, sexual dysfunction, ileostomy, colostomy

ÖZ

Amaç: İleostomi veya kolostomi kolorektal kanser ameliyatlarında kullanılan yöntemlerdir. Bu araştırmada ileostomi veya kolostomi ameliyatı geçiren hastalarda depresyon, anksiyete, cinsel işlev bozukluk düzeyleri ve yaşam kaliteleri düzeyleri incelenmesi amaçlanmıştır.

Yöntem: Çalışma retrospektif olarak planlanmış olup çalışmaya tek merkezde kolorektal kanser nedeni ile ileostomi veya kolostomi ameliyatı geçiren hastalar ve kontrol grubu olarak sağlıklı bireyler alınmıştır. Katılımcılardan çalışmaya katılmaya gönüllü olanlara bilgilendirilmiş onam formu, sosyodemografik veri formu, Beck Depresyon ölçeği, Beck Anksiyete ölçeği, Yaşam Kalitesi formu, Arizona Cinsel Yaşantılar ölçegi, Golombok-Rust Cinsel Doyum ölçegi uygulanmıştır.

Bulgular: Çalışmaya 50 hasta ve kontrol grubu olarak 50 sağlıklı birey katılmıştır. Hasta ve kontrol grubun Beck Anksiyete ölçeği toplam puan ortalamasının sırasıyla 23,0±4,2, 14,1±6,5 olduğu ve hasta grubunun istatistiksel olarak anlamlı biçimde daha yüksel anksiyete puanına sahip olduğu saptanmıştır (p=0,01). Grupların, Arizona Cinsel Yaşantılar Ölçeği sonuçları incelendiğinde; hasta grubunun puan ortalaması 55,8±12,4 ve kontrol grubunun puan ortalaması 45,2±10,9 olarak bulunmuştur (p=0,04) ve istatistiksel olarak anlamlıdır. Yaşam Kalitesi formu değerlendirmesinde hasta grubunun ruhsal sağlıklılık ve fiziksel sağlıklılık bildirimlerinin kontrol grubuna göre istatistiksel olarak anlamlı biçimde daha düşük olduğu izlenmiştir (p=0,01 ve 0,03) ve sonuç istatistiksel olarak anlamlıdır.

Sonuç: Kolostomisi ya da ileostomisi olan hastaların daha fazla anksiyete belirtisi gösterdikleri, cinsel doyuma daha az ulaştıkları, cinsel birleşmeden daha fazla oranda kaçındıkları, yaşam kalitelerinin daha düşük olduğu saptanmıştır

Anahtar Kelimeler: Depresyon, anksiyete, cinsel disfonksiyon, ileostomi, kolostomi

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Introduction

Stomas (colostomy, ileostomy) are commonly used surgical procedure for treatment of colorectal cancer patients. After the operation some side effects such as changes in body image, dermatitis, stomal edema, stoma induced infection, bleeding, stomal ischemia and necrosis, stoma prolapse and stenosis may occur. As a result anxiety may develop in such patients, and this may lead to depression.[1] Depression feautures are not usually limited to emotional changes, it also affects many psychophysiological functions such as sexual function. Reduced sexual function is associated with lower quality of life in cancer survivors. As overall the prevalence of sexual dysfunction in men ranges between 10-52%, and in women between 25-63%.[2] These rates are reported to increase after rectal surgery as erectile dysfunction has been found in 77.3% of the patients. While erectile dysfunction after colostomy was 77%, it increased up to 85.5% in patients who had additionally radiotherapy.[3] The aim of this study was to evaluate depression, anxiety, sexual dysfunction and quality of life in patients with ileostomy and colostomy.

Materials and Methods

Study Design and Setting

The study was planned as a case-control, retrospective study. Database of all colorectal cancer patients who involved surgery with ileostomy or colostomy at one center from 2011 to 2014 were evaluataed for the study. Non-Interventional Research Ethics Committee of Üsküdar University approved the study, and all participants signed a written informed consent form before participation in the study.

Inclusion and Exclusion Criteria

Inclusion criteria were patients with colorectal cancer who underwent surgery with ostomy (ileostomy or colostomy) for any stage of colorectal cancer. Survivors (18-60 aged) treated with surgery [with or without (neo) adjuvant therapy] who not underwent ostomy closure and did not received psychological treatment were included. Patients who are more than 60 age, have loss of follow up, exitus, no sexual activity and those who underwent ostomy closure were excluded from the study. The control group consisted of healthy volunteers who were matched with the patients group in terms of age, gender, education and marital status.

Clinical Data

Information on age, gender, histological diagnosis, surgical procedure, eduacaction status and (neo)adjuvant treatment were obtained from the medical records of the patients who underwent surgery for colorectal cancer between 2011 and 2014 at one center. Depression, anxiety and quality of life after treatment were measured using the validated questionnaires of Beck Depression inventory (BDI), Beck Anxiety inventory (BAI) and Short Form-36 (SF-36) respectively. Sexual function was measured using the validated questionnaires Arizona Sexual Experiences (ASEX) scale and The Golombok-Rust inventory of Sexual Satisfaction (GRISS).

Beck Depression Inventory

It has been developed by Hisli[4], and validated to Turkish population has been performed by Hisli[5] It is a self-reported inventory applicable in healthy and psychiatric patient groups. The aim of the inventory is to define the risk of depression and to measure the level and severity of depressive symptoms.

0It has been developed by Ulusoy et al.[6], and validated to Turkish population has been performed by Ulusoy et al.[6] It is a self-reported inventory. It is used in order to determine the frequency of anxiety symptoms.

Short Form-36

SF-36 having a generic scale feature among scales of quality of life and providing a comprehensive measurement has been developed by Rand Corporation in 1992.[7] The SF-36 consists of 36 items which provides the measurement of 8 sections: physical functioning (10 items), social functioning (2 items), physical role functioning (4 items), emotional role functioning (3 items), mental health (5 items), vitality (4 items), bodily pain (2 items) and general health perceptions (5 items). Reliability and validity of SF-36's Turkish version has been performed by Koçyiğit et al.[8]

Arizona Sexual Experiences Scale

It is a short 5-item rating scale developed to quantify five basic components of sexual functioning.[9] Turkish validity and reliability work has been used on patients with end-stage renal failure.[10]

The Golombok-Rust Inventory of Sexual Satisfaction

It has been developed by Rust and Golombok.[11] It is a measurement tool for assessing the quality of the sexual intercourse and sexual function. Turkish adaptation of the inventory has been performed by Tuğrul et al.[12]

Statistical Analysis

Background clinical data were analyzed using the t-test or Mann-Whitney U for continuous data and Fisher exact test or the chi-square test for categorical data. To find the relationship between variables in more than 2 groups analysis of variance (ANOVA) were used. To investigate the relationship between the sub-dimensions of the scale, correlation analysis was performed. Data were analyzed using SPSS ver. 22.0 (SPSS Inc., Chicago, IL, USA). P-values below 0.05 were considered statistically significant.

Results

Between November 2011 and December 2014, 134 patients with colorectal cancer underwent surgery with ostomy (ileostomy or colostomy) at Marmara University Pendik Training and Research Hospital. Fifty one of colostomy patients and 9 of ileostomy patients were found to be over 60 years old. Nine patients have their ostomy closed at the time of the study. Four patients lost their lives, 7 patients stated that there was no sexual activity, 4 patients were not reached. A total of 50 patients (group of patients) completed the questionnaires (Figure 1). A control group was formed from 50 healthy volunteers whose characteristics were similar in terms of age, education and gender. The study cohort consisted of 25 men (50%) and 25 women (50%) in patients group and 25 men (50%) and 25 women (50%) in the control group. The mean age of the patient group was 46.7±11.3 and the mean age of the control group was 48.2±10.8. The demographic and the clinical characteristics of the patients are shown in (Table 1). By analyzing the history of patients group it has been found the duration of co morbid diseases was found to be less than one year in 62% of the patients, 2-3 years in 28%, 4-5 years in 2%, and more than 10 years in 8%. The histological diagnosis of all patients in the the patient group was adenocancer and all underwent resection in curative intent. However the data regarding surgical procedures could not be reached clearly. It was found out that 60% of the patients received adjuvat chemotherapy during the treatment process. The mean score of BDI in the patient group and control group were found to be 14.8±8.0 and 12.6±9.1, respectively, and the difference was not significant (p=0.89). The mean anxiety score (BAI) was significantly higher in the patient group than in control group (55.8±12.4 vs. 45.2±10.9, respectively; p=0.04). The mean ASEX score was significantly higher in the patient group than in control group (23.0±4.2 vs. 14.1±6.5, respectively; p=0.01). According to GRISS test the sparse frequency of sexual intercourse was significantly higher in the patients group than in control group (68% vs.30%, respectively; p=0.01). Also it was found that 52% of the patient group avoided sexual intercourse and the avoidance rate of the control group was 4% (p=0.01). The rate of the vaginismus symptom of female participants was significantly higher in the patient group than in control group (92% vs. 52%, respectively; p=0.02). There weren't any significant differences between the patient group and control group in terms of touching during sexual intercourse, verbal communication during sexual intercourse, anorgasmia, impotency, and premature ejaculation (Table 2). In evaluating the SF-36 Quality of Life Form, the patient group was reported to have significantly lower levels of mental health and physical well-being reporting than the control group (p=0.01 and 0.03). Physical functioning, physical role functioning, general health perceptions, vitality, emotional role functioning and mental health scores were found to be significantly lower in patient group compared to control group (Table 3). Positive correlation was found between BDI score and BAI, ASEX score; negative correlation was found between BDI score and SF-36 Physical Health and Mental Health subscale scores. Inverse correlation was found between BAI score and SF-36 Physical Health subscale score. The rise in ASEX score was found to be correlated with the rise in the BDI score and the decline in SF-36 Physical Health subscale scores (Table 4).

Table 1. Comparison of sociodemographic variables in patient and control groups

	Patient group (n=50)	Control group (n=50)	p
Age (Mean ± SD)	46.7±11.3	48.2±10.8	0.82
Gender (n, %)			
Male	25 (50%)	25 (50%)	
Female	25 (50%)	25 (50%)	
Education (year mean ± SD)	10.9±4.3	10.7±5.6	0.91
Marital status (n, %)			
Married	44 (88%)	44 (88%)	
Single	5 (10%)	5 (10%)	
Widowed/divorced	1 (2%)	1 (2%)	

SD: Standard deviation

Discussion

This study showed that patients with colostomy or ileostomy had more anxiety symptoms, less sexual satisfaction, more sexual abstinence, and lower quality of life than normal healthy people. Conventionally, outcome assessments in colorectal cancer include mortality, morbidity, disease recurrence, and long-term survival. However, patient-reported outcomes (e.g., quality of life) are now also regarded as key measurements in assessing outcomes of interventions.[13] Sexuality and intimacy are considered to be important aspects of quality of life.[14] Improvements in the treatment of colorectal cancer result in satisfactory outcomes, but patients are still complain of long-term sequelae of the treatment. Despite sexual dysfunction is common after rectal cancer treatment and can have major negative effects on the quality of life, it is not often discussed in clinical practice. Patients are unlikely to mention these problems themselves either because they are embarrassed or because they do not relate their symptoms to their rectal cancer treatment.[15] These complications seriously affect the psychology, social

Table 2. Comparison of depression, anxiety and sexual dysfunction between the study groups

	Patient group (n=50)	Control group (n=50)	p
Beck Depression inventory total score (mean ± SD)	14.8±8.0	12.6±9.1	0.89
Beck Anxiety inventory total score (mean ± SD)	23.0±4.2	14.1±6.5	**0.01**
ASEX (mean ± SD)	55.8±12.4	45.2±10.9	
Healthy in terms of sexual functioning	8 (16%)	12 (24%)	
Sexual dysfunction at a very low level	17 (34%)	23 (46%)	**0.04**
Low-level sexual dysfunction	16 (32%)	9 (18%)	
Moderate-level sexual dysfunction	4 (8%)	5 (10%)	
High-level sexual dysfunction	5 (10%)	1 (2%)	
Golombuk-Rust inventory frequency (mean ± SD)	23.7±8.9	45.6±7.5	
Infrequent sexual intercourse	34 (68%)	15 (30%)	**0.01**
Frequent sexual intercourse	16 (32%)	35 (70%)	
Golombuk-Rust inventory communication (mean ± SD)	47.5±3.9	52.5±5.7	
Low communication in sexual intercourse	16 (32%)	10 (20%)	0.17
High communication in sexual intercourse	34 (68%)	40 (80%)	
Golombuk-Rust inventory orgasm (mean ± SD)	44.3±7.8	56.4±6.9	
Low level of sexual pleasure	17 (34%)	6 (12%)	0.09
High level of sexual pleasure	33 (66%)	44 (88%)	
Golombuk-Rust inventory abstinence (mean ± SD)	62.5±9.2	37.5±8.9	
Less abstinence of sexual intercourse or no abstinence	24 (48%)	48 (96%)	**0.01**
Abstinence of sexual intercourse	26 (52%)	2 (4%)	
Golombuk-Rust inventory touching (mean ± SD)	47.5±6.7	52.5±7.7	
Low-level touching desire during sexual intercourse	8 (16%)	4 (8%)	0.22
High-level touching desire during sexual intercourse	42 (84%)	46 (92%)	
Golombuk-Rust scale vaginismus (mean ± SD)	29.5±8.6	20.5±7.5	
Vaginismus	23 (92%)	13 (52%)	**0.02**
No vaginismus	2 (8%)	12 (48%)	
Golombuk-Rust inventory anorgasmia (mean ± SD)	23.5±4.5	26.5±4.8	
Anorgasmia	10 (20%)	6 (12%)	0.23
No anorgasmia	15 (30%)	19 (38%)	
Golombuk-Rust inventory impotence (mean ± SD)	25.5±6.7	24.5±8.5	
Impotence	0 (0%)	2 (4%)	0.15
No impotence	25 (50%)	23 (46%)	
Golombuk-Rust inventory premature ejaculation (mean ± SD)	24.0±6.0	26.5±5.6	
Premature ejaculation	13 (26%)	12 (24%)	0.77
No premature ejaculation	12 (24%)	13 (26%)	

SD: Standard deviation, ASEX: Arizona Sexual Experiences scale

Table 3. Comparison of quality of life between the study groups

		n	Lean	p
Physical functioning	Control	50	64.47	**0.01**
	Patient	50	35.53	
Physical role	Control	50	70.85	**0.01**
	Patient	50	29.15	
Bodily pain	Control	50	45.22	0.13
	Patient	50	54.78	
General health	Control	50	62.69	**0.01**
	Patient	50	37.31	
Vitality	Control	50	59.89	**0.01**
	Patient	50	40.11	
Social functioning	Control	50	56.14	0.48
	Patient	50	43.86	
Emotional role	Control	50	66.53	**0.01**
	Patient	50	33.47	
Mental health	Control	50	58.98	**0.03**
	Patient	50	41.02	

Table 4. Analysis of the correlation between depression, anxiety, sexual dysfunction and quality of life in the study group

		Beck depression	Beck anxiety	ASEX
Beck depression	r	1	**0.405**	**0.247**
	p		0.000	0.013
	n	100	100	100
Beck anxiety	r	**0.405**	1	0.174
	p	0.000		0.084
	n	100	100	100
ASEX	r	**0.247**	0.174	1
	p	0.013	0.084	
	n	100	100	100
Physical health	r	**-0.336**	**-0.213**	**-0.267**
	p	0.001	0.034	0.007
	n	100	100	100
Mental health	r	**-0.398**	-0.156	-0.015
	p	0.000	0.121	0.886
	n	100	100	100

ASEX: Arizona Sexual Experiences scale

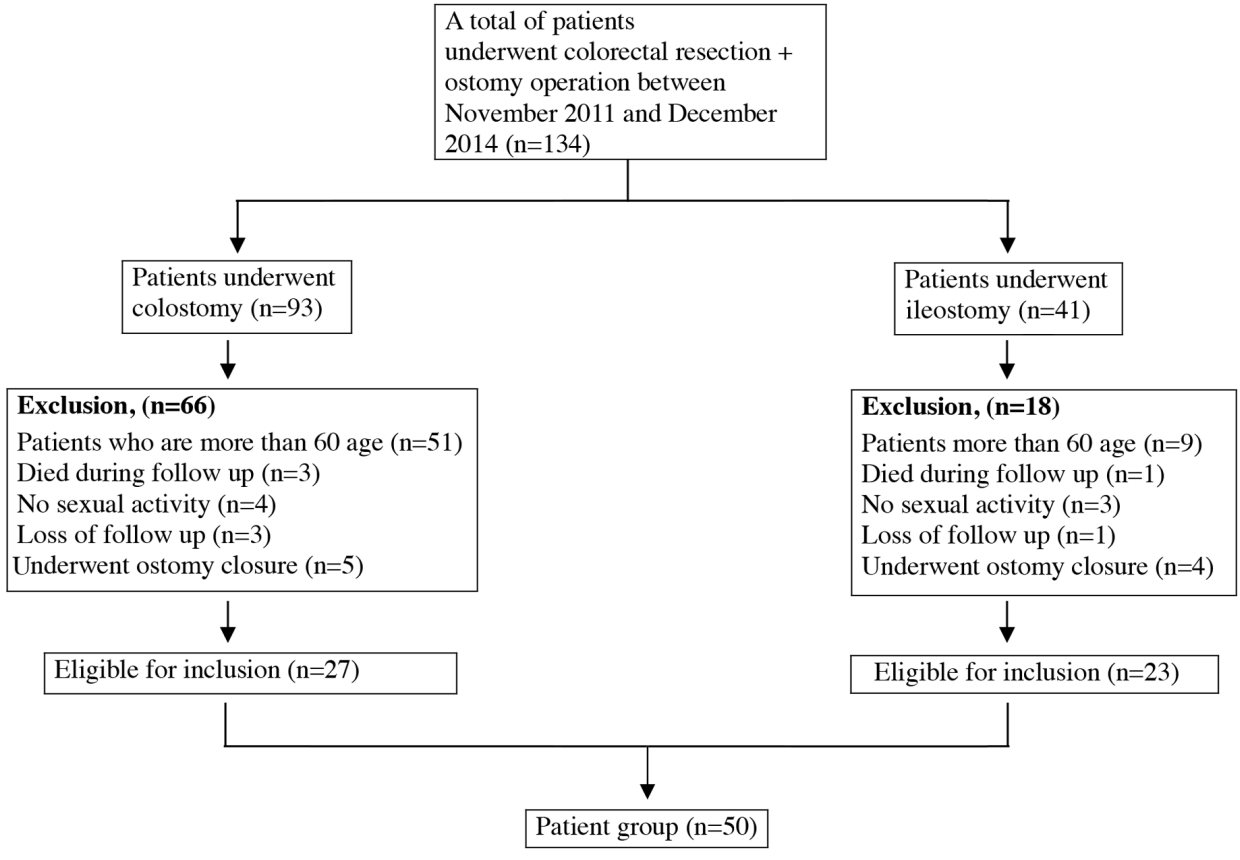

Figure 1. Flowchart for inclusion in the study

and emotional functions of the patient.[16] This study will fills this gap and highlights the less discussed issue in the literature[17] and suggests that depression, sexual dysfunction, and quality of life studies are needed in patients with ostomy after colorectal cancer treatment. The importance of this study is evaluating depression, anxiety, sexual functions and quality of life all together in the patients. This study has some limitations that need to be acknowledged. Limitations of this study include sample size. In addition, the study was retrospective and no information was known about anxiety, depression, quality of life, and sexual (dys) function before diagnosis/treatment of cancer, which limited the determination of the effect of cancer diagnosis and treatment on functioning or on the ability to correct for baseline functioning. Lack of data regarding surgical procedure and (neo) adjuvant radiation therapy which have effect on the quality of life, including sexually habits and problems were other limitations of this study. In a study performed with 409 patients who had bowel resection or ostomy due to colorectal cancer, ileitis or colitis; higher depression and decline in social activity was found in patients who had ostomy during the preoperative and postoperative periods when compared to patients who had bowel resection due to the same diagnosis.[18] Turnbull[19] suggests that patients do not receive any support especially in terms of physical image and sexual functioning after ostomy and this condition affects patients' quality of life in a negative manner. Szczepkowski[20] showed that psychological problems of patients who had colostomy included a change in the perception of the body, decreased self-esteem, impairment of sexual functions, emergence of problems in alignment of the spouses and various psychiatric disorders including depression in the forefront. In patients who underwent surgery due to colorectal cancer, fear of recurrence of cancer is one of the major problems. This fear has been defined as a condition with repetitive thoughts and imaginations that create intense anxiety and distress. Low quality of life, low emotional state, declined social functioning; thoughts of death, suffering, inability to perform familial responsibilities were reported to be the reasons that increased this fear.[21] Similar fear and thoughts may have been effective in the emergence of anxiety symptoms of the patients in our study as well. In another study, depression and anxiety scores of patients who underwent colorectal cancer surgery were found to be low, however high somatization, low cognitive and social functioning were found.[22] Similarly, in another study from Sweden, anxiety and depression levels were found to be low in patients who believed to be fully treated.[23] Another study reported that patients were complaining from not having life and travel insurance, lack of interdepartmental coordination, poor patient management and support systems, and lack of accessible hospital parking areas.[24] When studies are still controversial since some studies showed that patients didn't have depression symptoms however other studies showed that patients have depression after colorectal cancer treatment with ostomy procedure. In this study depression levels of the patients were found to be low. This may be related to some factors regarding the community and health system in Turkey such as the trust in care, the health care coverage of the state in some way, the family support as a cultural feature causing reduction of future anxiety that patient will not feel be alone with troubles, these all may be create a protective effect of depression. In addition, patients who did not receive l post-operative chemotherapy may have reduced the likelihood of depression. As well as in other studies evaluated pre-operative and post-operative anxiety, in this study, it has been found that anxiety rate of the patients were found to be significantly higher than healthy population.[25] McDonald and Baird[26] reported that sexual dysfunction in patients with ostomy due to rectal cancer, was associated with a decrease in sexual competence rather than a decrease in sexual desire. Lack of sexual desire after ostomy is thought to be caused by shortening of the vagina and reduction of vaginal fluid in women, and by pain during sexual intercourse in men the caused by fibrosis tissue in the pelvis.[27] Kılıç et al.[28] reported that patients with ileostomy or colostomy had sexual dysfunction and problems in communication, touching, physical image, and abstinence. In two previous studies (one is retrospective and the other is prospective), we have shown that rectal cancer survivors had a high rate of standard deviation, which was seldom treated.[29,30] In this study, further deterioration in the patient group was reported in the physical function, physical role, general health, vitality, emotional role and mental health scores determined by the SF-36 form. Anaraki et al.[31] compared patients with cancer and patients without cancer who had colostomy and ileostomy, and he investigated the degree of lifestyle changes after the ostoy in both groups. The questionnaire was administered to 102 patients (cancer and non-cancerous group with colostomy and ileostomy) based on the variables of nutrition, sexual activity, change of clothing style, job change and depression tendency of the patients. As a result of that study, it was determined that ileostomy and colostomy lead to a lifestyle change in both groups and it emphasized the importance of psychoeducation and psychological support for patients with ileostomy and colostomy after surgery.[31] In conclusion, it was found that patients who had ileostomy or colostomy had higher rates of anxiety symptoms, less sexual pleasure, more abstinence from sexual intercourse, and lower quality of life compared to that of healthy individuals. The establishment of pre-operative training and support programs for patients and

their relatives who are scheduled for the operation of the ostomy will provide the necessary support in the face of the physical and psychological difficulties that the operation can bring about.

Ethics

Ethics Committee Approval: Non-Interventional Research Ethics Committee of Üsküdar University approved the study (approval number : B.08.0.YÖK.2.ÜS.o.05.0.06/2015/16).

Informed Consent: Consent form was filled out by all participants.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: W.A., S.Y., Concept: K.B., H.B., E.Ö., Design: Kader Bahayi, W.A., S.Y., H.B., E.Ö., Data Collection or Processing: K.B., W.A., S.Y., Analysis or Interpretation: K.B., W.A., S.Y., Literature Search: K.B., W.A., H.B., E.Ö., Writing: K.B., W.A.

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RESEARCH ARTICLE

Blood Group Characteristics in Colorectal Cancers

Kolorektal Kanserlerde Kan Grubu Özellikleri

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ABSTRACT

Aim: Colorectal cancer (CRC) is the third most common cancer in the world. Tumors are most commonly located in the rectosigmoid region. There are many factors in the etiology such as age, geographical features, family history, obesity, diet, and history of malignancy. In the present study, we aimed to determine the effect of blood group characteristics, which play a role in the etiology of stomach cancer, on the etiology of CRC.
Method: We retrospectively reviewed the files of patients who were diagnosed with CRC and operated in our center or at other centers and were followed postoperatively at our centers. Age, gender, histologic TNM stage (tumor, lymph node involvement, and metastasis), tumor-bearing colon segment, ABO blood group, and Rh antigen were examined from the patients' records.
Results: There were 265 (54.5%) patients with lymph node involvement and 53 (10.9%) with liver metastasis. The most common tumor location was the rectum (n=203). When the blood group and Rh antigen subgroups were examined, blood group A was detected in 253 patients (52.1%), blood group B in 115 patients (23.7%), blood group O in 78 patients (16%), and blood group AB in 40 patients. The incidence of colon cancer was found to be significant in patients with A (+) blood group (p<0.001).
Conclusion: As in stomach cancer, our findings show that the A (+) blood group is a risk factor in colorectal cancers, which have multifactorial etiology. Further genetic studies are needed.
Keywords: Colorectal cancer, ABO blood group, Rh antigen

ÖZ

Amaç: Kolorektal kanserler (KRK) tüm dünyada 3. en sık görülen kanser tipidir. Tümör lokalizasyonu en fazla rektosigmoid bölge yerleşimlidir. Etiyolojisinde yaş, coğrafi özellikler, aile öyküsü, obezite, diyet, malignite öyküsü gibi birçok faktör rol oynamaktadır. Çalışmamızda mide kanseri etiyolojisinde rol oynayan kan grubu özelliklerinin, kolorektal kanser etiyolojisi üzerine etkisini ortaya koymayı amaçladık.
Yöntem: KRK tanısı ile tarafımızdan opere edilen ve dış merkezlerde opere edilip merkezlerimizde takip altında olan hastaların dosyaları retrospektif incelendi. Hastaların; yaş, cinsiyet, histopatolojik TNM (tümör, lenf nodu tutulumu ve metastaz varlığı) evreleri, tümörlü kolon segmentleri, hastaların ABO kan grupları ve Rh antijenleri incelendi.
Bulgular: Çalışmamızdaki hastaların 265'inde (%54,5) lenf nodu pozitifliği, 53'ünde (%10,9) karaciğer metastazı tespit edildi. En sık tümör yerleşimi rektum (n=203) idi. Kan grubu ve Rh antijen alt grupları incelendiğinde; 253 hastada (%52,1) A kan grubu, 115 hastada (%23,7) B kan grubu, 78 hastada (%16) O kan grubu ve 40 hastada (%8,2) AB kan grubu saptanırken, 370 hastada (%76,1) Rh antijeni pozitif olarak tespit edildi. A (+) kan grubuna sahip hastalarda kolon kanseri görülme sıklığının anlamlı olduğu gözlendi (p<0,001).
Sonuç: Birçok etiyolojik faktörün risk faktörü olarak kabul edildiği kolorektal kanserlerde, genetik çalışmalara ihtiyaç olmakla birlikte, A (+) kan grubunun mide kanserinde olduğu gibi risk faktörü olduğu sonucuna ulaştık.
Anahtar Kelimeler: Kolorektal kanser, ABO kan grubu, Rh antijeni

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Introduction

Colorectal cancer (CRC) is the third most common cancer and ranks third in males and fourth in females among causes of cancer-related mortality.[1] There are a number of etiological factors such as age, gender, obesity, diet, geography, and hereditary characteristics. Forms of CRC with proven genetic bases include the polyposis syndromes and hereditary nonpolyposis syndromes. However, the CRCs associated with these inherited and acquired etiologic factors account for a relatively small proportion of all CRC cases. In the majority of patients the responsible factors are still undetectable. Blood groups are one of the controversial etiologic factors in CRC. Blood group antigens, discovered by Karl Landsteiner in 1901, have been the subject of numerous cancer studies since 1953, when Aird declared that blood group A was associated with stomach cancer.[2] Today, there are literature data suggesting that blood group A plays a role in the development of stomach, uterus, kidney, and neurological malignancies; blood group B in esophagus cancers; and blood group O in melanoma.[3,4,5] In this study, we aimed to determine differences in blood group distribution among patients with CRC.

Materials and Methods

Ethical approval for the study was obtained from the Kafkas University Faculty of Medicine Ethics Committee (approval number 105, 26 October 2016) and the study was conducted in accordance with the criteria of the Declaration of Helsinki. Informed consent forms were obtained from all patients included in the study. Data were collected by retrospective chart review of CRC patients diagnosed and followed postoperatively in the Kars State Hospital and Kafkas University Medical Faculty Hospital between June 2013 and September 2016. All patients included in the study presented to the general surgery outpatient clinic and emergency department with complaints of abdominal pain, changes in bowel habits, rectal bleeding, and malaise, and underwent surgery either in our center or other centers after receiving CRC diagnosis. The following data were recorded from the patients' records: age and gender, surgery type (elective/emergency), TNM (tumor, lymph node involvement, and distant metastasis) staging according to the pathology report, tumor location (segment), and ABO blood groups and Rh antigens.

Statistical Analysis

Statistical analyses of the data were done using SPSS for Windows version 22 (Chicago, IL, USA) software package. The Kolmogorov-Smirnov test was used to determine whether continuous variables showed normal distribution. Descriptive statistics were expressed as mean ± standard deviation for continuous variables, and number and percentage for categorical variables. Categorical variables were assessed by nonparametric chi-square test. Results were considered statistically significant for $p<0.05$.

Results

The study included 486 patients with a male/female ratio of 1.52:1. Two hundred and sixty-five patients (54.5%) had lymph node positivity and 53 patients (10.9%) had liver metastasis. The most common TNM stages were 3B (n=96), 3C (n=96), 2A (n=87), and 2B (n=80). The most frequent tumor locations were the rectum (n=203) and sigmoid region (n=138). Sixty-two patients underwent emergency surgery. The demographic characteristics of the patients are shown in Table 1. Analysis of blood group and Rh antigen subgroups revealed that 253 patients (52.1%) were blood group A, 115 patients (23.7%) were blood group B, 78 patients (16%) were blood group O, 40 patients (8.2%) were blood group AB, and 370 patients (76.1%) were Rh positive (Table 2). The incidence of colon cancer was significant among patients in the A (+) blood group

Table 1. Demographic characteristics of colorectal cancer patients

Demographic characteristics		Patient number (n) and percentage
Age (years)		61.4±12.3
Gender (male/female)		293/193
TNM stage	Stage 1	42 (8.4)
	Stage 2A	87 (17.9%)
	Stage 2B	80 (16.5%)
	Stage 2C	2 (0.4%)
	Stage 3A	17 (3.5%)
	Stage 3B	96 (19.8%)
	Stage 3C	96 (19.8%)
	Stage 4A	47 (9.7%)
	Stage 4B	20 (4.1%)
Tumor location	Right colon	105 (21.6%)
	Transverse colon	19 (3.9%)
	Left colon	138 (28.4%)
	Rectum	203 (41.8%)
	Anal canal	8 (1.6%)
	Synchronous/ metachronous	13 (2.7%)

TNM: Tumor, lymph node involvement, distant organ metastasis

(p<0.001). Although ABO blood groups were not associated with lymph node involvement or TNM grade (p=0.239 and p=0.055), there was a significant relationship between blood group and risk of liver metastasis, particularly for blood group A (p=0.020). No statistically significant relationships were observed between Rh antigen and TNM stage, lymph node involvement, or liver metastasis (p=0.579, p=0.849, and p=0.140).

Discussion

This study investigated the relationship between ABO blood groups and Rh antigens and rates of CRC, which involves numerous etiological factors. Our results show that the prevalence of blood groups A and B, as well as Rh antigen positivity were significantly higher among CRC patients. Despite being an archive study, it was of a retrospective design, which is a drawback in terms of the strength of the evidence. ABO blood group antigens were discovered by Karl Landsteiner in 1901 and Rh antigens by Huang et al.[2] in 1940. The ABO blood group antigens are encoded on chromosome 9q34. Although these antigens are biochemical components of the erythrocyte membrane, they have also been identified in epithelial cells of the gastrointestinal mucosa.[6] There is an intriguing hypothesis regarding the pathophysiological link between ABO blood groups and malignancy. Dysregulation of the enzymatic activities of glycosyltransferase A and glycosyltransferase B, which are responsible for cell membrane-mediated signaling and intercellular adhesion during the immune response, may increase plasma levels of von Willebrand factor, thereby leading to angiogenesis, apoptosis, and tumorigenesis. In addition, the association shown between ABO antigens and tumor necrosis factor-α, E-selectin, P-selectin, and intercellular adhesion molecule-1 also supports the hypothesis that ABO alleles influence the formation and spread of malignancy.[7] In line with these pathophysiological mechanisms, Huang et al.[2] first demonstrated the relationship between stomach cancer and blood group A Rh antigen in 1953. This first step led to the theory that blood group antigens could be a predisposing factor in many types of malignancies and continues to guide new studies in this area even today. Aird's findings regarding the association between gastric cancer and blood group were later corroborated by Etemadi et al.[8] who reported that individuals in the non-O blood groups (those carrying at least one A or B allele) had a higher incidence of gastric cancer and a 1.09-fold higher rate of total mortality. Xu et al.[9] also reported that gastrectomy patients with blood group A alleles had poorer prognosis. Beckman and Angqvist[10] reported that blood group O had a protective effect on tumor growth and spread, while Qiu et al.[11] also reported that blood group O reduced lymphatic invasion. Pancreatic cancer is usually advanced at time of diagnosis and has a very poor prognosis even after surgery. Wolpin et al.[12] reported that pancreatic cancer was more common in the non-O blood groups, and Greer et al.[13] reported that the incidence of pancreatic cancer was especially high in blood group A. CRC is the third most common cancer worldwide, and similar data have been reported in Turkey. Henderson et al.[3] reported that blood group A was more frequent in patients with CRC, and in Turkey, Urun et al.[1] also found that the incidence of CRC was higher among patients with non-O blood groups, especially those carrying the blood group A allele. Our finding that 52.1% of the CRC patients in this study had blood type A is consistent with the literature. In 2001, Nakagoe et al.[14] evaluated nonpolypoid syndromes, one of the hereditary syndromes involved in CRC development, and reported that blood group A was associated with nonpolypoid CRC. Despite improved early diagnosis, treatment modalities, and industrial advances, CRC remains one of the main causes of cancer-related death. In addition to comorbid factors, causes of cancer-related mortality include tumor grade, distant organ metastasis, and lymph node invasion. Nakagoe et al.[14] showed that CRC patients with blood group A had higher risk of lymph node metastasis. Cao et al.[6] investigated the overall postoperative survival and found that mean survival time was 99.8 months for blood group A (shortest survival), 103.4 months for blood group B, and 113.9 months for blood group AB (longest survival). As with A and B antigens, Rh antigen positivity has been associated previously with the spread of malignancy.[15] However, we observed no relationship in the present study between Rh antigen and lymph node metastasis, liver metastasis, or TNM stage. ABO was also not associated with lymph node involvement or TNM stage, but we found that risk of liver metastasis was higher in blood group A.

Table 2. Distribution of ABO blood groups and Rh antigen among colorectal cancer patients

ABO blood group				Rh antigen	
A	B	O	AB	Rh +	Rh -
253/486	115/486	78/486	40/486	370/486	116/486
52.1%	23.7%	16.0%	8.2%	76.1%	23.9%
p<0.001				p<0.001	

In summary, CRC is the most common malignancy of the gastrointestinal system and various acquired and inherited factors play a role in its etiology. Polyposis and nonpolyposis syndromes are the most common hereditary forms of CRC. In the present study, we investigated blood group and subgroup distributions in many gastrointestinal system malignancies. Although the patient population in this study was not sufficient to reach a definitive conclusion, we found that blood group A and Rh antigen positivity had a higher

frequency among the patients with CRC followed up in our center.

Ethics

Ethics Committee Approval: It was taken from Kafkas University Faculty of Medicine (date and aproval number 26.10.2016/105).

Informed Consent: Informed consent forms were obtained from all patients included in the study.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Ş.K., O.K., T.A., Concept: T.A., A.C.Y., Design: Ş.K., Data Collection or Processing: A.C.Y., Analysis or Interpretation: Ş.K., Literature Search: O.K., T.A., Writing: Ş.K.

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RESEARCH ARTICLE

Determination of Cancer Risk Perceptions and Health Beliefs of First-Degree Relatives of Patients Who Were Operated with Colorectal Cancer Diagnosis

Kolorektal Kanser Tanısı ile Opere Edilmiş Hastaların Birinci Derece Akrabalarının Kanser Risk Algıları ve Sağlık İnançlarının Belirlenmesi

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ABSTRACT

Aim: The purpose of this study was to determine the risk perceptions and health beliefs of first-degree relatives of individuals who underwent surgery for a diagnosis of colorectal cancer.

Methods: This was a descriptive, cross-sectional study conducted between January 2014 and December 2015 in the general surgery department of a teaching hospital. The universe of the study consisted of first-degree relatives (children, siblings, parents) of patients who underwent surgery for colorectal cancer. The sample included all first-degree relatives who met the inclusion criteria and agreed to participate in the study during the specified period. Written and verbal consent was obtained from all participants after the study was approved by the ethics committee. Descriptive and sociodemographic characteristics and the health belief model scale were included in the data collection form. SPSS 15.0 package program was used for statistical analysis of the data. Descriptive statistics were used to analyze demographic data. Mann-Whitney U, Student's t, analysis of Variance, and Kruskal-Wallis tests were used in the analysis of dependent and independent variables. Linear regression analysis was used to evaluate the data related to the factors that may affect participation in colonoscopy and fecal occult blood screening.

Results: Participants included in the survey were between the ages of 21 and 75 years with a mean age of 47.69±11.20 years. Most of the participants were female (65%) and married (82%). Most participants did not use alcohol (92%) or cigarettes (73%). The mean body mass index of the participants was 26.42±4.51. Mean subscale scores were 48.14±6.54 [minimum (min)=26, maximum (max)=55] for confidence/benefit, 14.41±4.28 (min=6, max=26) for susceptibility, 16.19±3.86 (min=8, max=26) for barriers, 16.29±2.94 (min=7, max=25) for health motivation, and 16.73±3.43 (min=6, max=24) for seriousness.

Conclusion: Our results clearly indicate that participation in colorectal screening is inadequate in this group. It is important to plan the necessary interventions to increase the screening participation of first-degree relatives who are at risk for colorectal cancer.

Keywords: Colorectal cancer, health belief, first-degree relatives

ÖZ

Amaç: Bu çalışmanın amacı; kolorektal kanser sebebiyle opere edilmiş bireylerin birinci derece akrabalarının risk algılarını ve sağlık inançlarını belirlemektir.

Yöntem: Bu çalışma tanımlayıcı ve kesitsel olarak yapılmıştır. Araştırma Ocak 2014-Aralık 2015 tarihleri arasında bir eğitim hastanesinin genel cerrahi kliniğinde yapılmıştır. Araştırmanın evrenini kolorektal kanser tanısı ile opere edilen hastaların birinci derece akrabaları (çocukları, kardeşleri, ebeveynleri) oluşturmuştur. Çalışmaya katılmayı kabul eden tüm hastaların birinci derece akrabaları çalışmanın örneklemini oluşturmuştur. Etik kurul izni alındıktan sonra katılımcıların yazılı ve sözlü onamları alınmıştır. Veri toplama formunda, tanımlayıcı ve sosyodemografik özellikler ile sağlık inanç modeli ölçeği yer almaktadır. Elde edilen verilerin istatistiksel analizinde SPSS 15.0 paket programı kullanılmıştır. Katılımcıların demografik özelliklerinin analizinde tanımlayıcı istatistikler kullanılmıştır. Bağımlı ve bağımsız değişkenlerin analizinde Mann-Whitney U, Student

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ÖZ

t testi, Varyans analizi ve Kruskall Wallis testleri kullanılmıştır. Kolonoskopi ve Gaitada Gizli Kan testlerini yaptırma durumlarını etkileyebileceği düşünülen faktörlere ilişkin verilerin değerlendirilmesinde lineer regresyon analizi kullanılmıştır.

Bulgular: Araştırmaya dahil olan katılımcılar 21 ile 75 yaş arasında olup yaş ortalaması 47,69'dur [standart sapma (SS): 11,20]. Katılımcıların çoğu kadındır (%65) ve evlidir (%82). Katılımcıların çoğu alkol (%92) ve sigara (%73) kullanmamaktadır. Katılımcıların beden kitle indeksi ortalaması 26,42'dir (SS: 4,51). Alt ölçek puan ortalamaları; güven-yarar için 48,14±6,54 [min (minimum)=26, maksimum (maks)=55], duyarlılık için 14,41±4,28 (min=6, maks=26), engel için 16,19±3,86 (min=8, maks=26), motivasyon için 16,29±2,94 (min=7, maks=25), ciddiyet için 16,73±3,43'tür (min=6, maks=24).

Sonuç: Elde edilen verilerden yola çıkarak bu riskli grupta yeterli katılımın sağlanmadığı söylenebilir. Kolorektal kanser için riskli olan birinci derece akrabaların tarama programlarına katılımlarının artırılması için gerekli girişimlerin planlanması önemlidir.

Anahtar Kelimeler: Kolorektal kanser, sağlık inançları, birinci derece akraba

Introduction

Colorectal cancer (CRC) is one of the most common types of cancer worldwide. According to GLOBOCAN 2012 data published by International Agency for Research on Cancer, there have been 1.4 million new cases of CRC with an estimated 693.900 deaths.[1] Turkish cancer data for 2015 indicates that CRC was the third most common cancer in 2012 with a prevalence of 15.2 per 100.000 females and 24.7 per 100.000 males.[2] The risk of developing CRC is highest among people over the age of 50-55, those with a family history of CRC, and those with inflammatory bowel disease.[1,3,4] Lifestyle, diet, and physical activity have also been associated with CRC risk.[1,3,5] Dietary recommendations for primary protection from CRC include having a diet high in fiber, taking antioxidant vitamins, consuming mineral-enriched food, eating a vegetable-based diet, and reducing consumption of red meat, processed meat, and alcohol; lifestyle recommendations include avoiding smoking, maintaining a normal weight, and engaging in regular physical activity. Secondary protection measures involve screening the target population and removing precancerous polyps.[4,6,7] Screening programs are an important part of the efforts to reduce CRC incidence and mortality rates. These programs facilitate early diagnosis, which can prevent progression and enable more effective treatment.[7,8] For screening programs to be successful, there needs to be a high level of participation among the individuals at risk. The immediate family members of individuals with CRC have a higher risk of developing CRC themselves. Therefore, it is especially important for first-degree relatives of CRC patients to participate in screening programs. The participation rate among the at-risk family population in CRC screening varies between 38-90%.[9] This rate is higher than in the general population, but still not as high as it should be.[7] Cancer is a disease that raises sensory and cognitive awareness of its causes, effects, and treatments by creating anxiety in the community.[10] Similarly, when someone undergoes surgery because of cancer, it propagates a feeling of risk both in the patient and among his/her friends and relatives. Perceived risk may generate cognitive motivation, which in turn leads to health-promoting behaviors.[11] In many conceptual and theoretical models of health behavior, psychosocial dimensions are evaluated to investigate the factors that influence participation in screening programs. The Health Belief Model is an established guide for explaining and measuring what motivates or deters individuals from exhibiting health-promoting behaviors.[12,13,14] The model asserts that health behavior is affected by beliefs, values, and attitudes. The first-degree relatives of individuals who have undergone CRC surgery have a higher risk of developing CRC. Identifying the risk perceptions and health beliefs of this group is important in order to identify ways to increase their participation in screening.

Materials and Methods

This descriptive, cross-sectional study was conducted to determine the cancer risk perceptions and health beliefs of first-degree relatives of patients diagnosed and operated for CRC. The study was performed between January 2014 and December 2015 in the general surgery clinic of a training hospital. The research universe consisted of the first-degree relatives (children, siblings, parents) of patients who were diagnosed and underwent surgery for CRC. There was no sampling frame for the study; the sample comprised all of the patients' first-degree relatives who met the study criteria and volunteered to participate during the study period. Inclusion criteria included being the first-degree relative (mother, father, child, or sibling) of a patient who was diagnosed and operated for CRC in our general surgery department; knowing Turkish; being at least 18 years of age; and agreeing to participate in the research. Individuals who did not meet these criteria or withdrew their consent to participate at any stage of the study were excluded. The study was approved by University of Health Sciences, Gülhane Training and Research Hospital Ethics Committee prior to data collection (approval no: 50687469-

1491-140-16/1648-449). The participants were informed about the study and written and oral consent was obtained from all volunteers. The data collection form was prepared by the researchers and consisted of two sections. The first section included 27 questions regarding the participants' demographic information (such as age, gender, education) and their knowledge about the risks of CRC. The second section included the health belief model scale for CRC. Data were collected via face-to-face interviews.

Health Belief Model Scale for Colorectal Cancer

The health belief model scale for CRC was adapted from Champion's Health Belief Model Scale as adapted by Jacobs in 2002. Validity and reliability studies for the Turkish version of the scale were conducted in 2007 by Ozsoy et al.[12] The scale consists of 33 items scored on a 5-point Likert scale with the options of strongly agree, agree, somewhat agree, disagree, and strongly disagree. Its subscales are confidence and benefits (11 items), susceptibility (6 items), barriers (6 items), health motivation (5 items), and seriousness (5 items). The Cronbach's alpha reliability range is 0.54-0.88. The collected data were statistically analysed using SPSS 15.0 software package. Descriptive statistics were used to analyze the participants' demographic characteristics. Dependent and independent variables were analyzed using the Mann-Whitney U, Student's t, analysis of Variance, and Kruskal-Wallis tests. Logistic regression analysis was done to evaluate factors that may influence the decision to undergo colonoscopy and fecal occult blood (FOB) tests.

Results

Descriptive and Sociodemographic Characteristics

The study participants were between 21 and 75 years old, with a mean age of 47.69±11.20 years. Sixty-five percent of the participants were female and most (82%) were married. Ninety-two percent of the participants stated that they did not use alcohol and 73% were nonsmokers. The mean body mass index (BMI) of the participants was 26.42±4.51 (Table 1).

Health Behaviors and Health History

Sixty-five percent of the participants described their health as good or excellent. Most of the participants have no colorectal disease and 26% had undergone screening at least once. When asked about their perceived risk of developing CRC, 43% of the participants responded with 'I don't know', while 10% perceived themselves as being at high risk. Reasons given for not participating in CRC screening programs included 'I am not informed' for 36% and 'It was not recommended to me' for 21% of the participants (Table 2).

Health Beliefs

Mean subscale scores were 48.14±6.54 [minimum (min)=26, maximum (max)=55] for confidence/benefits, 14.41±4.28 (min=6, max=26) for susceptibility, 16.19±3.86 (min=8, max=26) for barriers, 16.29±2.94 (min=7, max=25) for motivation, and 16.73±3.43 (min=6, max=24) for seriousness.

Regression Analysis of the Factors Influencing Decision to Have Colonoscopy and FOB Tests

The logistic regression analysis of univariate and multivariate factors influencing colonoscopy performance is shown in

Table 1. Characteristics of participants (n=100)

Characteristic	n %
Age (years)	
Mean ± SD*	47.69±11.20
Sex	
Female	65
Male	35
Marital status	
Married	82
Single	18
Education level	
Primary school	29
High school	33
University or higher	38
Alcohol use	
Yes	8
No	92
Cigarette use	
Yes	27
No	73
Exercise	
None	26
Rarely	56
Frequently	11
Regularly	7
Diet	
High-fiber, fruit, vegetables	28
Low-fiber, protein-rich, fatty	20
Balanced fiber, protein, and fats	52
Body mass index	
Mean ± SD*	26.42±4.51

*Mean + Standard deviation, SD: Standard deviation

Table 3. Unemployed participants had a 4.376-fold higher risk of avoiding colonoscopy than employed participants. Perceived barriers was a significant factor in colonoscopy avoidance [odds ration (OR)=1.283]. In other words, individuals with higher perceived barriers were more likely to avoid colonoscopy. In univariate regression analysis, risk of avoiding colonoscopy was not associated with gender, age, BMI, marital status, employment status, smoking and use of alcohol, exercise habits, dietary habits, perceived risk, bowel diseases, awareness of screening methods, intent to have a screening test soon, barriers to participating in screening programs, desire for information, or perceived confidence/benefit, perceived susceptibility, health motivation, and perceived seriousness scores. After correcting for age, employment status, dietary habits, bowel diseases, awareness of screening methods, desire for information, perceived confidence/benefit, perceived susceptibility, and health motivation, risk of avoiding colonoscopy was significantly associated with being unemployed (OR=5.607), having a bowel disease (OR=0.168), desire for information (OR=5.329), perceived barriers (OR=1.310), and health motivation (OR=0.793). The logistic regression analysis of univariate and multivariate factors influencing FOB test performance is shown in Table 4. Individuals who were knowledgeable about screening methods were at 0.260 times higher risk of avoiding FOB. Participants who cited "I am afraid the procedures will hurt" as a barrier to participating CRC cancer screening programs had a 0.136 times higher risk of avoiding FOB testing. Those who desired information had a 3.354-fold higher risk of avoiding FOB, whereas stronger health motivation reduced the risk of avoiding FOB (OR=0.824). Gender, marital status, employment status, smoking and use of alcohol, dietary habits, exercise habits, perceived risk, bowel diseases, intent to have a screening test soon, age, BMI, and perceived confidence/benefit, perceived susceptibility, perceived barrier, and perceived seriousness scores were not associated with the risk of avoiding FOB testing in univariate regression analysis. After correcting for awareness of screening methods, desire for information, perceived susceptibility, health motivation, and perceived seriousness, there were statistically significant associations between risk of avoiding FOB and willingness to be informed (OR=5.188) and health motivation (OR=0.773).

Table 2. Health behaviors and medical history of the participants

Characteristic	n %
Perceived health	
Poor-fair	35
Good-excellent	65
Frequency of bowel movements	
≥2 per day	17
≥1 per day	55
1 per 2-3 days	26
≤1 per week	2
Colorectal disease	
Yes	22
No	78
Sreening tests performed	
Fecal occult blood	8
Colonoscopy	7
Both	11
Perceived risk of colorectal cancer	
I'm not at risk	14
I don't know	45
Average	15
Moderate	16
High	10
Wants information about colorectal cancer and screening tests	
Yes	37
No	63
Barriers to participation in colorectal cancer screening tests	
I am not informed	36
I am embarrassed	5
Pain	10
It was not recommended	21
Fear of cancer	15
Other (e.g. lack of time)	13

Discussion

This study evaluated CRC-related health beliefs and screening participation among first-degree relatives (mother, father, siblings, children) of patients diagnosed and operated for CRC. In Turkish society, visiting patients in the hospital is extremely important. In particular, the immediate family members of patients scheduled for an operation tend to visit the hospital before, during, and after the patients undergo surgery. Raised awareness of the disease and higher participation rates in CRC screening programs among these patients' relatives are desired consequences of their witnessing this difficult process. In the present study, the rate of undergoing colonoscopy and FOB tests among the first-degree relatives of CRC patients was very low (26%). Another study of individuals aged 50+ who were at risk,

including the first-degree relatives of CRC patients, also reported that a low proportion had undergone screening tests (30.7%).[13] Courtney et al.[15] also found that 33% of first-degree relatives who were at high risk of CRC had had no screening test. Similar results have been reported in other studies as well.[9,16] Counterintuitively, these results indicate that immediate family members of CRC patients, who are known to be at higher risk of developing CRC themselves, are not sufficiently motivated to participate in screening programs. Regarding their reasons for not participating, most of the respondents said that they were not informed about the screening programs or that they were not recommended to undergo screening. This highlights the need for health care professionals to prepare informational programs targeted at this risk group and actively recommend their participation. Shiloh et al.[11] reported a positive correlation between the degree of concern about colon cancer and perceived possibility and seriousness. Ensuring that this risk

Table 3. Results of univariate and multivariate logistic regression analysis of factors that may be associated with avoidance of colonoscopy

	First stage				Terminal model			
			95% Confidence interval				95% Confidence interval	
	OR	p	Lower	Upper	OR	p	Lower	Upper
Colonoscopy								
Employment status								
Employed								
Unemployed	**4.376**	**0.034**	1.120	17.100	**5.607**	**0.037**	1.110	28.326
Retired	1.242	0.745	0.336	4.588	1.459	0.649	0.288	7.398
Bowel disease								
No								
Yes	0.352	0.063	0.117	1.058	**0.168**	**0.018**	0.038	0.740
Barrier to participation								
I am not informed								
It was not recommended	0.400	0.214	0.094	1.697				
I am afraid of being diagnosed with cancer	0.500	0.407	0.097	2.571				
I am afraid that the procedures will be painful	0.188	**0.045**	0.036	0.964				
Desire for information								
No								
Yes	2.654	0.095	0.844	8.341	**5.329**	**0.025**	1.231	23.067
Benefit								
	0.915	0.097	0.824	1.016				
Susceptibility								
	0.938	0.285	0.834	1.055				
Barriers								
	1.283	**0.003**	1.091	1.509	**1.310**	**0.007**	1.078	1.592
Health motivation								
	0.871	0.119	0.731	1.036	**0.793**	**0.037**	0.638	0.986
Seriousness								
	0.919	0.294	0.785	1.076				

OR: Odds ratio

p<0.05 was accepted as statistically significant

group feels concerned about CRC, particularly while they are present in the hospital, may influence perceived risk and seriousness and thereby increase the rate of participation in screening programs. The mean total and subscale scores in our study are comparable to results obtained by Koc and Esin.[16] This suggests that the health beliefs of immediate family members are affected similarly when they witness the hospitalization process of patients who undergo surgery or oncological treatment for CRC. As for the perceived risk perception in the target population in our study, only 10% believed themselves to be at high risk and 45% did not know about their level of risk. In a study by Gimeno García et al.[9] 46.7% of the first-degree relatives of CRC patients considered themselves at high risk. Akhtar et al.[5] also concluded that 59% of the immediate family members of CRC patients in their study were aware of their high risk status. Furthermore, Cameron et al.[17] also determined that perceived risk was high in 46% of the target population in their study. Risk perception, which is incorporated in many health belief models, is a cognitive concept with significant influence on screening behaviors. The low levels of perceived risk observed among the participants in our

Table 4. Results of univariate and multivariate logistic regression analysis of factors that may be associated with avoidance of fecal occult blood testing

	First stage				Terminal model			
			95% Confidence interval				95% Confidence interval	
	OR	p	Lower	Upper	OR	p	Lower	Upper
Fecal occult blood								
Knowledge of screening methods								
No								
Yes	**0.260**	**0.012**	0.092	0.740				
Barrier to participation								
I am not informed								
It was not recommended	0.386	0.246	0.077	1.928				
I am afraid of being diagnosed with cancer	0.364	0.252	0.064	2.054				
I am afraid that the procedures will be painful	**0.136**	**0.024**	0.024	0.770				
I am embarrassed	0.364	0.426	0.030	4.385				
Other	0.205	0.062	0.039	1.085				
Desire for information								
No								
Yes	**3.354**	**0.033**	1.099	10.236	**5.188**	**0.011**	1.449	18.574
Benefit	0.964	0.406	0.885	1.051				
Susceptibility	0.894	0.059	0.795	1.005	0.889	0.065	0.785	1.007
Barriers	1.043	0.525	0.915	1.189				
Health motivation	**0.824**	**0.031**	0.691	0.983	**0.773**	**0.011**	0.634	0.942
Seriousness	0.881	0.120	0.751	1.033				

OR: Odds ratio

$p<0.05$ was accepted as statistically significant

study correspond to their low screening rates. The risk perception figures in the studies cited above are higher than those obtained in studies conducted in our country. The high levels of perceived risk in European countries may be due to cultural, educational, and institutional differences. According to available evidence, screening participation rates are higher in immediate family members than the general population but are still not at desired levels.[7] Educational and institutional activities should be organized in Turkey to encourage first-degree relatives who are at high risk of CRC to participate in screening programs. The screening participation rate in the target population is expected to be at least 70%. Delgado-Plasencia et al.[6] reported in their study that participation in screening programs among immediate family members of CRC patients in the hospital increased due to doctor recommendations. This indicates that health care personnel can improve rates of screening by advising first-degree relatives of CRC patients who stay with or visit them at the hospital to participate in these programs. In our study, unemployed individuals were at high risk of not undergoing colonoscopy. People must be able to meet their basic needs in order to be healthy, and having a source of income is an important part of this ability. The Turkish Statistics Institute reported an unemployment rate of 11.1% for January 2016. This high figure is an important problem for our country because it affects health-related behaviors just as it does all other aspects of life. Individuals in our study who had high perceived barriers were also at risk of not undergoing colonoscopy. In a research performed with the immediate family members of patients with CRC, Jacobs reported that those with high perceived barriers according to the Health Belief Model had a 2.99-fold higher risk of nonparticipation in screening programs.[8] Similar results were reported by Koc and Esin[16] Perceived barriers may have adverse effects on health behaviors. This is also supported by the data obtained in our study. We determined in this study that lower health motivation had a negative impact on screening participation. Koc and Esin[16] also concluded that health motivation influences decisions of whether or not to undergo screening tests. The stronger an individuals' health motivation, the greater the likelihood of exhibiting health-promoting behaviors. Consequently, it is important that first-degree relatives of CRC patients, as they comprise a high-risk group, should be informed and encouraged by health care personnel in the hospital to increase their likelihood of participating in screening programs. As stated in the 2013-2018 cancer control plan, there are several steps to be taken at a national level in Turkey to increase the public's participation in screening programs. These include implementing relevant standards in all hospitals, collaborating on education and public awareness activities, familiarizing screening programs, organizing campaigns in print and visual media for informing and incentivizing the public, producing short films with the help of popular Turkish artists, and broadcasting these films at appropriate times. In conclusion, it is crucial to encourage first-degree relatives of patients with CRC to participate in screening programs to ensure early diagnosis and treatment. The available data indicate that this high-risk group does not exhibit adequate rates of participation in CRC screening programs. Addressing this issue with them while in the hospital accompanying or visiting patients undergoing surgery for CRC may yield higher participation rates in this target population.

Ethics

Ethics Committee Approval: The study was approved by the University of Health Sciences, Gülhane Training and Research Hospital Ethics Committe (approval number: 50687469-1491-140-16/1648-449).

Informed Consent: Was taken.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Concept: B.Ö., E.İ., S.T., Design: B.Ö., E.İ., S.T., M.F.C., Data Collection or Processing: B.Ö., M.Ö., Analysis or Interpretation: B.Ö., E.İ., S.T., M.F.C., M.Ö., Literature Search: B.Ö., M.Ö., Writing: B.Ö., E.İ., S.T.

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RESEARCH ARTICLE

Comparison of the Protective Effects of *Calendula officinalis* Extract and Hyaluronic Acid Anti-adhesion Barrier against Postoperative Intestinal Adhesion Formation in Rats

Ratlarda Postoperatif İntestinal Adezyon Formasyonuna karşı *Calendula officinalis* Extraktının ve Hyaluronik Asit Anti-adezyon Barierinin Koruyucu Etkilerinin Karşılaştırılması

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ABSTRACT

Aim: Intra-abdominal adhesions that develop after abdominal surgery are still a cause of serious morbidity and mortality. This study compared the efficacy of a hyaluronic acid adhesion barrier and *Calendula officinalis* extract (COE) for inhibiting adhesion in rats.

Method: We performed laparotomies in 30 rats and induced postoperative intraabdominal adhesions using a scraping model. The animals were divided randomly into 3 groups of 10 rats each. We performed only caecal abrasions and did not apply any substance in the control group (group 1). In group 2, we performed caecal abrasion and then applied the hyaluronic acid adhesion barrier to the abraded area. In group 3, we applied COE after the caecal abrasions.

Results: There were no significant differences among the groups in terms of the macroscopic adhesion score. Histopathologically, there was a significant difference in microscopic adhesion scores between groups 1 and 2 (p=0.044). There was also a significant difference between groups 1 and 3 (p=0.010). There was no significant difference between groups 2 and 3 (p=1). Group 1 had the highest score for adhesions between the abdominal wall and intra-abdominal organs.

Conclusion: Both the COE and hyaluronic acid adhesion barrier significantly reduced the incidence of postoperative intra-abdominal adhesions in a rat scraping model. Although the mechanism is not clear, the COE applied in the peritoneal cavity reduced the development of adhesions. There was no significant difference between the COE and hyaluronic acid adhesion barrier in terms of preventing adhesions. Although the COE is less expensive than hyaluronic acid adhesion barrier, toxicology studies must be performed before it is used in humans.

Keywords: *Calendula officinalis*, hyaluronic acid, postoperative intra-abdominal adhesion, scraping model

ÖZ

Amaç: Abdominal cerrahi girişimler sonrası gelişebilen intraabdominal adezyonlar halen ciddi morbidite ve mortaliteye yol açmaktadır. Biz bu çalışmada hyaluronik asitli adezyon bariyeri ile *Calendula officinalis* ekstraktının (COE) deneysel adezyon modeli oluşturduğumuz ratlardaki adezyon önleyici etkisini araştırıp karşılaştırmayı amaçladık.

Yöntem: Otuz rata laparatomi yaptık ve bu ratlarda scraping model oluşturarak postoperatif intraabdominal adezyonu indükledik. Hayvanları rastgele 10 rattan oluşan 3 eşit gruba ayırdık. Kontrol grubu olan grup 1'e sadece çekal abrazyon oluşturup herhangi bir madde uygulamadık. Grup 2'ye çekal abrazyonu takiben hyalurinik asitli adezyon bariyeri uygulamadık. Grup 3'e çekal abrasyonu takiben COE uygulamadık.

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ÖZ

Bulgular: Gruplar arasında makroskopik adezyon skorlaması açısından istatistiksel olarak anlamlı fark bulunamadı. Histopatolojik inceleme neticesinde mikroskopik adezyon skorları karşılaştırıldığında grup 1 ile 2 arasındaki istatistiksel fark p=0,044 olup anlamlıydı. Grup 1 ve 3 karşılaştırıldığında p=0,010 olup istatistiksel olarak anlamlıydı. Grup 2 ve 3 karşılaştırıldığında p=1 olup istatistiksel olarak anlamsızdı. Grup 1 abdominal duvar ve karın içi organlar arasındaki en yüksek adezyon skoru sergiledi.

Sonuç: Bu çalışma COE'nin ve hyalurinik asitli adezyon bariyerinin her ikisininde scraping modelli ratlarda postoperatif intraabdominal adezyonların insidansını önemli derecede azalttığını göstermiştir. Mekanizma açık olmamasına rağmen peritoneal kaviteye uygulanan COE adezyon gelişimini azaltmıştır. COE ile hyaluronik asitli adezyon bariyerinin arasında adezyonu önleme açısından istatistiksel anlamlı bir fark bulunamamıştır. Ancak COE maliyet açısından hyaluronik asitli adezyon bariyerinden daha çok avantajlı olmasına rağmen insanlar üzerinde uygulanmadan önce toksikoloji çalışmaları mutlaka yapılmalıdır.

Anahtar Kelimeler: *Calendula officinalis*, hyalurinik asit, postoperatif intra-abdominal adezyon, scraping model

Introduction

Despite advances in the surgical techniques and instruments used, postoperative adhesions are unpredictable consequences of laparotomies. Postoperative intra-abdominal adhesion formation remains an important cause of morbidity and mortality. The reported incidence of adhesions in patients after laparotomy ranges from 32.6% to 90%.[1,2] While some of these patients have no complaints, a significant proportion will develop small bowel obstruction, bowel infarction, pain, constipation, or infertility in women.[3] The time required for treatment results in a loss of labour, and the costs of treatment constitute an economic loss.[4] Several agents and barrier systems have been developed to reduce the incidence of adhesions, but none is 100% effective. The hyaluronic acid containing adhesion barrier (HAAB) is widely used worldwide.[5] Although HAAB significantly reduced the formation of adhesions in some animal studies and clinical trials, it does not completely inhibit the formation of adhesions.

Calendula officinalis extract (COE) is an herbal agent that has anti-inflammatory, anti-oedema, and antimicrobial activities experimentally and clinically, and it is used traditionally in many parts of the world for healing wounds, peptic ulcers, and venous ulcers in the feet and legs of diabetics, preventing skin ulcers caused by radiotherapy for breast cancer, and improving colitis in inflammatory bowel disease. It was effective in the treatment of experimental oral mucositis in hamsters and in the treatment of second and third degree burns in ra ts.[6,7,8,9,10,11,12,13,14,15,16,17,18,19] Long-term studies have shown that the acute and chronic toxicity of oral COE is very low in female and male rats and rarely leads to anaphylactic reactions, uterotonic effects in pregnancies, hypotension, or sedation.[20,21,22,23] The efficacy of COE in the treatment of many different pathological conditions has been demonstrated experimentally and clinically. However, few studies have examined the anti-adhesion activity of COE. Therefore, this study investigated the efficacy of COE in preventing postoperative intra-abdominal adhesions and compared it with the anti-adhesive efficacy of HAAB.

Materials and Methods

This study was conducted in the Animal Research Laboratory of Kahramanmaraş Sütçü İmam University after obtaining permission from the Ethics Committee. Thirty 10-12-week-old male Wistar Albino rats, each weighing 300-350 grams, were used. The animals were divided into three groups of 10 rats each. In group 1 (control group) only the scraping model was applied. In group 2, the scraping model was applied, and then HAAB was applied to the abraded bowel. Similarly, group 3 was subjected to scraping, and then the COE was applied. We used two gel preparations of The HAAB (Heine Medizin Adhesion Barrier Gel) (Figures 1, 2). The COE was obtained from the leaves of marigold plants (*Calendula officinalis*). Since a pure extract could not be obtained, it was obtained in a 4/3 ratio of pure olive oil to COE from an herbalist in Italy. A detailed biochemical analysis could not

Figure 1 and 2. The hyaluronic acid adhesion barrier (Heine Medizin Adhesion Barrier Gel)

be performed. We also have no information on the altitude or region in Italy where the marigolds were grown. The rats were anaesthetised with 50 mg/kg ketamine hydrochloride (Ketalar, 50 mg/mL; intramuscular; Parke-Davis, İstanbul, Turkey) and 5 mg/kg xylazine (Xylazine-20 injection; Butler, Columbus, OH, USA).

A 3 cm midline incision was made after disinfecting the animal's abdominal skin with povidone iodide. The terminal ileum and cecum were held in a wet sponge and mobilised. Both sides of a 5~10 cm segment of the terminal ileum and cecum were irritated with a sponge until a pellet formed on the serosal surface. The scraped segment was clamped for 1 minute to create arterial transient ischemia (scraping model, Figure 3). The control group was subjected to scraping only. The scraped area was covered with 3 mL of COE in the COE group or 1 mL of adhesion barrier in the HAAB group. The abdominal incisions were closed with two layers of continuous 3/0 silk sutures. All rats were allowed to feed daily until they were sacrificed 15 days postoperatively. After sacrifice, an inverted U-shaped incision was made in the anterior abdominal wall to allow maximal exposure of the abdominal cavity. The adhesions were examined macroscopically by three independent investigators (A.E., A.I., and A.N.Ş.) and rated using the Blauer and Collins scale (Table 1). Adhesion-containing tissue samples were excised and fixed in 10% formaldehyde solution. The samples were embedded in paraffin and dehydrated. Then, 5 µm cross sections were prepared with a microtome. After staining with haematoxylin eosin, the samples were examined by the same pathologist (A.Y.B.) under light microscopy for their general structure, amount of fibroblast activity, and presence of fibrosis (Table 2). A fibrosis score for each rat was calculated according to these criteria.

Figure 3. Scraping model

Statistical Analysis

SPSS 22.0 (IBM, Armonk, NY, USA) was used to analyse the data. The Kruskal-Wallis H-test was used for the nonparametric tests with the Monte Carlo simulation technique, and Dunn's test was used for the post hoc analyses. Quantitative variables are shown as the median (range), and categorical variables as a number. Variables were examined at the 95% confidence level, and a p value ≤0.05 was considered significant.

Results

All 30 rats survived until the repeat laparotomy. Table 1 shows the Blauer and Collins macroscopic adhesion scores.

Table 1. Macroscopic adhesion assessment scores for the three groups

Macroscopic findings (Blauer and Collins scale)	Calendula officinalis extract group (n=10)	Hyaluronic acid adhesion barrier group (n=10)	Control group (n=10)
No adhesions	2	3	–
Slender or narrow, easily separable adhesions	3	3	4
Thick adhesions in a limited area	3	1	2
Widespread thick adhesions	2	3	1
Widespread thick adhesions connecting organs with the anterior or posterior abdominal wall	–	–	3
Total	10	10	10

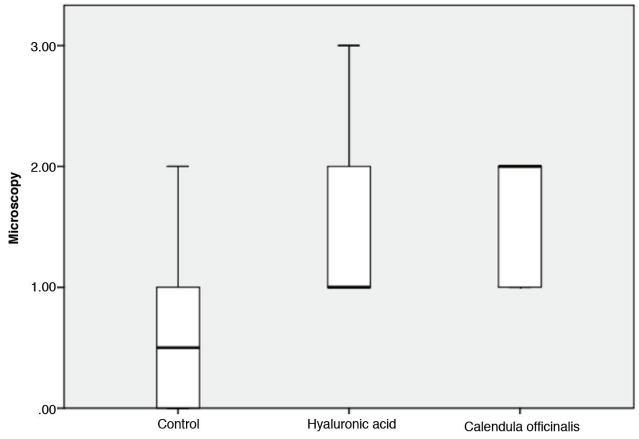
Table 2. Scores for adhesions in the three groups based on macro- and microscopic findings

Group	n	Microscopy Median (range)	Macroscopy Median (range)
Control	10	0.5 (0-2)	1.5 (0-3)
Hyaluronic acid	10	1 (1-3)	1 (0-3)
Calendula officinalis	10	2 (1-2)	2 (1-4)
Total	30	1 (0-3)	1.5 (0-4)
p values (overall)		0.004	0.266
Pairwise comparisons	I&II	0.044	ns
	I&III	0.010	ns
	II&III	1	ns

Kruskal–Wallis test (Monte Carlo), Dunn's post hoc test

ns: Not significant

Grade 4 adhesions were seen only in three rats in the control group. The adhesions were grade 0-4 in 0, 4, 2, 1, and 3 rats in the control group, 3, 3, 1, 3, and 0 rats in the HAAB group, and 2, 3, 3, 2, and 0 rats in the COE group, respectively. There were no differences in the Blauer and Collins scores among the groups (Table 2; Figure 4). Table 3 summarises the results of the histopathological examinations in terms of the general structure of the adhesions, amount of fibroblast activity, and presence of fibrosis. Respective microscopic adhesion assessment scores of 0 to 3 were seen in 2, 4, 4, and 0 rats in the control group, 0, 6, 3, and 1 rats in the HAAB group, and 5, 4, 1, and 0 rats in the COE group (Figures 5, 6, 7). Histopathologically, the fibrolipomatous tissue of the adherent areas of rats in the control group showed a decrease in fat tissue, with moderate fibrosis and fibroblast accumulation and a moderate mixed infiltration of lymphocytes, plasma cells, and polymorphonuclear leukocytes (Figure 7). The density of inflammatory cells and fibroblasts was decreased in the HAAB and COE groups (Figure 5). Comparison of the microscopic adhesion scores based on the histopathological examination revealed significant differences between groups 1 and 2 (p=0.044) and between groups 1 and 3 (p=0.010), but not between groups 2 and 3 (p=1). Group 1 had the highest score for adhesions between the abdominal wall and intra-abdominal organs (Table 2). COE and HAAB significantly reduced the incidence of intra-abdominal peritoneal adhesions in scraping-model rats when compared with the control group (Graph 1).



Graph 1. *Calendula officinalis* extract and hyaluronic acid adhesion barrier significantly reduced the incidence of intra-abdominal peritoneal adhesions in scraping-model rats when compared with the control group

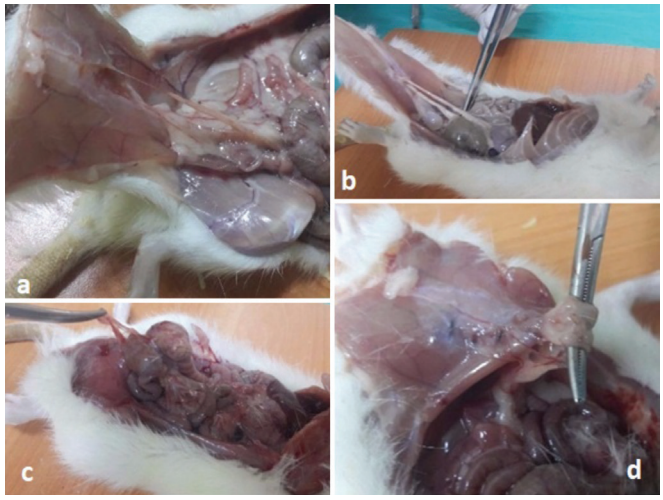


Figure 4. According to Blauer and Collins classification, at groups a) first degree, b) second degree, c) third degree, and d) fourth degree of adhesion observed

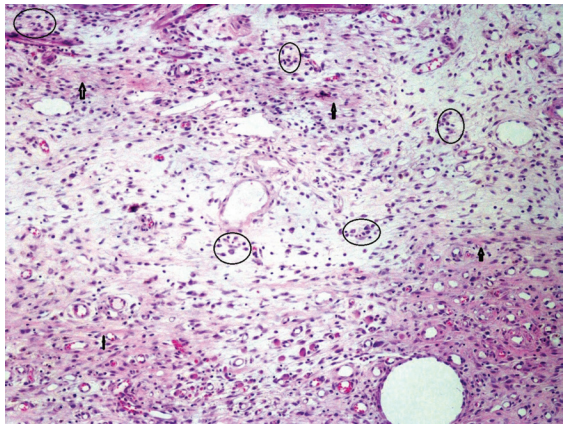


Figure 5. Omental loose fibrolipomate tissue in adherence sites has been replaced by a fat reduced and vascularized granulation tissue. Fine fibrous bands (arrows) and scattered lymphocytes, histiocytes and plasma cell groups (intra-circle) were rated as score 1 (10x objective, hematoxylin eosin staining)

Discussion

Although the mechanism is not clear, COE administered in the peritoneal cavity significantly reduced the development

Table 3. Microscopic adhesion assessment scores in the three groups

Microscopy findings	*Calendula officinalis* group	Hyaluronic acid adhesion barrier group	Control group
No inflammation	5	–	–
Large cells, rare scattered lymphocytes and plasma cells	4	6	4
Large cells together with an increased number of lymphocytes, neutrophils, eosinophils, and plasma cells	1	3	6
Multiple and mixed inflammatory cells, micro-abscesses	–	1	-
Total	10	10	10

of adhesions. There was no statistical difference between COE and HAAB at preventing adhesions. COE is less expensive than HAAB. Although no adverse effects were seen in the rats treated with COE, toxicology studies must be performed before it is administered to humans. In addition, studies should examine the effects of higher doses of COE on its efficacy and toxicity. The rate of obstruction caused by abdominal surgery-induced adhesions ranges from 92.9% to 100%[24,25] of which 60~70% are small bowel obstructions.[25] The relaparotomy rate due to obstruction is 29~50%.[26,27] Other adverse effects of adhesions include enterocutaneous fistulas, intra-abdominal abscesses, chronic abdominal pain, and infertility in females due to perforations caused by intestinal obstruction.[28,29] The prolonged hospital stays and loss of labour are other important problems. Recurrent relaparotomy is also a major cause of mortality.[28] Although there is now a fairly good understanding of how and why adhesions occur, and there are agents to reduce adhesion formation, no agent completely prevents adhesions. Foreign bodies, blood, tissue ischemia, infection, and some chemicals that cause irritation and damage the peritoneum are all responsible for the formation of adhesions.[30,31] There are many models of the formation of adhesions in experimental animals, including caecal scraping, caecal abrasion, uterine adhesion, peritonitis, and peritoneal defect models.[32,33,34,35,36] We chose a scraping model that involved both ischemic and peritoneal injury (Figure 3) because ischemia and peritoneal damage frequently occur during abdominal surgery in humans. After abdominal surgery, adhesions form in an average of 7-10 days, and fibrosis with the formation of fibrotic bands occurs in 14 days. Therefore, we waited 15 days to perform the relaparotomies. There is no globally accepted scoring system for adhesions. Rather, different scoring systems are based on various parameters such as thickness, type, vascularisation, adhesiveness, density, and fibroblast density of the adhesions. The Mazuji adhesion scale ranges from 0 to 5, the Moreno score from 2 to 7, the Bigatti score from 0 to 11, and the Blauer and Collins[38] score from 0 to 4.[37,38] We chose the scoring system of Blauer and Collins, which is used widely and is useful for assessing macroscopic and microscopic adhesions. Various agents have been used to prevent postoperative adhesions, including corticosteroids, antihistamines, dextran, saline, anti-cytokine agents, a recombinant tissue plasminogen activator, aprotinin, octreotide, heparin, and biorefined membranes modified from carboxymethyl cellulose, oxidised regenerated cellulose, polyethylene glycol, expanded polytetrafluoroethylene, and hyaluronic acid. However, no agent or system completely inhibits adhesions.[39,40] Currently, hyaluronic acid preparations are among the most widely used. In this study, we compared the efficacy of HAAB at preventing postoperative intra-abdominal adhesions with that of COE, which has antimicrobial, anti-oedema, and anti-inflammatory activities. The results showed that intraperitoneal COE and HAAB both significantly reduced the development of adhesions compared with the control group. There was no difference in the inhibitory effect of the two agents. None of the rats died before the end of the experiment, suggesting that both agents were reliable in the quantities used. However, we cannot predict the effects of applying COE in different quantities. In our study, the use of HAAB within the peritoneal cavity gave results similar to those obtained in many previous studies, further demonstrating its efficacy in preventing adhesions. One of the major shortcomings of our study is the lack of a pre-application biochemical analysis of the COE obtained

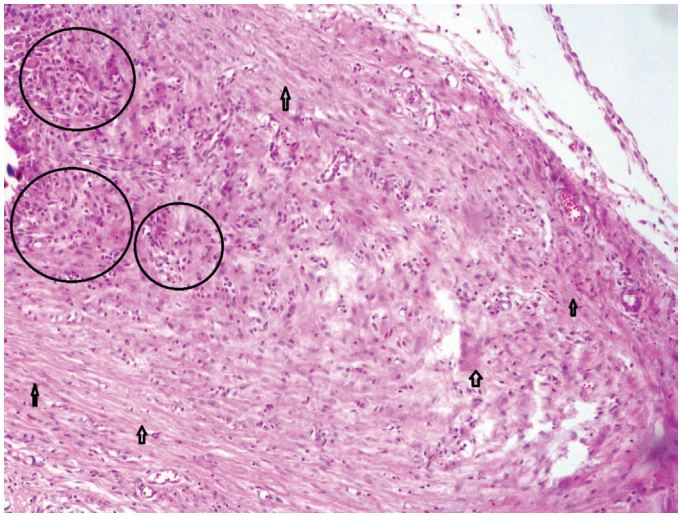


Figure 6. According to score 1, thicker fibrotic bands (arrows) and increase in inflammatory cell accumulation (inside circle) were evaluated as score 2 (10x objective, hematoxylin eosin staining)

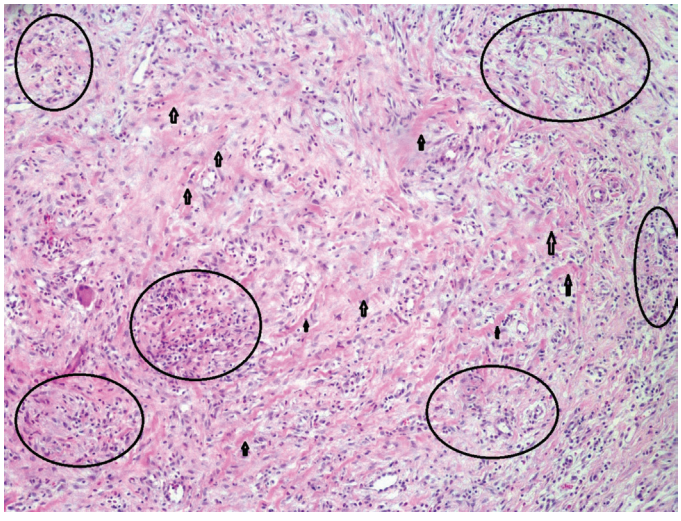


Figure 7. Intensive inflammatory cell accumulation with thick hyalinized fibrotic bands (arrows) and microabscess foci (in-the-circle) were assessed as score 3 (10x objective, hematoxylin eosin staining)

from an herbalist or knowledge of the region in Italy and the altitude where the COE we used originated. Since the content of many herbal agents can vary regionally and with altitude, precise information about these variables would enhance the value of future work. In summary, the COE reduced postoperative intra-abdominal adhesion formation but did not prevent it completely. The similarity of the results using HAAB and COE suggest that new agents should be investigated for this purpose. Further studies should also investigate the effectiveness of different quantities of COE. As predicted, COE reduced the development of adhesions, although it did not prevent them completely. Although our results show that COE is effective in preventing adhesions in rats, further studies are needed before it can be used in humans.

Ethics

Ethics Committee Approval: The study was approved by the Kahramanmaraş Sütçü İmam University Local Ethics Committee (approval number: 2017/1-2 date: 03/01/2017).

Informed Consent: Consent form was filled out by all participants.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.E., A.Y.B., A.İ., A.N.Ş., A.Ö., M.A.I., Concept: A.E., M.S., A.N.Ş., Design: A.E., M.S., A.N.Ş., Data Collection or Processing: A.E., A.İ., A.N.Ş., A.Ö., M.A.I., Analysis or Interpretation: A.E., İ.T.K., O.A.E., A.Y.B., Literature Search: A.E., A.N.Ş., Writing: A.E., M.S., A.N.Ş.

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RESEARCH ARTICLE

Episiotomy-Related Perineal Injury During Spontaneous Vaginal Delivery

Normal Doğum Sırasında Epizyotomiye Bağlı Perine Yaralanması

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ABSTRACT

Aim: Perineal tear a common occurrence during vaginal delivery. In this study, we present patients who underwent surgical intervention due to iatrogenic perineal tears during vaginal delivery.

Method: We retrospectively reviewed patients who had iatrogenic perineal tear during normal vaginal delivery and for whom consultation by the general surgery unit was requested between May 2017 and December 2017.

Results: Mean age of the patients was 27 years. Mean follow-up after surgery was one week. All patients underwent surgery due to grade 3A perineal tear after episiotomy with mediolateral incision during vaginal delivery under spinal anesthesia. Mean birth weight of the delivered infants was 3331 g and mean head circumference was 34.7 cm. Sphincter tone was reduced in digital rectal examination on postoperative day 1, and improved but still lower than normal on day 7. Three patients (42.8%) had gas incontinence, while no patients had fecal incontinence.

Conclusion: Anorectal injuries are managed by surgical interventions which vary depending on time to intervention, severity of injury, severity of fecal contamination, presence of comorbid injuries, the patient's general health status, and the surgeon's preference and experience. Primary repair should be preferred in case of early diagnosis.

Keywords: Episiotomy, rectal injury, treatment

ÖZ

Amaç: Perine yırtıkları vajinal yolla doğum sürecinde sıklıkla karşılaşılan durumlardandır. Bu çalışmada normal vajinal yolla doğum esnasında iyatrojenik olarak gelişen perine yırtıkları nedeniyle cerrahi uygulanan hastaların sunulması amaçlanmıştır.

Yöntem: Mayıs 2017 ile Aralık 2017 tarihleri arasında Şanlıurfa Eğitim ve Araştırma Hastanesi'nde normal vajinal yolla doğum esnasında karşılaşılan ve genel cerrahi kliniğine konsülte edilen iyatrojenik perine yırtığı olan hastalar retrospektif olarak değerlendirildi.

Bulgular: Hastaların yaş ortalama 27 idi. Yapılan cerrahi sonrası ortalama takip süresi 1 hafta idi. Tüm hastalara spinal anestezi altında normal doğum esnasında mediyolateral epizyotomi sonrasında 3A. Derece perine yırtığı nedeniyle cerrahi müdahale yapıldı. Doğan bebeklerin ortalama doğum ağırlığı 3322 gr olup, baş çevresi ölçümü 34,7 cm olarak saptandı. Müdahale edilen hastaların hepsinde 3A derece perine yırtığı mevcuttu. Hastaların post operatif 1. gün parmakla rektal muayenelerinde sfinkter tonusunun azalmış olduğu görüldü. Yedinci gün parmakla rektal muayenede sfinkter tonuslarının ilk günki muayeneye göre daha aktif olduğu ancak normale göre azalmış olduğu izlendi. Birinci hafta sonunda 3 (%42,8) hastada gaz inkontinansı olduğu görüldü, hiçbir hastanın gaita inkontinansı yoktu.

Sonuç: Anorektal yaralanmalarının tedavisi cerrahi olup, tedavinin prosedürü müdahale sürene, yaralanmanın derecesine, fekal kontaminasyon derecesine, eşlik eden yaralanma varlığına, hastanın genel durumuna, cerrahın tercih ve tecrübesine göre değişiklikler göstermektedir. Erken tanı konan yaralanmalarda primer onarım tercih edilmelidir.

Anahtar Kelimeler: Epizyotomi, rektal yaralanma, tedavi

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Introduction

Iatrogenic etiology is frequently encountered in rectal injuries although blunt and penetrating traumas are commonly seen in other body regions. Iatrogenic causes include diagnostic and therapeutic procedures at anal canal and rectum as well as urological, obstetric and gynecological interventions.[1,2] Perineal tears are one of the most commonly seen complications during vaginal delivery. Perineal tears are classified by perineal injury classification (Table 1) which uses depth of tear for grading.[3,4] Maternal pain and discomfort are common in grade 1 and 2 perineal tears. Infection rate is low at follow-up and long-term sequels are unlikely. The pain is more severe while risk for infection or dehiscence is higher in grade 3 and 4 perineal tears. Thus, they may be associated to long-term morbidities such as chronic pain, sexual dysfunction, urinary incontinence, fecal incontinence, pelvic organ prolapse and fistula formation.[5] Our hospital is at a region where birth rate is high with a high volume of obstetric patients. In this study, it was aimed to present patients underwent due to iatrogenic perineal tears during vaginal delivery.

Materials and Methods

We retrospectively reviewed patients who had iatrogenic perineal tear during normal vaginal delivery and were consulted to general surgery clinic during May, 2017 and December, 2017. The study was made according to Helsinki Declaration. In 2017, total number of births was 30.888 in our hospital, including 20.714 spontaneous vaginal delivery and 10.714 cesarean sections. Of the patients underwent spontaneous vaginal delivery, episiotomy was performed in 12.215. We included only patients with grade 3A perineal injury excluding those with grade 1 and 2 injuries. The perineal injury classification was used to identify degree of rectal injury in order to determine treatment modality.[3,4] The inclusion criterion was detection of grade 3 perineal tear during vaginal delivery. In all cases, data regarding age, parity, comorbid condition, type of anesthesia, labor induction, type of episiotomy, fetal characteristics [biparietal diameter (BPD), presentation, head circumference and birth weight], instrumentation during delivery, rectal injury score, time to surgical intervention from injury, surgical intervention employed, continence at early postoperative period and digital rectal examination findings were extracted from patient files and electronic database. All patients/legal surrogates gave written informed consent for surgical interventions during delivery. In all patients, sphincteroplasty with 2/0 Vicryl was performed in perineal tears. In addition to peroperative antibiotic prophylaxis, all patients received broad-spectrum antibiotic with aerobic and anaerobic coverage. Oral intake was withdrawn at postoperative day one. Clear liquids were started on day 1 and foods on day 2. Perineal examination and digital rectal examination were performed to patients during postoperative follow-up and at control visit on outpatient clinic. There are several scoring systems for incontinence in the literature. In our study, scoring was performed based on long-term follow-up in the patients. In our hospital, anal manometry and endoanal sonography was unavailable; thus, the patients were referred to reference centers for these interventions, resulting in failure to score incontinence. The patients were referred to centers with capability of endoscopic rectal sonography and anal manometry for long-term follow-up.

Table 1. Perineal injury classification

Grade 1	Laceration of the vaginal mucosa or perineal skin only
Grade 2	Laceration involving the perineal muscles
Grade 3	Laceration involving the anal sphincter muscles, being further subdivided into 3A, 3B, 3C:
3A	Where <50% of the external anal sphincter is torn
3B	Where >50% of the external anal sphincter is torn
3C	Where the external and internal anal sphincters are torn
Grade 4	Laceration extending through the anal epithelium (resulting with a communication of the vagina epithelium and anal epithelium)

Statistical Analysis

Statistical Package for the Social Sciences (SPSS 21 Inc., Chicago, IL, USA) computer software was used for bio-statistical analyses. When the data were presented as mean values their standard deviation values were given, when they were presented as median values their minimum (min)-maximum (max) values were also stated.

Results

The study included seven patients, who underwent surgical intervention due to iatrogenic perineal tear during vaginal delivery between May, 2017 and December, 2017. Mean age was 27 years (min-max: 20-45 years). Mean follow-up after surgery was one week. The parity was 2.2 (min-max: 1-5) and 2 patients were nullipara. All patients underwent surgery due to grade 3 perineal tears after episiotomy with mediolateral incision during vaginal delivery under spinal anesthesia. Induction was used in three patients (42.8%). No instrumentation (forceps and/or vacuum extraction) was needed in any patient (Table 2). When fetal characteristics were assessed, it was seen that all fetuses had cephalic presentation. Mean BPD was 38.2 mm (min-max: 37-39 mm) while mean birth weight was 3322 g (min-max: 3000-4060

g) and mean head circumference was 34.7 cm (min-max: 34-35 cm) (Table 3). Mean time to surgical intervention was 26.4 min (min-max: 20-30 min). There was grade 3A grade 3A perineal tear in all patients underwent surgery. It was found that sphincter tone was decreased in digital rectal examination on day 1 while no finding suggestive of infection was detected in perineal examination. Daily examination was performed during follow-up. Sphincter tone was more active but decreased than normal on digital rectal examination on day 7 after surgery. It was found that there was gas incontinence in 3 patients (42.8%) while no patient had fecal incontinence. No wound infection was detected during one-week follow-up.

Discussion

The majority of rectal injuries occur as a result of blunt or penetrating traumas. Perineal tears are one of the common complications in vaginal delivery. Both clinician and patients are closely pertained to grade of perineal tears, perineal tears requiring surgical intervention and consequences of surgical intervention. Rectal injuries during delivery should have to be recognized as soon as it occurs; otherwise, treatment delay and complications can be seen. The diagnosis can be made by inspection in anal canal and perineal injuries as well as combined rectal injuries at one-third lower portion. Severity of injury can be identified by examination following insertion of a urinary catheter.[6] Rectal examination should be routinely performed after delivery; otherwise, perineal lesion can be overlooked and present as late complications. Etiological factors resulting in perineal injuries during delivery can be related to maternal or fetal characteristics. Maternal factors include pelvic length, rapid presentation and tissue characteristics. In our study, no comorbid systemic disease was present in our patients. Fetal factors include head circumference and presentation anomalies. Instrumentation and forced mechanical examination during delivery can increase risk for injury. No instrumentation (forceps and/or vacuum extraction) was used in our patients. When we assessed our cases, it was found that mean head circumference was 34.7 cm (25-50 percentile) whereas mean birth weight was 3322 g (25-90 percentile). Episiotomy with midline incision increases risk for severe perineal tear due to low resistance pathway towards anal sphincter. Using episiotomy when indicated is associated with decreased

Table 2. The demographic and clinical characteristics of the patients

Patient no	Age	Gender	Additional comorbidity	Parity	Anesthesia	Episiotomy	Induction	Instrumentation
1	33	Female	None	1	Spinal	Mediolateral	None	None
2	45	Female	None	5	Spinal	Mediolateral	None	None
3	22	Female	None	2	Spinal	Mediolateral	Done	None
4	21	Female	None	2	Spinal	Mediolateral	Done	None
5	26	Female	None	3	Spinal	Mediolateral	None	None
6	20	Female	None	1	Spinal	Mediolateral	Done	None
7	22	Female	None	2	Spinal	Mediolateral	None	None

Table 3. The characteristics of the fetuses

Patient no	Fetal prensentation	BPD (mm)	Head circumference (cm)	Birth weight (gr)
1	Vertex	38	35	3000
2	Vertex	38	35	4060
3	Vertex	37	34	3200
4	Vertex	39	35	3500
5	Vertex	38	35	3000
6	Vertex	39	34	3500
7	Vertex	39	35	3200

BPD: Biparietal diameter

Table 4. The intraoperative and postoperative results of the patients

Patient no	RIS	Intervention period (mn)	Po 1st day anal tonus	Po 7th day anal tonus	Po 7th day tonus and continans
1	3	15	Minimal	Minimal	Normal
2	2	30	Minimal	Minimal	Normal
3	2	30	Minimal	Minimal	Incontinence
4	3	25	Minimal	Minimal	Normal
5	3	25	Minimal	Minimal	Normal
6	2	30	Minimal	Minimal	Incontinence
7	3	20	Minimal	Minimal	Incontinence

Po: Postoperative, RIS: Rectal injury score

severe perineal trauma when compared to routine use of episiotomy.[7] It was seen that mediolateral episiotomy was used in all patients in our study. In previous studies, it has been reported that prognosis is associated to width of trauma, presence of additional trauma, time to intervention, general health status, age and fecal contamination in cases with rectal injury.[8] In a study on 4 patients with isolated rectal injury during delivery, Morrel et al.[9] suggested that sufficient visualization at early period is key factor and that selection of anesthesia could vary depending on clinicians' preference. The incision of anal sphincter isn't recommended since it may cause anal dysfunction even it was repaired immediately. Authors recommended closing defect with single-layer continuous suture. In our study, mean time to intervention was 26.4 minutes and all patients underwent surgery under spinal anesthesia. In addition, Morrel et al.[9] recommended broad-spectrum antibiotics without temporary stoma. In rectal injuries, the goal of surgical treatment is to reduce morbidity and mortality associated to pelvic contamination or sepsis. Rectal injuries are assessed as intraperitoneal and extra-peritoneal injuries.[6,10] Primary repair and diverting ostomies are often preferred in the management of intraperitoneal injuries. Primary repair is generally recommended in extra-peritoneal rectal injuries. Pre-sacral drainage is suggested in the management of extra-peritoneal injuries in particular.[10,11] Contaminated area at pre-sacral area is dissected, which, in turn, removed from posterolateral part of anus via Penrose drain.[12] Tears in anorectal sphincter should be identified during first intervention, which should be repaired primarily. Secondary interventions to scar tissue are more complicated with higher failure rates.[13] We also gave broad-spectrum antibiotics with aerobic and anaerobic coverage after sphincteroplasty with Vicryl sutures. No local or systemic infection was observed in our patients. This study has some limitations including retrospective design, limited sample size and lack of control group. In conclusion, anorectal injuries are managed by surgery which varies depending on time to intervention, severity of injury, severity of fecal contamination, presence of comorbid injuries, general health status, surgeon's preference and experience. Primary repair should be preferred in case of early diagnosis. It is likely to face with anorectal injuries following vaginal delivery for surgeons. This is important in regions with high birth rate. We think that patients with perineal and rectal injuries, especially those with sphincter injury, can be managed successfully by early diagnosis and timely intervention.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.P., Concept: M.P., D.A.Ç., Design: M.P, T.G., Data Collection or Processing: M.P., Y.Y., Analysis or Interpretation: M.P., D.A.Ç., S.Y., Literature Search: T.G, Y.Y., Writing: M.P.

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CASE REPORT

Left-Sided Colonic Obstruction Due to Brid Ileus and Coexisting Right Colon Cancer without Palpable Mass

Sol Kolon Kaynaklı Brid İleus ile Seyreden Ele Gelmeyen Sağ Kolon Kanseri

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ABSTRACT

This is a case of a 70-year-old man presenting with caecum perforation and obstruction in the splenic flexure. During surgical exploration, calcified lymph nodes were found in the mesocolon. Right hemicolectomy was performed according to oncological surgical principles. Pathology revealed a 1 cm tumor of moderately differentiated adenocarcinoma in the caecum and 3 metastatic lymph nodes. Two weeks after discharge, pulmonary thromboembolism was diagnosed and was successfully treated. Chemotherapy had to be delayed during the thromboembolic event. The patient is currently alive but has three millimetric metastatic nodules in the liver and left lung. While right colon perforations almost always arise from a distally located obstruction, there may be co-existing pathologies. Palpable calcified lymph nodes in the mesocolon are a good indication for cancer. Therefore, an extended resection according to oncologic surgical principles is more beneficial if malignancy is suspected. The patient may not always be suitable for a completion surgery.

Keywords: Colon perforation, emergency colon tumour resection, adhesion ileus, colonic obstruction

ÖZ

Yetmiş yaşında erkek hasta splenik fleksurada obstrüksiyona bağlı gelişen çekum perforasyonu ile başvuruyor. Cerrahi eksplorasyon sırasında mezokolonda kalsifiye lenf nodları saptandı. Onkolojik cerrahi prensiplerine uygun olarak sağ hemikolektomi uygulandı. Patoloji sonucu çekumda 1 cm tümör ve 3 adet metastatik lenf nodu saptandı. Hasta sorunsuz taburcu olduktan sonra 2 hafta sonra pulmoner emboli gelişti ve tedavi edildi. Ancak bu sebeple kemoterapinin ertelenmesi gerekti. Hasta şu anda hayatta olmakla beraber karaciğerinde ve akciğerinde metastatik nodülleri mevcuttu. Sağ kolon perforasyonlarının en sık sebebi distal obstrüksiyon olmakla birlikte eşlik eden başka patolojiler de bulunabilir. Mezokolonda palpe edilen kalsifiye lenf nodları iyi bir kanser göstergesi olabilir. Eğer kanserden şüpheleniliyorsa onkolojik cerrahi prensiplerine uygun olarak daha geniş bir eksizyon yapmak daha faydalı olacaktır. Hasta her zaman ikinci bir ameliyat için uygun durumda olmayabilir.

Anahtar Kelimeler: Kolon perforasyonu, acil kolon tümörü rezeksiyonu, brid ileus, kolon tıkanıklığı

Introduction

Emergency surgery for colon cancer, especially those due to perforations, is a challenging situation with poor prognosis. This is mostly because these cases often present as advanced disease, rather than problems arising from emergency surgery.[1,2] Approximately 80% of emergency colon surgeries are performed due to obstruction and 20% are due to perforations.[3,4] Mortality is specifically high in the early postoperative period. Even early stage disease has been associated with poor disease-free survival and high recurrence rates.[5] However, all these reports are based on the spontaneous perforation of the tumor and perforation secondary to obstruction of tumor. We are presenting a case of right colon perforation due to brid ileus related obstruction on the splenic flexure. Right hemicolectomy was performed according to oncologic surgical principles due to suspicion arising from calcified lymph nodes in the right mesocolon. This decision was proved to be correct after 1 cm tumor was found during pathologic evaluation.

Case Report

Seventy-year-old man presented to the emergency room due to abdominal pain and vomiting which started 3 hours

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ago. Pain was intermittent and spreading to all quadrants of abdomen. On physical examination, the patient had a large incisional hernia from xyphoid to midpoint between umbilicus and symphysis pubis with 10 cm width. Hernia was result of a peptic ulcer surgery which was performed approximately 30 years ago. The patient also had distension, which is largely due to hernia, generalized tenderness. The patient's bowel sounds were hyperactive suggesting intestinal obstruction. Vital signs were stable. Laboratory work-up including chest X-ray was normal. Abdominal X-ray revealed dilated colon and suggested colonic obstruction. Computerized tomography was also performed and revealed an obstruction located at the splenic flexure of colon. Surgery was offered to the patient but was refused. Nasogastric tube and Foley catheter were inserted, and the patient was closely monitored to see if the obstruction would resolve on its own. Two days later patient's body temperature rised to 38.3 °C and the intensity of the pain increased. Chest and abdominal X-ray were performed, and subdiaphragmatic free air was observed, suggesting perforation (Figure 1). Emergency surgery was carried out. Abdominal cavity was opened through incisional hernia without injuring any organs. Exploration revealed large, dilated right and transvers colon. There was a perforation on the right colon. An omental band was pressing on the splenic flexure of colon and was the cause of the obstruction. The omental band was incised, and the obstruction was resolved. Right hemicolectomy was decided to be performed. However, inspection of right mesocolon revealed calcified lymph nodes. This was suspicious of cancer. Therefore, right hemicolectomy, double barrel ileostomy and colostomy were performed following oncological surgery principles. Abdomen was irrigated and only skin was sutured, as it was impossible to bring fascial planes together due to a huge incisional hernia. Initial postoperative period was uneventful except for serous discharge from the wound due to lack of fascial closure. Discharge ended within the week and patient was discharged successfully. Pathology revealed a 1 cm tumor of moderately differentiated adenocarcinoma on caecum and 3 out of the 10 lymph nodes were metastatic. Tumor had infiltration to the subserosal fatty tissue (pT3N1Mx), distal and proximal margins were tumor free. Two weeks after surgery, while patient was waiting for recovery prior to chemotherapy, he had to be hospitalized with the diagnose of a pulmonary thromboembolism. Angiography revealed multiple clots at segmentary arteries of lower and mid zones of both lungs and distal of right pulmonary artery. Chemotherapy had to be postponed due to patients' poor performance. Three months later patient was reevaluated for chemotherapy. Computerized tomography revealed an 8 mm mass on left upper lobe apicoposterior segment and two 5 mm masses on segment 2 of liver. Folinic acid, fluorouracil and oxaliplatin chemotherapy regimen is now being planned. Patient has given written consent for publication of this case report.

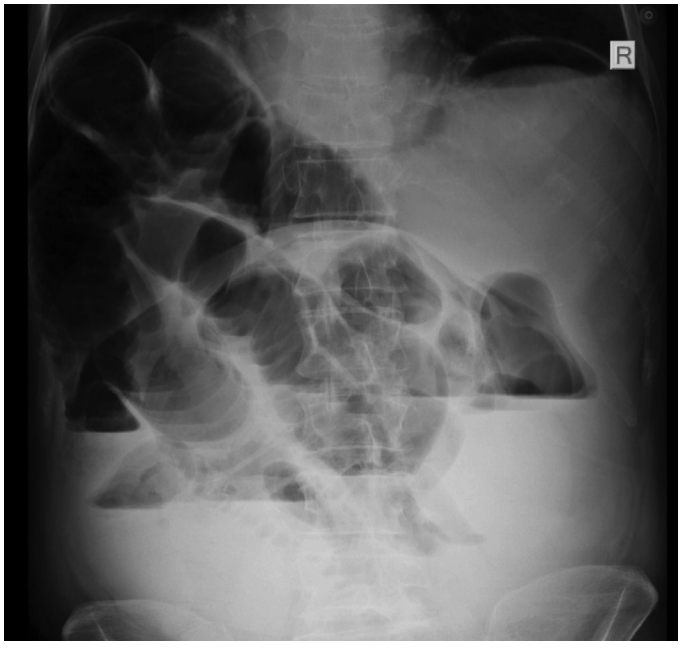

Figure 1. Abdominal X-ray showing colonic obstruction and free air under diaphragma suggesting perforation

Discussion

Laplace's law indicates that the tension on the wall of a sphere is the product of the pressure times the radius of the chamber and the tension is inversely related to the thickness of the wall. What this implicates in our practice is that unresolved colonic obstruction in left colon would cause perforation in the right colon, because right colon wall is thinner.[6,7] Thus, distal obstruction is blamed whenever a right colon perforation occurs. However other pathologies must also be evaluated even though the cause may seem obvious. This was the case here. Right colon perforation in this case was the result of a brid in the splenic flexure of the colon. Calcified lymph nodes were alarming enough to perform a wider resection. Dystrophic calcification in lymph nodes are associated with malignant lymphoma or metastatic adenocarcinomas, often after chemotherapy or radiotheraphy. *De novo* calcification in lymph node metastases from carcinoma, such as in this case, are very rare and only few such cases have been reported so far.[8,9] Pathology revealed three of these lymph nodes to be metastatic. Right hemicolectomy without inclusion of these lymph nodes would have been detrimental to the patient's welfare. Frozen section evaluation would have been helpful. Since operation was performed during night time, it was not available. This patient was also plagued with postoperative pulmonary thromboembolism on day 15 which indirectly

effected the prognosis of the cancer. He was given therapeutic doses of low molecular weight heparin and survived the complication. Thromboprophylaxis is usually recommended for all abdominal oncologic resections. Postdischarge thromboembolism is defined as newly onset of thromboembolism at least 30 days after procedure and often associated with colon surgery, especially surgery due to ulcerative colitis.[10,11] Arterial thromboembolism consequently caused a delay in systemic therapy, which ultimately lead to pulmonary metastasis. In conclusion, while the right colon perforations almost always arising from distal obstruction; other pathologies need to be considered. Calcified lymph nodes in the mesocolon can be considered as a sign of malignancy. If such suspicion arises, application of oncologic surgical principles is highly recommended.

Ethics

Informed Consent: Informed consent was recieved from the patient prior to writing of this manuscript.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: K.B., M.A.Ü., B.Ç., Concept: K.B., M.A.Ü., B.Ç., Design: K.B., M.A.Ü., B.Ç., Data Collection or Processing: K.B., M.A.Ü., Analysis or Interpretation: K.B., M.A.Ü., B.Ç., Literature Search: K.B., Writing: K.B.

Conflict of Interest: No conflict of interest was declared by the authors.

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CASE REPORT

Adult Intussusception Caused by Cecal Lymphangioma: A Case Report

Çekal Lenfanjioma Bağlı Erişkin İnvajinasyon: Olgu Sunumu

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ABSTRACT

A 23-year-old female was admitted to our hospital with abdominal pain and diarrhea. Preoperative abdominal ultrasonography and computed tomography revealed ileocecal intussusception. Emergency laparotomy was performed due to escalation of the patient's abdominal pain and development of acute abdomen. During the laparotomy, we found an ileocecal intussusception and solid mass in the cecum, and an ileocecal resection was performed. Histopathological examination showed cystic lymphangioma in the cecum. This case emphasizes that lymphangioma, a rare benign tumor, should be considered in the differential diagnosis of intussusception.
Keywords: Cecum, lymphangioma, intussusception

ÖZ

Yirmi üç yaşında kadın hasta karın ağrısı ve ishal şikayeti ile hastanemize başvurdu. Preoperatif abdomen ultrasonografi ve bilgisayarlı tomografide ileoçekal invajinasyon saptandı. Hastanın karın ağrısı şiddetlenmesi ve akut batın gelişmesi üzerine acil laparotomi yapıldı. Laparotomide ileoçekal invajinasyon ve çekumda sert kitle saptanması üzerine ileoçekal rezeksiyon yapıldı. Histopatolojik incelemede çekumda kistik lenfanjiom saptandı. Bu olgu, nadir görülen ve benign bir tümör olan lenfanjiomun invajinasyon olgularında ayırıcı tanıda göz önünde bulundurulması gerektiğini vurgulamaktadır.
Anahtar Kelimeler: Çekum, lenfanjiom, invajinasyon

Introduction

Lymphangioma is a benign congenital tumor in the lymphatic system arising from a rare developmental anomaly. It is usually seen in childhood, with 80-90% of cases detected in the first five years of life, and rarely occurs in adulthood. They are most commonly located in the head, neck, and axilla. In rare cases they may also be found in the abdomen.[1,2] Gastrointestinal involvement occurs in less than 1% of cases and can cause bowel invagination. Intussusception is rare in adults, accounting for approximately 1-3% of all bowel obstructions.[3] In this report, we present a rare case of ileocecal intussusception due to intestinal lymphangioma in an adult patient.

Case Report

A 23-year-old woman presented to our emergency department with complaints of abdominal pain and diarrhea starting one week earlier. Her medical and family histories were unremarkable. On physical examination, she exhibited right lower quadrant abdominal tenderness. Her blood pressure was 100/60 mmHg, pulse was 96/min, and body temperature was 36.7 °C. Laboratory tests were normal except for elevated C-reactive protein level (2.9 mg/dL). Air-fluid level was observed in the small intestine on standing anteroposterior X-ray. Abdominal ultrasound and computed tomography showed that the terminal ileum was invaginated into the cecum (Figure 1). Emergency laparotomy was performed due to escalation

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of the patient's abdominal pain and development of acute abdomen. The ileocecal intussusception and a solid mass in the cecum were detected during the laparotomy. After manual reduction, we observed that the invaginated small intestine loop had diminished perfusion, and ileocecal resection was performed. On macroscopic examination of the resected material, a 4x4x2 cm polypoidal lesion was observed at the cecal base, ulcerating the mucosa but limited to the submucosa (Figure 2). Microscopic examination revealed an endothelium-lined cyst divided by fibrous septa under a normal mucosal membrane (Figure 3). Histopathological diagnosis was reported as cystic lymphangioma.

The patient was discharged on postoperative day 6. No recurrence was detected in colonoscopy or computed tomography in follow-up at postoperative 3 and 9 months.

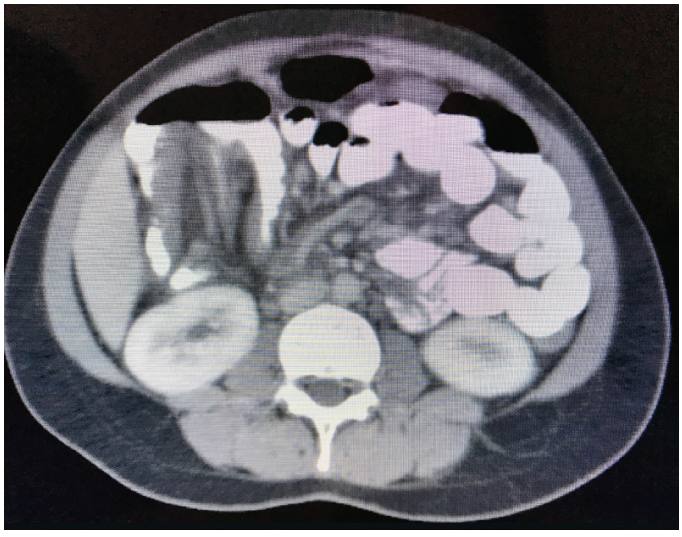

Figure 1. Abdominal computed tomography axial image shows ileocecal intussusception

Figure 2. Macroscopic examination of the resected material

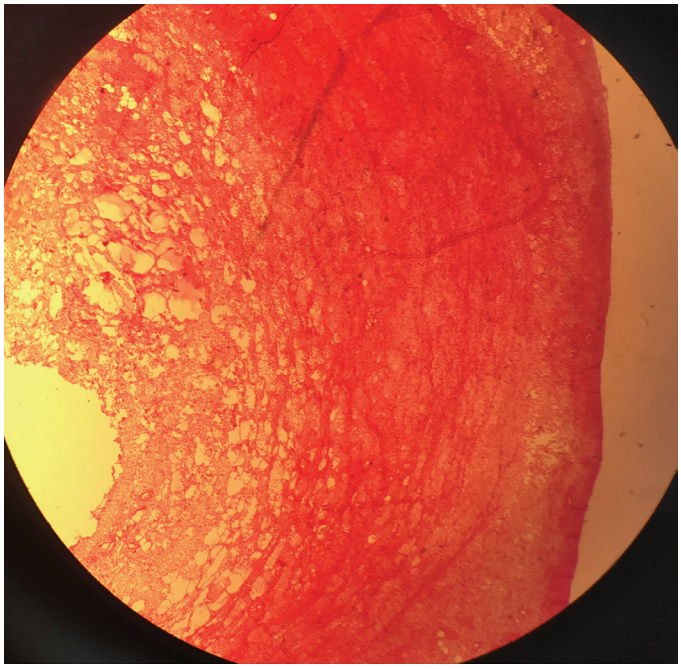

Figure 3. Microscopic examination of the resected material

Discussion

Lymphangiomas are benign congenital tumors of the lymphatic system and are divided into three classes: capillary, cystic, and cavernous.[4] Cystic lymphangiomas are the most common. Cystic lymphangiomas have large endothelium-lined cystic spaces, often with thick walls, and collagen and smooth muscle are present at various proportions. Patients with lymphangioma are usually asymptomatic. Symptomatic patients may experience abdominal pain, vomiting, diarrhea, constipation, obstruction, invagination, lower gastrointestinal hemorrhage, and protein-losing enteropathy.[5] The diagnosis of intraabdominal lymphangioma can be facilitated by barium enema, colonoscopy, endoscopic ultrasonography, abdominal computed tomography and magnetic resonance imaging. In cases where a diagnosis cannot be established with imaging methods, diagnostic laparoscopy should be considered despite its invasive nature. Especially in female patients, diagnostic laparoscopy can be used both for diagnosis and treatment. We used abdominal ultrasonography and computed tomography for diagnostic purposes in the present case. Regression of lymphangiomas is unlikely. The recommended treatment is endoscopic polypectomy and mucosal resection for lesions smaller than 2 cm intraluminal, and surgical resection for lesions larger than 2 cm.[6,7,8,9] Due to the development of intussusception and acute abdomen in our case, we performed laparotomy and surgical resection. Postoperative examination revealed the cecal lymphangioma was 4 cm in size, making our treatment

approach consistent with the literature. In the literature, the first colonic lymphangioma was described by Chisholm and Hillkowits[10]. Only six cases of intussusception due to colonic lymphangioma have been reported in adults; five of them were located in the ascending colon and one was in the transverse colon.[11,12,13,14,15,16] As in our case, all six of those patients were female and had lesions over 4 cm in size, and all were treated with laparotomy and surgical resection. Lymphangioma, which is rare in adulthood, is generally detected by colonoscopy and endoscopic ultrasonography and treated when small. However, it must be kept in mind that in the rare cases where lymphangiomas reach large sizes, they may cause obstruction and intussusception and require treatment by surgical resection.

Ethics

Informed Consent: Consent form was filled out by all participants.

Peer-review: Internally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the author.

Financial Disclosure: The author declared that this study received no financial support.

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CASE REPORT

A Rare Case of Anorectal Abscess due to Foreign Ingested Foreing Body

Yutulmuş Yabancı Cisime Bağlı Gelişen Anorektal Apse Olgusu

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ABSTRACT

Anorectal abscesses caused by foreign bodies are rare, but are often caused by the ingestion of fish bones or bone fragments. Rectal or proctoscopic examination performed under general anesthesia can be used to diagnose a perianal abscess but may not reveal the foreign body, which can lead to the development of chronic abscesses. Draining the abscess and removing the causative foreign body allows for rapid healing. Therefore, foreign bodies should be considered in the etiology of chronic abscesses that do not resolve with drainage. In this study, an anorectal abscess due to a swallowed toothpick is presented.
Keywords: Ingested foreign body, anorectal abscess, perianal abscess

ÖZ

Yabancı cisime bağlı olarak oluşan anorektal apseler klinikte pek karşılaşılmayan durumlar arasında bulunmaktadır. Anal apselerin oluşumuna neden olan yabancı cisimler arasında balık kılçığı ve kemik parçasına sık rastlanmaktadır. Genel anestezi altında yapılacak rektal muayene ve/veya proktoskopik tetkik anal apse tanısını koydursa da yabancı cisimlerin varlığını göstermeyebilir dolasıyla apse zamanla kronikleşebilir. Bununla birlikte yabancı cisime bağlı apselerde drenajın yapılması ve apseye neden olan etkeni çıkarılması hastanın kliniğinde hızla düzelme sağlamaktadır. Drenaja rağmen düzelmeyen kronik apselerde yabancı cisim etiyolojide düşünülmelidir. Bu çalışmada yutulmuş kürdana bağlı olarak gelişmiş anorektal apse olgusu sunulmuştur.
Anahtar Kelimeler: Yutulmuş yabancı cisim, anorektal apse, perianal apse

Introduction

Anorectal abscess is an infectious, suppurative disease that usually develops due to the infection of anal glands in the intersfincteral plane. The most common cause in the etiology of anorectal abscesses and fistulas is obstruction of anal crypts due to increased intersphincteric tone.[1,2] Less common causes include Crohn's disease, trauma, malignancies, and immunodeficiencies.[3] Perianal apse related to foreign bodies, which are among etiologic causes, is rarely encountered.[4] An anorectal abscess placement was given in 42.7 perianal, 22.7% ischiorectal, 21.4% intersphincteric, 7.3% supralevator in a study involving one thousand patients from Ortiz et al.[5] In this study; it is intended to present a case of abscess in the ischialectal region which is formed by the swallowed toothpick treated in our clinic.

Case Report

A 54-year-old female patient admitted to a medical center with complaints of pain and fever in the right gluteal area that have began about a week ago. In the medical center, the patient's perianal abscess was drained. Due to the presence of gaseous, purulent drainage from the perianal abscess pouch and color change in the skin, the patient was referred to our clinic with the preponderance of "fournier gangrene". In the physical examination of the patient; there was a incision made for drainage on the right gluteal region. It was observed that there was a blue-purplish color change on the skin around the incision and the necrosis of subcutaneous fat tissue. There was a second abscess pouch in the area of approximately 8*10 cm in the area of about 4-5 cm above of the incision. Vital findings were stable,

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fever was 37.5 °C. Laboratory values were, white blood cell: 11.9 10^3/µL, C-reactive protein >210 mg/dL. There was no tenderness in the abdominal examination did not reveal additional findings on digital rectal examination except mild tenderness. The affected area was irrigated with abundant saline-diluted hydrogene peroxide solution and dressed. The patient was hospitalized for intravenous (i.v.) antibiotic therapy, debridement and dressing. Considering that the drainage of the abscess was not enough, debridement was planned under anesthesia. Sterile dyeing and covering were performed in the jack knife position under spinal anesthesia. In the examination with an anoscop, no internal orifice was seen in the rectum after saline-diluted hydrogene peroxide solution was given to the abscess cavity. The first drainage incision was extended to the superiolateral direction where necrosis progressed. For microbiological culture, multiple samples are collected from the abscess cavity. The cavity was irrigated with abundant saline and the necrosis tissues were debrided. In the necrosis area which advances towards the ischorectal area a hard object was palpated, with appropriate exploration a yellowish foreign body was seen (Figure 1). Foreign body removed from ischiorectal area with the help of forceps. It was seen that the foreign body was a broken toothpick (Figure 2). After adequate debridement and drainage, one penrose drain was placed in the ischiorectal area. It was learned that the patient had taken a toothpick soaked meal about 10-15 days ago in her detailed anamnesis after the operation and did not use her prosthetic teeth that day. 2*1 sterile dressings per day were performed in the clinic. *Escherichia coli*, *Klebsiella pneumonia* and *Citrobacter koseri* grown in culture results were susceptible to imipenem. The patient was consulted with the infectious diseases clinic and imipenem 2*400 mg i.v. was started in the direction of the recommendation. On the 14th day of antibiotherapy, the infection was clinically regressed, and appropriate oral antibiotics were prescribed, and the patient was called to policlinic control one week later. On control examination, it was seen that subcutaneous area was began to close up with granulation tissue. At the 3rd week (Figure 3) and 6th week (Figure 4) controls, the patient's complete healing was observed.

Written informed consent was obtained from patient in this case.

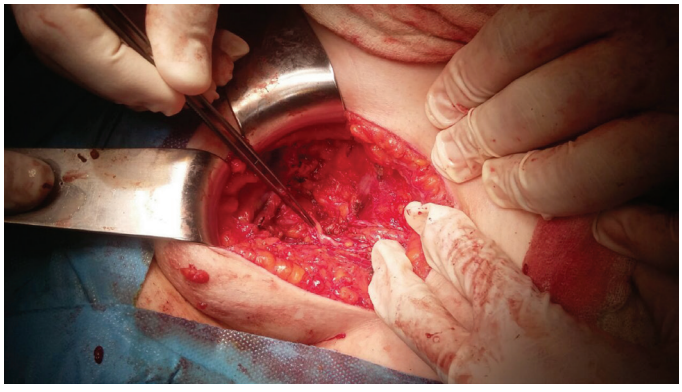

Figure 1. Foreign body spotted during the exploration of the abscess

Figure 2. The toothpick removed from the abscess

Figure 3. The patient's healing observed 3 weeks after the procedure

Figure 4. The patient's healind observed 6 weeks after the procedure

Discussion

A perianal abscess due to foreign bodies is not a common occurrence. Patient's anamnesis, which was taken at the beginning, has an important place in revealing the cause. Patients with foreign body related anorectal abscesses; usually have sensory loss in the mouth, dental problems and anal stenosis due to anal surgery or unconsciousness periods like alcoholics.[6,7,8] Therefore, patients may not be able to give a foreign body swallowing story in their anamnesis.[4] There was no foreign body swallowing story in our patient anamnesis too. The pain at the beginning of the process is due to the spasm in the external and internal anal sphincter caused by foreign bodies stuck in the anal canal but then the abscess formation around the foreign body, which is pushed out of the wall of the anal canal.[8] In our case the patient had an ongoing pain for a week. Presence of perianal abscess can be diagnosed with careful rectal examination and proctoscopy[9] but foreign body may not be detected. Additional imaging modalities (e.g. endoscopic rectal ultrasound, computed tomography and magnetic resonance imaging) may be needed for the diagnosis of abscess in suspected cases.[10] No additional imaging was needed because the foreign body was not mentioned or suspected in the patient's history. A proper exploration of the abscess during the operation is very important for diagnosis.[4] In our case, no foreign body was detected because of the lack of proper exploration during the first intervention at the external center. As a result, the healing process has not been achieved sufficiently. The removal of a foreign body in such a case, exploration with an adequate incision will provide rapid treatment of the present situation.[4,11] As a result, swallowed foreign bodies may cause perianal abscess formation. In cases of perianal abscesses with predisposing factors and prolonged healing, the presence of foreign bodies is one of the conditions that should be kept in mind.

Ethics

Informed Consent: Written informed consent was obtained from patient in this case.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: H.E, Concept: H.E., M.B., Design: H.E., H.D., Data Collection or Processing: T.Ç., M.S.S., Analysis or Interpretation: H.E., R.K., Literature Search: T.Ç., Writing: H.E., M.B.

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CASE REPORT

Multiple Primary Malignant Neoplasms in the Presence of Concomitant Chilaiditi Syndrome

Chilaiditi Sendromu ile Eş Zamanlı Çoklu Birincil Malign Neoplazmlar

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ABSTRACT

Chilaiditi syndrome, jejunal diverticulosis, and multiple primary malignant neoplasms (MPMN) are all relatively rare entities. In this study, clear cell renal cell carcinoma together with adenocarcinoma arising in the rectum were confirmed in an 82-year-old patient. Jejunal diverticulosis and Meckel diverticulitis were detected intraoperatively. Following radiotherapy with 25 Gy delivered in 5 fractions over 1 week, the patient underwent partial nephrectomy as well as abdominoperineal rectal resection and cholecystectomy due to cholelithiasis. The immediate postoperative period was uneventful, but the patient died of myocardial infarction on postoperative day 4. Malignancy may accompany Chilaiditi syndrome. In the presence of MPMN, appropriate treatment must be chosen individually on a case-to-case basis. Although there is no treatment for asymptomatic jejunal diverticulosis and Meckel diverticulitis, it should always be kept in mind that they may cause potentially serious complications.

Keywords: Multiple, primary neoplasms, Chilaiditi syndrome

ÖZ

Chilaiditi sendromu, jejunal divertikülozis ve multipl birincil malign neoplazmlar (MBMN) sıklıkla nadir antitelerdir. Bu, 82 yaşında olan bir hastanın berrak hücreli renal karsinomunun rektum kökenli adenokarsinom ile birlikteliğinin teyit edildiği bir çalışmadır. Ameliyat esnasında jejunal divertikülozis ve Meckel divertikülü tespit edilmiştir. Bir haftalık sürede beş seansta verilen 25 Gy radyoterapiyi müteakiben, parsiyel nefrektomi, abdomino-perineal rezeksiyon ve kolelithiazis nedeni ile kolesistektomi uygulanmıştır. Ameliyat sonrası 4. gün herşey normal seyrinde giderken hasta miyokardial enfarktüs nedeniyle kaybedilmiştir. Chilaiditi sendromuna maligniteler eşlik edebilir. MBMN varlığında her hastaya göre uygun tedavi yöntemleri seçilmelidir. Asemptomatik jejunal divertikülozis ve Meckel divertikülü için herhangi bir önlem alma gerekliliği yok iken bunların ciddi komplikasyonlara yol açabileceği akılda tutulmalıdır.

Anahtar Kelimeler: Çoklu, biricil neoplazm, Chilaiditi sendromu

Introduction

Chilaiditi syndrome is a rare disease in which the bowel (usually transverse colon or hepatic flexure) or the small intestine is found interposed in between the diaphragm and the liver, and was first described in 1910 by the Greek radiologist Demetrius Chilaiditi.[1] The frequency of this anomaly in proportion to the general population is 0.025-0.28%. The incidence of increasing multiple malignant tumors is a critical challenge for the clinician and great attention should be paid to avoid misdiagnosis. Besides, early diagnosis is of crucial importance for scheduling a radical treatment method. Treatment approach should attentively be selected for each patient based on structural discrepancies.[2] Though typically asymptomatic jejunal diverticulosis is a rare disease, it may give rise to chronic symptoms and acute complications.[3]

Case Report

Eighty two years-old male patient suffering from rectal bleeding for the last 6 weeks. In the history of the patient, he was diagnosed with hypertension and cardiac arrhythmia. In colonoscopic examination, a mass lesion starting on the 2nd cm of the rectum where the lumen was found to narrow down significantly was detected. Extensive diverticulosis existed

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along the entire colon. Colonoscopic biopsy confirmed the existence of adenocarcinoma. X-ray of the chest showed free air under the right diaphragm pertaining to intestinal loops (Figure 1a). On thoraco-abdominal computed tomography (CT) evaluation, it was observed that the lumen became narrowed due to a mass lesion affecting approximately 12 cm of the rectum (Figure 1b). In addition, a mass lesion of 33x28 mm giving the impression of renal cell carcinoma (RCC) in the inferior pole of the right kidney was seen (Figure 1c). Again on CT, structures pertaining to the intestine lain between the right diaphragm and liver were found. Multiple calculi were observed in the gallbladder. Blood values were detected as follows: Hemoglobin 12.4 g/dL, hematocrit 38.8%. Other blood values were within the reference ranges. Twenty five Gy in five fractions in one week radiotherapy was planned for the patient who was envisaged unable to receive chemotherapy as a result of the multidisciplinary oncology consultation.[4] The patient was operated on the 3rd day after the radiotherapy was finalized. Abdominoperineal rectal resection along with cholecystectomy was applied. Additively, partial nephrectomy for right-sided RCC was performed by the urology team. Uncomplicated extensive jejunal diverticulosis and meckel diverticulitis were seen (Figure 2a, 2b). The mesentery of the colon and the small intestine appeared to be mobile and the intestinal loops were located between the liver and the right diaphragm (Figure 2c). On pathological examination, two separate primary malignant tumors were reported. Adenocarcinoma in the rectum and clear cell RCC in the kidney were confirmed. On the post-operative 4th day, the patient died because of myocardial infarction.

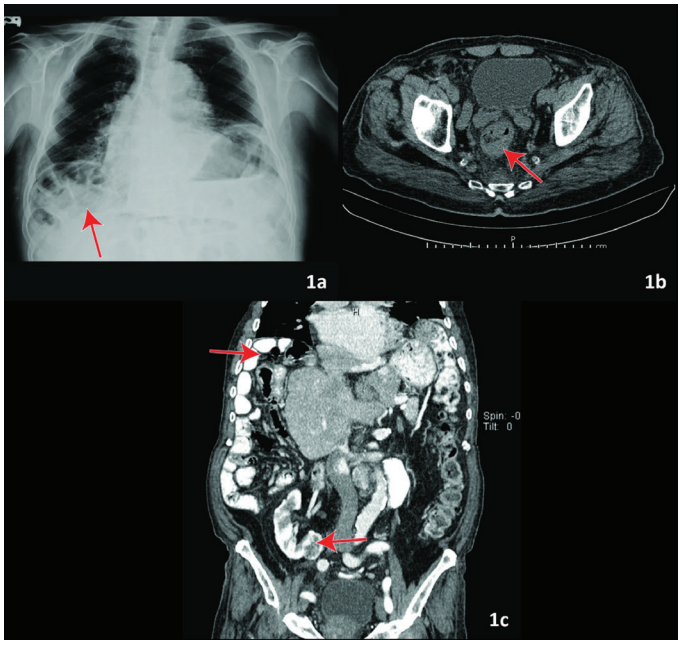

Figure 1. a) On anterior-posterior chest X-ray, the elevation of the right hemi-diaphragm and air under the diaphragm (indicated by the arrow), b) pelvic cut of the computed tomography (CT) scan showing thickened rectal wall (indicated by the arrow), c) CT scan coronal view showing the right-sided renal cell carcinoma and Intestinal loop transposed between the diaphragm and the liver (indicated by the arrow)

Discussion

Typically asymptomatic Chilaiditi sign is named Chilaiditi syndrome in the presence of concomitant clinical symptoms. The frequency of Chilaiditi syndrome rises with increased age.[5] Conservative treatment methods and surgical intervention are practiced for the management of this disease. Since Chilaiditi syndrome is a rare entity and highly associated with malignancies, it is generally misdiagnosed in clinical practice.[1] Treatment and diagnosis principles of multiple primary malignant neoplasms (MPMN) differ from metastasis or recurrent cancers. On patients with MPMN, the treatment method should carefully be chosen and planned based on the clinical status of each individual patient.[2] Results from the Swedish Rectal Cancer Trial demonstrate that the application of short-term pre-operative radiotherapy with a high-dose regimen lowers the rate of local recurrence by roughly 65% after at least two years of follow-up.[4] Due to the occurrence of rectal bleeding with our case, the risk of blockage by the lesion where the rectum was found to narrow down and the existence of two separate primary

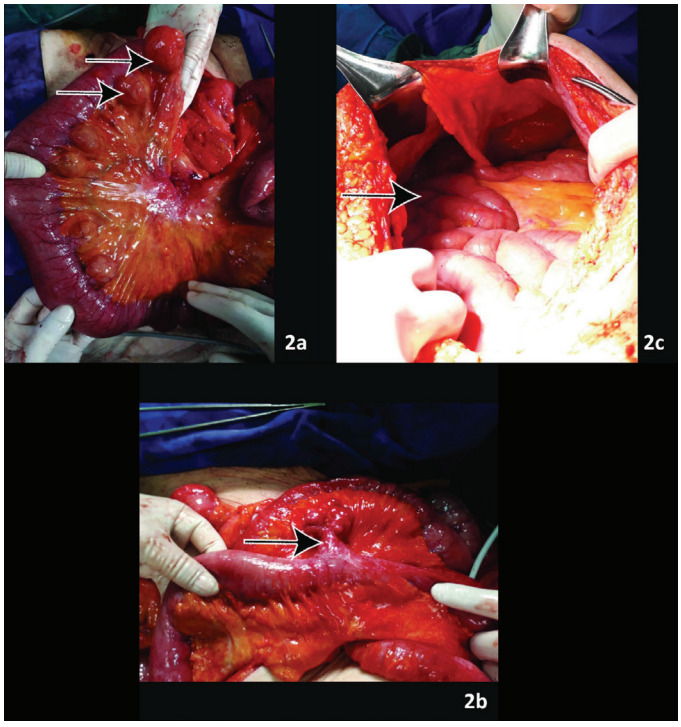

Figure 2. a) Multiple diverticula arisen at the mesenteric border of the jejunum (indicated by the arrow), b) meckel diverticulum arising from terminal ileum (indicated by the arrow), c) intestinal loop transposed between the diaphragm and the liver (surgical images) (indicated by the arrow)

tumors in the right kidney, early abdominoperineal resection for rectum cancer following a short-term radiotherapy was preferred in order not to cause a delay in initiation of the treatment.[6] The technique of nephron-sparing surgery has evolved over the past two decades and has become an established surgical treatment for small renal masses rather than the traditional method of radical nephrectomy for clear cell RCC. In progress of time, improvements in the techniques and indications for partial nephrectomy have made it an alternative to radical nephrectomy.[6] There is no requirement for intestinal resection on patients with asymptomatic jejuno ileal diverticulosis.[3] Through imaging or laparatomy, when proximal jejunal diverticula are coincidentally identified, close follow-up is necessary as the diverticula may cause serious complications. In conclusion, although Chilaiditi syndrome is a rare entity, malignancies may accompany with this disease. In the event of MPMN, a special treatment method peculiar to each individual patient should be chosen. As with our case, when uncomplicated jejunal diverticulosis and meckel diverticulitis are verified, no action can be taken for these conditions. However, during follow-up, it should be taken into consideration that these situations can cause such serious complications as rectal bleeding, infection and perforation.[7]

Ethics

Informed Consent: Obtained.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.E., Concept: A.P., Design: A.E., Data Collection or Processing: A.P., Analysis or Interpretation: A.E., Literature Search: A.P., Writing: A.E., A.P.

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