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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), British Library, ProQuest, Root Indexing, Idealonline, Gale/Cengage Learning, Index Copernicus, Turkish Citation Index, Hinari, GOALI, ARDI, OARE, J-GATE** and **TürkMedline.**

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/.

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

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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), British Library, ProQuest, Root Indexing, Idealonline, Gale/Cengage Learning, Index Copernicus, Türk Atıf Dizini, Hinari, GOALI, ARDI, OARE, J-GATE 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.

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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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.

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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.

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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

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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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Üst Yazı

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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:

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- Makalenin kısa başlığı;

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

- Her yazarın görevi;

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- 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. Deneysel hayvan çalışmalarında "Guide for the care and use of laboratory animals http://oacu.od.nih.gov/regs/guide/guide.pdf doğrultusunda hayvan haklarını koruduklarını belirtmeli ve kurumlarından etik kurul onay raporu almalıdırlar.

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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Basım Öncesi Son Kontrol (Proof Reading)

Amaç; dizgi kontrolünü sağlamak veya dönüştürme hatalarını fark etmek, bütünlük ve netlik açısından yazıyı, tabloları ve şekilleri kontrol etmektir. Yeni bulgu ekleme, değerlerde düzeltme, başlıkta ve yazarlarda önemli değişikliklere editör izni olmadan müsade edilmemektedir.

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

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Saygıdeğer Meslektaşlarım,

Uzun ve üzülerek söylemek zorundayım ki keyifsiz bir yaz döneminden sonra yeni bir sayı ile karşınızdayız. Maalesef bu yaz olağanüstü koşullarda geçti. Koranavirüs gölgesinde seyahatler kısıtlandı. Bilimsel aktiviteler askıya alındı ve en önemlisi insanların bilimsel aktivitelere karşı olan ilgileri azaldı. Bu süreç içinde hakemlerin müsait olmaları azaldı. Doğal olarak yayınları değerlendirme süreleri uzadı. Buna rağmen daha önceden söz verdiğimiz gibi, değerlendirme sürecini en kısa sürede tamamlamayı başardık ve değerlendirme istatistiklerinde kayda değer bir uzama olmadı. Bunun için tüm editöriyal kurulun yoğun çaba harcadığını bildirmek isterim.

Bütün bu olanaksızlıklar içinde size çok dolu bir sayı sunmaktan gurur duyarız. Bu sayıda; yedi makale, üç olgu sunumu ve bir editöre mektup ile çıkıyoruz:

Özelikle COVİD-19 pandemisiyle birlikte artan appendektomiler ile ilgili iki makaleye yer verdik. Bu makalelerden birincisinde özellikle appendektomi sonrası beklenmeyen histopatolojik sonuçlara dikkat çeken ilginç bir makale, ikinci ise, son dönemlerde çok irdelenen akut appendisit tanısında platelet/lenfosit oranını değerlendiren bir çalışmaya yer verildi. Üçüncü çalışma ise, rektum kanserinde distal marjının bir santimetreden daha yakın olmasının onkolojik sonuçlarını irdeleyen bir yazıyla buluşacaksınız.

Türkiye'de cerrahların en sık yaptıkları operasyonlardan biri olan pilonidal sinüs cerrahisine minimal invazif bir yöntem olan EPST'nin sahada uygulamasının sonuçlarını derleyen bir çalışmayı sunuyoruz.

Hemoridektomi sonrası gelişen ağrı hepimizin en büyük sorunudur. Bu konuda geliştirilen yeni preparatların etkinliğini sunan bir çalışa ile birlikte, vücut kitle indeksinin çekal entübasyon oranıyla ilişkisini değerlendiren iki çalışmaya daha yer verildi.

Son makalemiz ise periappendiküler kitleleri retrospektif olarak değerlendiren bir çalışmadır.

Bununla birlikte, üç birbirinden ilginç olgu sunumu ve bir editöre mektuba da yer verildi.

Ayrıca, "Web of Science" indeksine başvuru yaptığımızı memnuniyetle belirtmek isterim. En kısa zamanda olumlu sonuçlanmasını ümit ederiz.

Korona pandemisinin tekrar yükselişe geçtiği bu günlerde hepinize sağlıklı günler dileriz. Gelecek sayıda daha ilginç yazılarla tekrar buluşmak dileğiyle

Esen kalınız….

Prof. Dr. Tahsin Çolak

Baş-Editör

My Dear Colleagues,

I have to say sadly that we are here with a new issue after a sad summer period. Unfortunately, this summer passed in extraordinary conditions. Travels have been restricted in the shadow of the Coranavirus. Scientific activities have been suspended and most importantly, people's interest in scientific activities has decreased. The availability of referees has decreased during this period. Naturally, the evaluation periods for publications have been extended. Nevertheless, as we have previously promised, we have been able to complete the evaluation process as soon as possible and there has been no significant extension in the evaluation statistics. I would like to inform you that the entire editorial board is working hard for this.

Of all these impossibilities, we are proud to present you a very full number. In this issue, we have 7 articles, 3 case reports and 1 letter to the editor:

In particular, we include two articles on appendectomies that have increased with the COVID-19 pandemic. The first of these articles draws attention to the unexpected histopathological results after appendectomy, and the second study evaluates the platelet/lymphocyte ratio in the diagnosis of acute appendicitis, which has been widely discussed recently. In the third study, you will meet with an article that examines the oncological consequences of the distal margin closer than one centimeter in rectal cancer.

We present a study reviewing the results of use of EPST in the field which is a minimally invasive method for the pilonidal sinus surgery which is the most common surgery performed by surgeons in Turkey.

Pain that develops after hemoridectomy is the biggest problem of all of us. Along with a study presenting the effectiveness of new preparations developed on this subject, two more studies evaluating the relationship between body mass index and cecal intubation rate are included in this issue.

Our last article is a study evaluating periappendicular masses retrospectively.

In addition, three interesting case reports and a letter to the editor are also included.

In addition, I would like to express that we have applied to the "Web of Science" index. We hope that it will turn out positively as soon as possible.

We wish you all healthy days in these days when the Coronavirus pandemic is on the rise again. Hope to meet again with more interesting articles in the next issue

Stay calm….

Prof. Dr. Tahsin Çolak

Editor-in-Chief

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RESEARCH ARTICLE

Unexpected Histopathological Diagnoses in Acute Appendicitis Specimens: A Retrospective Analysis of 2076 Patients

Akut Apandisit Spesmenlerinde Beklenmeyen Histopatolojik Tanılar: 2076 Hastanın Retrospektif Analizi

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ABSTRACT

Aim: Acute appendicitis is the most common cause of emergency abdominal surgery in the world. Although the etiology of appendicitis is still not fully known, possible causes include lumen obstruction. Fecaloid and lymphoid hyperplasia are the most common causes of lumen obstruction. However, some rare conditions may cause acute appendicitis by causing lumen obstruction. Here, we aimed to present the pathology results of 2076 patients operated due to acute appendicitis in our hospital and the unexpected histopathological findings in the light of the literature.

Method: Patients who were emergently operated with diagnosis of appendicitis between January 2016 and February 2020 in Gaziantep Dr. Ersin Arslan Training and Research Hospital were retrospectively screened. Incidental appendectomies were excluded. Data of 2076 patients were reached. Gender, age, and pathology results of the patients were analyzed. Pathology preparations were reassessed by two pathologists. Pathology results were analyzed under two categories as general findings and unexpected findings. Fisher's chi-square test was used for statistical analysis.

Results: A total of 2076 patients were included in the study and analyzed. Of the patients, 1368 (66%) were man, 708 (34%) were woman, and the mean age was 33±12.9 years. Acute appendicitis was found in 1309 (63.1%) patients, gangrenous-perforated appendicitis in 305 (14.7%) patients, negative appendectomy in 105 (5.1%) patients, phlegmonous appendicitis in 32 (1.5%) patients, and unexpected pathological findings in 62 (3%) patients. Among the unexpected pathological findings were fibrous obliteration in 31 (50%) patients, mucosal hyperplasia in 8 (13%) patients, appendicular diverticulitis in 7 (11.3%) patients, retention cyst in 5 (8.1%) patients, mucinous cystadenoma in 3 (4.8%) patients, well-differentiated neuroendocrine tumor in 2 (3.2%) patients, eosinophilic infiltration in 2 (3.2%) patients, foreign body reaction in 2 (3.2%) patients, granulomatous appendicitis in 1 (1.6%) patient, and parasitic infestation was detected in 1 (1.6%) patient.

Conclusion: Unexpected histopathological findings are rare in appendectomy specimens and these diagnoses help guide the patient's treatment.

Keywords: Appendicitis, neuroendocrine neoplasm, mucocele, adenocarcinoma, carcinoid

ÖZ

Amaç: Akut apandisit dünya üzerinde en sık acil karın ameliyatıdır. Apandisitin etiyolojisi hala tam olarak bilinmemekle birlikte olası nedenler arasında lümen obstrüksiyonu yer alır. Fekaloit ve lenfoid hiperplazi lümen obstrüksiyonuna neden olan en yaygın nedenlerdir. Ancak bazı nadir durumlar da lümen obstrüksiyonu yaparak akut apandisite neden olabilmektedir. Biz burada hastanemizde akut apandisit tanısıyla opere edilen 2076 hastanın patoloji sonuçlarını ve bunlar arasında beklenmeyen histopatolojik bulguları literatür eşliğinde sunmayı amaçladık.

Yöntem: Gaziantep Dr. Ersin Arslan Eğitim ve Araştırma Hastanesi'nde Ocak 2016-Şubat 2020 tarihleri arasında akut apandisit tanısıyla acil opere edilen hastalar retrospektif olarak tarandı. İnsidental apendektomiler çalışma dışı bırakıldı. Toplam 2076 hastanın verisine ulaşıldı. Hastaların cinsiyet, yaş ve patoloji sonuçları analiz edildi. Patoloji preparatları iki patolog tarafından tekrar değerlendirildi. Patoloji sonuçları genel bulgular ve beklenmeyen bulgular olarak iki kategori altında incelendi. İstatistiksel analizde Fisher's ki-kare testi kullanıldı.

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Bulgular: Toplam 2076 hasta çalışmaya dahil edilip analiz edildi. Bu hastalar 1368 (%66) erkek olup, toplam yaş ortalaması 33±12,9 idi. Akut apandisit 1309 (%63,1), gangrenöz-perfore apandisit 305 (%14,7), negatif apendektomi 105 (%5,1), flegmanöz apandisit 32 (%1,5), beklenmeyen patolojik bulgular ise 62 (%3) hastada saptandı. Beklenmeyen patolojik bulgular içerisinde, 31 (%50) hastada fibröz obliterasyon 8 (%13) hastada mukozal hiperplazi, 7 (%11,3) hastada apendiküler divertikülit, 5 (%8,1) hastada retansiyon kisti 3 (%4,8) hastada müsinöz kistadenom 2 (%3,2) hastada iyi defansiye nöroendokrin tümör, 2 (%3,2) hastada eozinofilik infiltrasyon, 2 (%3,2) hastada yabancı cisim reaksiyonu, 1 (%1,6) hastada granülomatöz apandisit ve 1 (%1,6) hastada parazit enfestasyonu saptandı.
Sonuç: Apendektomi spesmenlerinde beklenmedik histopatolojik bulgular nadir olup, bu tanılar hastanın tedavisini yönlendirmeye yardımcı olmaktadırlar.
Anahtar Kelimeler: Apandisit, nöroendokrin neoplazm, mukosel, adenokarsinom, karsinoid

Introduction

Acute appendicitis remains one of the most common causes of emergency abdominal surgeries in the world. Appendectomy is performed in patients with suspected or definite acute appendicitis. Appendectomy not only removes the appendix but also prevents mortal complications such as perforation, plastron and sepsis.[1] While the risk of development of acute appendicitis is higher in men, women are more exposed to appendectomy. The incidence of acute appendicitis is 8.6% in men and 6.9% in women. The appendectomy rate is 12% in men and 23% in women.[2] Appendicitis can be seen in all age groups but is often seen between 10-20 years of age.[3]

Although the etiology of appendicitis is still unknown, lumen obstruction is one of the possible causes.[4] Lumen obstruction prevents the discharge of mucosal secretions, resulting in increased lumen intra-pressure. As a result of increased pressure, venous and lymphatic drainage deteriorates, causing necrosis and perforation.[5] Fecaloid and lymphoid hyperplasia are the most common causes of lumen obstruction. However, some rare cases can cause an acute appendicitis by causing lumen obstruction. Among these are enterobiasis, ascariasis, tapeworm, actinomycosis, schistosomiasis, amebiasis, carcinoid tumor, adenocarcinoma, endometriosis, granulomatous diseases, gastrointestinal stromal tumors and mucocele.[6]

There are many studies reporting unexpected histopathological findings following examination of appendectomy specimens.[7,8,9] In this way, bening and malignant tumors and infectious diseases can be diagnosed early and treated. In order to emphasize that unexpected histopathological findings are important in appendectomy specimens, we conducted a retrospective analysis of appendectomy specimens in our hospital. We aimed to present the pathology results of 2076 patients with acute appendicitis in our hospital and the unexpected histopathological findings among them with the literature.

Materials and Methods

Patients who were admitted to the emergency service with the diagnosis of acute appendicitis between January 2016 and February 2020 in Gaziantep Dr. Ersin Arslan Training and Research Hospital were retrospectively screened. Incidental appendectomies were excluded. Data of a total of 2076 patients were accessed. The gender, age and pathology results of the patients were analyzed. Negative appendectomy and unexpected histopathological findings by gender were evaluated separately. The distribution of pathological findings by age was analyzed. Pathology preparations were re-examined by two pathologists (MT, DA). Pathology results were analyzed under two categories as general findings and unexpected findings. Acute, gangrenous-perforated and phlegmatous appendicitites were included in the group of general pathological findings. Appendicular diverticulitis, eosinophilic infiltration, granulomatous appendicitis, fibrous obliteration, mucosal hyperplasia, mucocele, mucinous cystadenoma, mucinous neoplasia, neuroendocrine tumor, parasite infestation and foreign body reaction were included in the group of unexpected pathological findings. In statistical analysis, quantitative variables were expressed as mean ± standard deviation, median, minimum-maximum and range. Qualitative variables were reported as number and percentage (%). Fisher's chi-square test was used to compare qualitative variables. A p value less than 0.05 was considered statistically significant.

Results

A total of 2076 patients were included in the study and analyzed. Of the patients, 1368 (66%) were man, 708 (34%) were woman, and the mean age was 33±12.9 years. The majority of the patients were between the ages of 21-30 (36%) years and 1.2% of the patients were over 70 years (Table 1). Acute appendicitis was detected in 1309 (63.1%) patients, gangrenous-perforated appendicitis in 305 (14.7%) patients, lymphoid hyperplasia in 263 (12.7%) patients, negative appendectomy in 105 (5.1%) patients, phlegmatous appendicitis in 32 (1.5%) patients, unexpected pathological findings in 62 (3%) patients. Among the unexpected pathological findings, fibrous obliteration was found in 31 (50%) patients, appendicular diverticulitis in 7 (11.3%) patients, retention cyst in 5 (8.1%) patients, mucinous

cystadenoma in 3 (4.8%) patients, well-differentiated neuroendocrine tumor in 2 (3.2%) patients, eosinophilic infiltration in 2 (3.2%) patients, foreign body reaction in 2 (3.2%) patients, granulomatous appendicitis in 1 (1.6%) patient, and parasite infestation in 1 (1.6%) patient (Table 2).

Table 1. Demographic characteristics of patients undergoing appendectomy

Features of patients	Result
Number of patients	2076
Gender	
Male	1368
Female	708
Features about age	
All patients	33.01±12.9
Males	31.5±11.8
Females	35.96±14.3
Distribution of patients by age	
15-20	320
21-30	743
31-40	508
41-50	286
51-60	128
61-70	66
>70	25
Distribution of patients with negative appendectomy by age	
All patients	105
Males	66 (4.8%)
Females	39 (5.5%)
15-20	13
21-30	34
31-40	23
41-50	20
51-60	10
61-70	3
>70	2

Acute appendicitis was detected in 890 (65.1%) of male and 419 (59.2%) of female patients. The frequency of acute appendicitis was significantly higher in men (p=0.01). Perforated appendicitis was detected in 196 (14.3%) of male and 109 (15.4%) of female patients. Perforated appendicitis was more common in women, but there was no statistical significance between genders (p=0.51). Negative appendectomy was detected in 66 (4.8%) of male and 39 (5.5%) of female patients. Negative appendectomy was more common in women, but there was no statistical significance between genders (p=0.53) (Table 3). The majority of patients with negative appendectomy was between the ages of 21-30 years.

Unexpected pathological findings were found in 62 (3%) patients, 38 (1.8%) of whom were male and 24 (1.2%) of whom were female. Fibrous obliteration was detected in 31 (1.5%) patients, mucosal hyperplasia in 8 (0.9%) patients, appendicular diverticulitis in 7 (0.3%) patients, retention cyst (mucocele) in 5 (0.2%) patients, mucinous

Table 2. Histopathological findings of appendectomy specimens

Histopathological findings	Total
Acute appendicitis	1309 (63.1%)
Gangrenous-perforated appendicitis	305 (14.7%)
Lymphoid hyperplasia	263 (12.7%)
Negative appendectomy	105 (5.1%)
Phlegmatous appendicitis	32 (1.5%)
Unexpected histopathological findings	62 (3%)
Fibrous obliteration	31 (50%)
Mucosal hyperplasia	8 (13%)
Appendicular diverticulitis	7 (11.3%)
Retention cyst	5 (8.1%)
Mucinous cystadenoma	3 (4.8%)
Neuroendocrine tumor, well differentiated	2 (3.2%)
Eosinophilic infiltration	2 (3.2%)
Foreign body reaction	2 (3.2%)
Granulomatous appendicitis	1 (1.6%)
Parasite infestation	1 (1.6%)

Table 3. Comparison of histopathological findings by gender

	Male (n=1368)	Female (n=708)	Statistical analysis
Acute appendicitis	890 (65.1%)	419 (59.2%)	p<0.05
Perforated appendicitis	196 (14.3%)	109 (15.4%)	p>0.05
Negative appendectomy	66 (4.8%)	39 (5.5%)	

cystadenoma in 3 (0.1%) patients, well-differentiated neuroendocrine tumor in 2 (0.1%) patients, eosinophilic infiltration in 2 (0.1%) patients, foreign body reaction in 2 (0.1%) patients, granulomatous appendicitis in 1 (0.05%) patient, and parasite infestation in 1 (0.05%) patient.

Discussion

The incidence of acute appendicitis is higher in men. The differential diagnosis includes normal menstruation, dysmenorrhea, ovarian torsion, ectopic pregnancy, and pelvic inflammatory disease, which are especially seen in premenopausal women.[10] This explains why women are mostly exposed to negative appendectomy. There are studies reporting the negative appendectomy rate as 6.3-22.8% in the literature.[1,11] In our study, negative appendectomy was found in 5.1% of the patients, and it was found more in women who were operated, but the difference was not statistically significant (p=0.53). The lower rates of negative appendectomy compared to the literature was thought to be a result of the widespread use of ultrasound and computed tomography, which have become routine in the preoperative period.

Although rare, different pathologies of the appendix can be encountered in patients who have been operated with a pre-diagnosis of acute appendicitis. These include congenital anomalies such as appendix duplication and appendix vermiformis agenesis.[12,13] No congenital anomalies were found in our clinical series. Unexpected histopathologies can be detected in appendectomy specimens. In a literature review, the rate of unexpected histopathological diagnoses was reported as 1.7%, and the rate of primary and secondary adenocarcinoma and mucinous cystadenocarcinoma of the appendix was reported as 0.03%.[6] In our study, the rate of unexpected histopathological findings was 3% and primary and secondary adenocarcinoma and mucinous cystadenocarcinoma of the appendix were not detected.

Fibrous obliteration is thought to develop as a result of neurogenic proliferation and is also referred as neurogenic appendicopathy and appendiceal neuroma. In addition, the molecular mechanism in its pathogenesis is unknown. It is thought to occur as a result of obstruction of the lumen of the appendix with fibrous tissue secondary to hyperplasia of neuroendocrine cells. Fibrous obliteration is seen in 9.7% of incidental appendectomy specimens.[14] In acute appendicitis series, it is seen at a rate of 0.8-4.5% and constitutes 27.1-65% of unexpected histopathological findings.[15,16] In our study, fibrous obliteration was detected in 31 (1.5%) patients and constituted 50% of unexpected histopathological findings.

Appendicular diverticulum is an extremely rare condition. Its incidence is 0.004-2.1% in appendectomy specimens, while it is 0.2-0.6% in routine autopsy series.[17] Appendicular diverticulum can be acquired or congenital. Acquired diverticula are mostly seen in patients aged >30 years old. In another series in which appendectomy was performed due to acute appendicitis, appendicular diverticulum was detected at a rate of 0.8%, and diverticulitis was found in 61.5% of them.[18] In the presence of diverticulum, the risk of perforation and mortality is higher than acute appendicitis without diverticulum.[19] In our study, appendicular diverticulum was detected in 7 (0.3%) patients, appendicular diverticulitis was detected in 6 (86%) patients, and no perforation was observed.

Appendiceal mucocele was first described by Rokitansky in 1842[20]. It occurs as a result of obstructive dilatation of the appendix and mucoid material filling the lumen. Appendiceal mucocele is rare, with an incidence of 0.07-0.63% in appendectomy specimens.[21] Histopathologically, there are four subtypes. These are retention cyst, mucosal hyperplasia, mucinous cystadenoma and mucinous cystadenocarcinoma.[22] When total excision is performed without perforation in the benign forms of retention cyst, mucosal hyperplasia and mucinous cyst adenoma, 5-year survival is 100%.[23] In our study, mucosal hyperplasia was detected in 8 (0.4%), retention cyst (mucocele) in 5 (0.2%) and mucinous cystadenoma in 3 (0.1%) patients, and mucinous cystadenocarcinoma was not detected.

Mucosal hyperplasia was first described by MacGillivray[24] in 1972 as mucosal metaplasia associated with colon cancer. Thereupon, in another study, appendices in the specimens of patients who underwent ileocolectomy were examined. Mucosal hyperplasia was found in 30% of adenocarcinomas, 11.8% of adenomatous polyps, and 6.5% of non-neoplastic specimens.[25] In our study, mucosal hyperplasia was detected in 8 (0.4%) patients, and it constituted 13% of unexpected histopathological findings. Colonoscopy was performed in these patients for malignancy screening and to detect accompanying colon pathologies, and no evidence of malignancy was found.

Granulomatous appendicitis is a rare condition in appendectomy specimens. Granulomatous infection of the appendix was first reported in 1953 by Meyerding and Bertram[26] as a finding of Chron's disease. Granulomatous appendicitis is detected at a rate of 0.1-2% in appendectomy materials.[27] In its etiology, not only Chron's disease, but also infectious or non-infectious causes such as Yersinia species, sarcoidosis, tuberculosis, foreign body reactions, schistosomiasis, actinomycosis and eosinophilic infiltration.[28,29] In our study, granulomatous appendicitis 1 (0.05%), eosinophilic infiltration 2 (0.1%), foreign body reaction 2 (0.1%) and parasite infestation were observed in 1 (0.05%) patient. However, no granulomatous formation was

detected in eosinophilic infiltration and parasite infestation. Carcinoid tumor (neuroendocrine tumor) is the most common primary malignant lesion of the appendix and constitutes 60% of all appendix tumors.[30] Carcinoid tumor is detected in 0.3-0.9% of appendectomy specimens.[31] It frequently affects young patients and it occurs between ages of 32 and 42.2 years.[32,33] Carcinoid tumors of the appendix are generally small in size, benign in character, and their metastases occur less than 2%, and tumor sizes are smaller than 1 cm in 70-95% of them.[34] In our study, carcinoid tumor (neuroendocrine tumor) was detected in 2 (0.1%) patients, and the ages of the patients were 27 and 32 years. The findings were consistent with the literature. Tumors of both patients were well differentiated. Tumor sizes were 3 and 4 mm and invasion of muscularis propria was detected. Neither of them had lymphovascular and perineural invasion.

Conclusion

Although acute appendicitis is a disease classified as benign and its surgery is a daily surgery, unexpected histopathological findings can be detected in the examination of appendectomy specimens. The variety of these findings can range from premalignant lesions to malignancies. It should be noted that the histopathological evaluation of appendectomy materials is a guide for the diagnosis and treatment of additional diseases present in the patient.

Ethics

Ethics Committee Approval: Ethics committee approval was not obtained because it was a retrospective study.

Informed Consent: Informed consent was obtained from all participants for surgery.

Peer-review: Internally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: U.U., R.G., K.G., Concept: U.U., M.T., Design: R.G., D.A., Data Collection or Processing: M.T., D.A., Analysis or Interpretation: R.G., M.T., D.A.,Literature Search: U.U., R.G., K.G., Writing: U.U., R.G.

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RESEARCH ARTICLE

Diagnostic Value of Platelet/Lymphocyte Ratio in the Diagnosis of Acute Appendicitis and its Relationship with Age

Akut Appendisit Tanısında Platelet/Lenfosit Oranının Tanısal Değeri ve Yaş ile İlişkisi

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ABSTRACT

Aim: Acute appendicitis (AA) is one of the most common emergency surgical pathologies. The tests used in the differential diagnosis of these patients need to be quick, easy to access and cheap. Discussions continue about the value of laboratory tests in the diagnosis of AA. In this study, we aimed to determine the diagnostic value of platelet/lymphocyte ratio (PLR) in the diagnosis of AA and to determine its diagnostic value in different age groups.
Method: Patients who underwent appendectomy after a preliminary diagnosis of AA between January 2015 and January 2020 were enrolled. Patients were divided into two groups, according to the postoperative pathology finding: group 1 (negative appendectomy) and group 2 (AA). In addition, groups were divided into subgroups based on age: 18-39 years, 40-59 years and 60 years and older. Platelet and lymphocyte counts and PLR were compared between groups and subgroups. In diagnostic accuracy evaluation ROC curve analysis was used; p<0.05 value was considered statistically significant.
Results: A total of 875 patients were included in the study. There were 152 patients in group 1 (negative appendectomy) and 723 patients in group 2 (AA). Mean age was similar between the groups (33.43 vs 35.33, p=0.152). In univariate analysis, lymphocyte count (p=0.033) and platelet count (p=0.002) were found to be significant. In multivariate analysis, lymphocyte count (p=0.000), platelet count (p=0.012) and PLR (odds ratio: 0.632; 95% confidence interval (minimum-maximum) 0.440-0.908; p=0.013) were found to be significant. When the ROC curve analysis was performed, the sensitivity of PLR regardless of age was 70.82% and the specificity was 40.13% (p=0.093). The highest specificity was in the 40-59 years age group (85.71%), the highest sensitivity was in the age group 60 and older (78.79%) (p=0.002).
Conclusion: PLR cannot be used alone in the diagnosis of AA. Normal PLR values cannot exclude AA alone. In addition, the PLR diagnostic value varies according to age groups. The surgeon's clinical evaluation should continue to be a priority in the diagnosis of AA.
Keywords: Platelet/lymphocyte ratio, acute appendicitis, age, sensitivity, specificity

ÖZ

Amaç: Akut appendisit (AA) en sık karşılaşılan acil cerrahi patolojilerden biridir. Bu hastaların ayırıcı tanısında kullanılan testlerin hızlı, kolay ulaşılabilir ve ucuz olması gerekmektedir. AA tanısının konmasında laboratuvar testlerinin değeri etrafında tartışmalar devam etmektedir. Bu çalışmada AA tanısında platelet/lenfosit oranının (PLO) tanısal değerini saptamayı ve yaş gruplarında tanısal değerinin nasıl değiştiğini saptamayı amaçladık .
Yöntem: Ocak 2015 ile Ocak 2020 tarihleri arasında AA ön tanısı ile opere edilen hastalar çalışmaya dahil edildi. Postoperatif patoloji bulgusuna göre hastalar grup 1 negatif appendektomi; grup 2 akut apandisit olmak üzere iki gruba ayrıldı. Ayrıca 18-39,40-59,60 yaş ve üstü olmak üzere subgruplara ayrıldı. Platelet, lenfosit sayısı ve PLO gruplarda ve subgruplarda karşılaştırıldı. Tanısal doğruluk değerlendirmede (ROC) eğrisi analizi kullanıldı; p<0,05 değeri istatistiksel olarak anlamlı kabul edildi.

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Bulgular: Toplam 875 hasta çalışmaya katıldı grup 1: 152, grup 2: 723 hastadan oluşuyordu (yaş 33,43 vs 35,33 p=0,152). Univaryant analizde lenfosit sayısı (p=0,033) ve trombosit sayısı (p=0,002) istatistiksel olarak anlamlı bulundu. Multivaryant analizde AA tanısında PLO bağımsız risk faktörüydü [olasılık oranı 0,632 %95 güven aralığı (minimum-maksimum) 0,440 -0,908 p=0,013]. ROC eğrisi analizi yapıldığında yaştan bağımsız sensivitesi %70,82, spesivitesi %40,13 p=0,093 idi. Yaş gruplarında en yüksek spesivite 40-59 yaş arasında %85,71, en yüksek sensivite 60 yaş ve üstü grupta %78,79 p=0,002 bulundu.

Sonuç: PLO AA tanısında tek başına kullanılamaz. Normal PLO değerleri akut apandisiti tek başına dışlayamaz. Ayrıca PLR tanısal değeri yaş gruplarına göre değişmektedir. Cerrahın klinik değerlendirmesi akut apandisit tanısında öncelikli olmaya devam etmelidir.

Anahtar Kelimeler: Platelet/lenfosit oranı, akut appendisit, yaş, sensivite, spesivite

Introduction

Acute appendicitis (AA) is the most common cause of acute abdomen presentation and appendectomy is the most common emergency surgery performed. It has been reported in the literature that the lifetime prevalence of this disease is approximately 7% and the perforation development rate in AA is 17-20%.[1,2]

Although the diagnosis of AA is based on clinical and laboratory data, it is still a difficult diagnosis. In adult patients, pathologies of gastrointestinal, urological or gynaecological origin can mimic AA, making the diagnosis even more difficult. There is no single laboratory marker with a diagnostic value of 100% to distinguish AA from other causes of abdominal pain.[3]

Optimal treatment in AA depends on early diagnosis and subsequent rapid intervention, but the decision to perform rapid appendectomy to avoid complications increases negative appendectomy rates. Traditionally, negative appendectomy has been considered acceptable to overcome morbidity and mortality. However, surgical stress is associated with postoperative morbidity and mortality, especially in advanced age groups. For this reason, caution should be exercised in appendectomy decision in older patients.[4,5]

The use of a number of inflammatory markers has been proposed to support clinical data in the decision-making process to ensure early diagnosis of AA and to reduce rates of misdiagnosis. Some of these are white blood cell count, erythrocyte sedimentation rate, C-reactive protein and bilirubin levels, immature granulocyte ratio, neutrophil/lymphocyte ratio and platelet/lymphocyte ratio (PLR).[6,7,8,9] While the diagnostic value of the PLR has been proven in many studies, it is still unclear how this diagnostic value is affected by age.

In this study, we aimed to determine the diagnostic value of PLR in the diagnosis of AA and to determine its diagnostic value in different age groups.

Material and Methods

Patients who underwent appendectomy between January 2015 and January 2020 with a preliminary diagnosis of AA, at Erciyes University Faculty of Medicine General Surgery Clinic, were included in the study. The patient files and hospital information system records were examined and a database was created. Using this database, the cases were analysed retrospectively. We did not receive an ethics committee approval because the study is retrospective. Patients who underwent appendectomy with the diagnosis of AA and whose pathology reports were available were included in the study. Patients younger than 18 years of age, pregnant patients, patients with heart failure, peripheral vascular disease, haematological disease or liver disease, patients with anticoagulant and steroid use, patients with other acute or chronic infections, patients with a pathological result showing a tumour and patients whose records could not be accessed were excluded.

Patients were divided into two groups according to histopathological evaluation: group 1 (negative appendectomy) and group 2 (AA). In the groups, demographic data such as age, sex and preoperative laboratory findings (lymphocyte count/mm^3, platelet count/mm^3) and PLR at the time of admission were compared between groups 1 and 2. In addition, the groups were divided into subgroups based on age: 18-39 years, 40-59 years and 60 years and older. The same parameters were compared between the age groups.

The total blood count was measured by an automated haematology analyzer (Roche Hitachi Cobas® 8000 Roche Diagnostics, Indianapolis, IN, USA). PLR was calculated for each subject by dividing the platelet count to the lymphocyte count.

Statistical Analysis

SPSS (Statistical Package for the Social Sciences) 23.0 package programme was used in the statistical analysis of the data. Categorical measurements were summarised as numbers and percentages and continuous measurements as mean and standard deviation (median and minimum–maximum where necessary). Pearson chi-square test statistics were used to compare categorical variables. Shapiro-Wilk test was used to determine whether the parameters in the study showed normal distribution. In comparing the continuous measurements between the groups, the distributions were

checked and the independent student t-test was used for the parameters that showed normal distribution in the calculation of the binary variables and the Mann-Whitney U test was used for the parameters not showing normal distribution and the analysis of variance and Kruskal-Wallis tests were used when there were more than two variables. Logistic regression analysis was applied to determine the independent variables affecting the dependent variable. In order to generate a cut-off value for the PLR value, ROC analysis and ROC curve were created The patients were divided into two groups according to pathologic results and cut-off value was found by ROC analysis In the study, the cut-off value was determined by calculating the sensitivity and specificity values based on the PLR of the patients and examining the area under the ROC curve. Statistical significance level was taken as 0.05 in all tests.

Results

A total of 875 patients were included in the study. The patients were divided into two groups: group 1 consisted of patients with negative appendectomy and group 2 consisted of patients with AA. There were 152 patients in group 1 and 723 patients in group 2. Mean age was similar between the groups (33.43 vs 35.33; p=0.152). Female sex was more dominant in group 1 (52% vs 43.1%; p=0.0285). Lymphocyte count was lower in group 2 (1936 vs 1753; p=0.033), platelet count was higher in group 1 (267,000 vs 246,000; p=0.002). PLR was similar between the groups (171 vs 184; p=0.382). These parameters were independent variables in the diagnosis of AA in multivariate logistic regression analysis. The comparison between groups 1 and 2 is detailed in Table 1.

The ROC curve analyses of these independent variables are shown in Figure 1. The proposed cut-off values and performance characteristics for these variables are shown in Table 2.

When the patients were subdivided according to age, there were 588 patients aged 18-39 years, 195 patients aged 40-59 years and 68 patients aged 60 and older. Male sex was higher in all groups (56.5%, 57.9% and 52.9%, respectively). The lymphocyte count was the lowest in the 60 and older age group (1.86, 1.68, 1.36, respectively; p=0.000). The platelet count was the highest in the 60 and older group (169, 207, 218, respectively; p=0.002). PLR was

Table 1. Comparison of the two groups

Parameters	Univariate analysis			Multivariate analysis			ROC curve analysis		
	Negative appendectomy	AA	p value	OR	95% CI (min-max)	p value	AUC	95% CI (min-max)	p value
Patient number	152	723							
Age	33.43±13.83 (18-85)	35.33±15.09 (18-87)	0.152						
Sex Male	73 (48.0)	411 (56.9)	0.028						
Sex Female	79 (52.0)	311 (43.1)							
Lymphocyte ($x10^3/mm^3$)	1936.44±841.3 (250-4810)	1753.1±984.6 (130-13400)	0.033	1.933	1357-2.754	0.000	0.577	0.543-0.610	0.002
PLT ($x10^3/mm^3$)	267598.6±93548.8 (92000-810000)	246214.6± 74637.2 (64000-758000)	0.002	1.581	1.106-2.259	0.012	0.565	0.531-0.598	0.011
PLR	171.94±117.87 (50.7-748)	184.1±163.1 (20.0-3384.6)	0.382	0.632	0.440-0.908	0.013	0.543	0.509-0.576	0.093

PLR: Platelet-to lymphocyte ratio, PLT: Platelet count, AUC: Area under the curve, OR: Odds ratio, AA: Acute appendicitis, CI: Confidence intervol

highest in the 40-59 age group (248, 255, 241, respectively; p=0.346). Lymphocyte count, platelet count and PLR were independent variables in the diagnosis of AA in multivariate logistic regression analysis. Comparison between groups by age is given in detail in Table 3. In the ROC curve analyses of these independent variables in age groups, AUC was above 0.600 for the 18-39 and 40-59 age groups. ROC curve analyses for PLR are given in Figure 2.

The diagnostic value of PLR varied between age groups. The highest specificity was for the 40-59 years group (85.71%), the highest sensitivity was in the 60 and older group (78.79%) (p=0.002). The proposed cut-off values and performance characteristics for the PLR by age group are shown in Table 4.

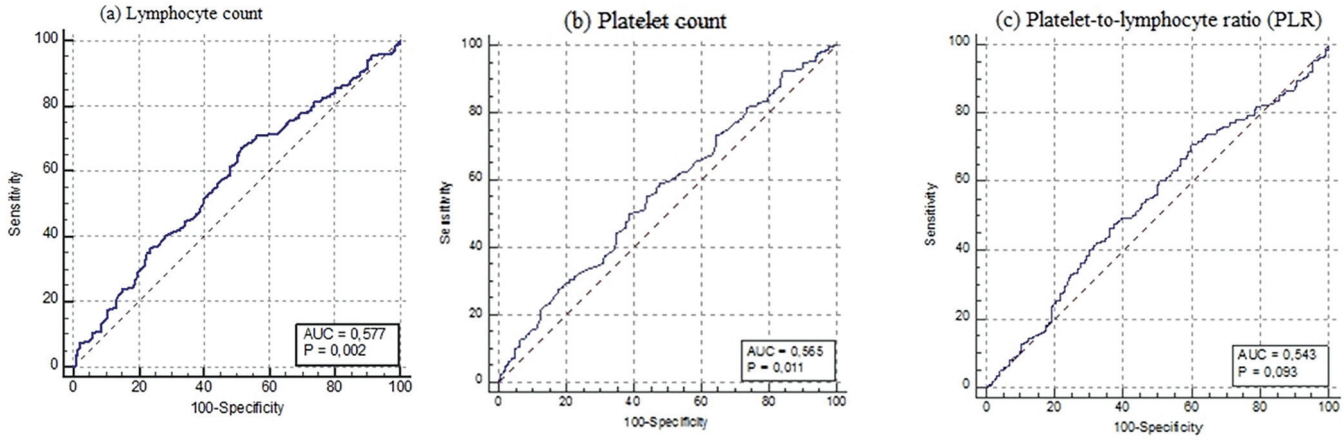

Figure 1. Receiver operating characteristic (ROC) curve analyses of significant parameters for the diagnosis of acute appendicitis: (a) Lymphocyte count, (b) Platelet count, (c) Platelet-to-lymphocyte ratio (PLR)

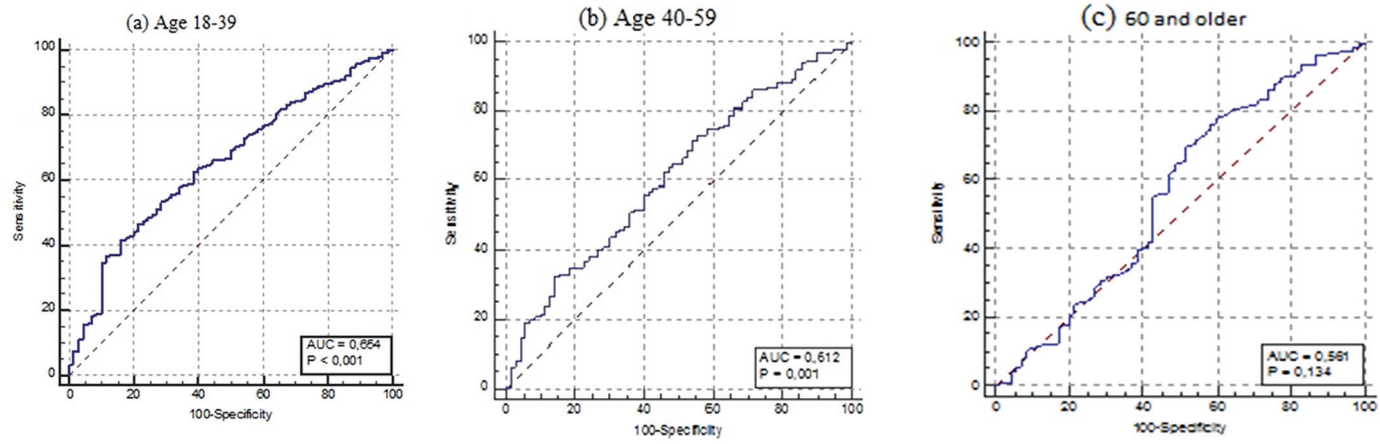

Figure 2. Receiver operating characteristic (ROC) curve analyses of PLR for the diagnosis of acute appendicitis in the age subgroups

Table 2. Proposed cut-off values for significant parameters in the diagnosis of AA

	Cut-off value	Sensitivity (%)	Specificity (%)	PPV	NPV	OR	pLLR	nLRR	AUC
Lymphocyte (x10^3/mm^3)	1960	67.08	48.68	86.1	23.7	1.16	1.31	0.68	0.577
PLT (x10^3/mm^3)	235000	50.07	61.18	86.0	20.5	1.21	1.29	0.82	0.565
PLR	114.96	70.82	40.13	84.9	22.4	4.17	1.18	0.73	0.543

PLR: Platelet-to-lymphocyte ratio, NLR: Neutrophil-to-lymphocyte ratio, PLT: Platelet count, AUC: Area under the curve, PPV: Positive predictive value, NPV: Negative predictive value, OR: Odds ratio, pLLR: Positive likelihood ratio, nLLR: Negative likelihood ratio

Table 3. Comparison of the subgroups

Parameters	Univariate analysis				Multivariate analysis			ROC curve analysis		
	18-39	40-59	60 and older	p value	OR	95% CI (min-max)	p value	AUC	95%CI (min-max)	p value
Patient number	588	195	68							
Age	26.9±6.00 (18-39)	48.29±5.76 (40-59)	69.68±7.62 (60-87)	0.000						
Male	332 (56.5)	113 (57.9)	36 (52.9)	0.772						
Female	256 (43.5)	82 (42.1)	32 (47.1)							
Lymphocyte ($x10^3/mm^3$)	1.86±0.99 (0.28-13.4)	1.68±0.88 (0.13-6.59)	1.36±0.67 (0.25-3.56)	0.000	1.64±0.04	1.562-1.729	0.023	0.553	0.518-0.588	0.024
								0.668	0.631-0.703	0.001
								0.610	0.549-0.669	0.003
PLT ($x10^3/mm^3$)	169.73±105.38 (20.03-712.12)	207.2±257.76 (39.04-3384.62)	218.11±132.09 (40.43-748)	0.002	248.8±3.8	241.33-256.29	0.002	0.504	0.469-0.539	0.858
								0.561	0.522-0.598	0.144
								0.563	0.501-0.623	0.141
PLR	248.86±71.81 (64-810)	255.8±91.20 (98-758)	241.08± 94.84 (75.2-629)	0.346	7.8±3.1	7.203-8.429	0.001	0.569	0.534-0.604	0.003
								0.629	0.591-0.666	0.002
								0.561	0.499-0.621	0.131

PLR: Platelet-to-lymphocyte ratio, PLT: Platelet count, AUC: Area under the curve, OR: Odds ratio, CI: Confidence interval, min: Minumum, max: Maximum

Discussion

The evaluation and treatment of pathologies that cause an acute abdomen presentation can vary depending on the age and sex of the patient. Although very detailed medical history taking and physical examination are performed, use of laboratory and radiological research is inevitable in cases requiring differential diagnosis.

In line with the studies in the literature, male sex was dominant in the AA group, while female sex was dominant in the negative appendectomy group.[2,7] Our negative appendectomy rate was 17.3%. We attributed our negative appendectomy rate, which was higher than in the literature, to the fact that we are a tertiary education hospital and that our patients had many additional diseases and a wide range of admission reasons.

Finding suitable, easily accessible and low-cost markers for early diagnosis of AA is often the focus of research. PLR is an inflammatory marker that can be identified in a simple haemogram examination. PLR is a tool to study important inflammatory cases. In many cancers and inflammatory processes, the release of proinflammatory cytokines promotes the proliferation of megakaryocytes and because platelets are cells that have a certain effect on infections, changes in PLR level can be used in the diagnosis and/or differential diagnosis of appendicitis.[10,11]

In AA, neutrophilia and a left shift on the haemogram are often associated with lymphopenia.[12] Boshnak et al.[13] found that low lymphocyte count is a risk factor in both univariate and multivariate analyses. When they took lymphocyte count [odds ratio (OR): 0.0125; 95% confidence interval (CI), 0.0015-0.1031; p<0.001] with a cut-off value of $2.3x10^9$/L, sensitivity was 82.76%, specificity was 63.64%, positive predictive value (PPV) was 85.7% and negative predictive value (NPV) was 58.3%. In the same study, they found a mean platelet count ($x10^9$/L) of 237.45±54.08 in the AA group and 257.00±48.55 (p=0.02) in the negative appendectomy group. When the cut-off for the platelet value was taken as $188x10^9$/L, sensitivity was 31.03%, specificity was 100%,

Table 4. Proposed cut-off values for PLR in diagnosis of AA to age groups

Age groups	Cut-off value	Sensitivity (%)	Specificity (%)	p-value	PPV	NPV	pLLR	nLRR	AUC
18-39	125.80	43.07	70.71		81.8	28.9	1.47	0.81	0.654
40-59	115	35.48	85.71	0.002*	95.6	13.3	2.48	0.75	0.612
60 and older	233.64	78.79	34.29		77.2	36.4	1.20	0.62	0.561

NLR: Neutrophil-to-lymphocyte ratio, AUC: Area under the curve, PPV: Positive predictive value, NPV: Negative predictive value, OR: Odds ratio, pLLR: Positive likelihood ratio, nLLR: Negative likelihood ratio

PPV was 100% and NPV was 35.5%.[13] In our series, similar to the literature, the lymphocyte count and platelet count were lower in the AA group.

In a study investigating the relationship between appendicitis and PLR in paediatric patients, the PLR level in the AA group was statistically significantly higher than the control group (p<0.001). In addition, when cut-off was taken as >111.62, the predictive power of PLR for patients with appendicitis [area under the curve (AUC): 0.706; 95% CI, 0.658-0.751; p<0.001] had 65.7% sensitivity and 68.0% specificity.[14]

Kahramanca et al.[15] found higher PLR values in the positive appendectomy group than in the negative appendectomy group [146.5 (59.7-975.0)] vs 123.0 (28.4-497.8); p=0.036). In their study, the cut-off value for PLR was 136.5; sensitivity, specificity, NPV and PPV were 56.3, 55.3%, 19.6% and 86.2%, respectively.

In the study by Yıldırım et al.[9], PLR could also predict complicated cases regardless of age and sex (p<0.001). While the cut-off value of the PLR was 169.7, it had 74.4% sensitivity and 73.5% specificity in predicting complicated cases.

In our study, although the rate of PLR was high in patients with AA, there was no statistically significant difference (171 vs 184; p=0.382). In multivariate analysis, PLR was a risk factor in the diagnosis of AA independent of age and sex (OR: 0.632; 95% CI, (min-max) 0.440-0.908; p=0.013). When age-independent ROC curve was performed (AUC: 0.543; p=0.093), its sensitivity was 70.82%, specificity was 40.13% and its diagnostic value was limited. In our study, we evaluated the diagnostic value of PLR rate separately in the age groups, as compared to the studies in the literature and the diagnostic values for the age groups were significantly different. While it had the highest sensitivity in patients older than 60 years, its specificity was quite low. Between 40 and 59 years of age, its sensitivity was very low, but it showed the highest specificity.

Study Limitations

The most important limitation of our study was its retrospective nature. In addition, only patients undergoing appendectomy were included in the study, patients who had suspected AA but did not undergo surgery were not included.

Conclusion

Consequently, PLR value alone is not sufficient in diagnosis of AA and normal PLR values cannot exclude AA alone. The diagnostic value of PLR varies according to age groups. The surgeon's clinical evaluation should continue to be a priority in the diagnosis of AA. Prospective randomised studies are needed to determine the diagnostic accuracy of the PLR value.

Ethics

Ethics Committee Approval: We did not receive an ethics committee approval because the study is retrospective.

Informed Consent: Because the study was retrospective, we could not get informed consent.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: U.T., M.A., E.M.S., Ş.Y.İ., F.D., T.T., Concept: U.T., M.A., Design: U.T., M.A., Ş.Y.İ, Data Collection or Processing: M.A., E.M.S., Analysis or Interpretation: U.T., Ş.Y.İ., F.D., T.T., Literature Search: U.T., M.A., E.M.S., Ş.Y.İ., F.D., T.T., Writing: U.T., M.A.

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RESEARCH ARTICLE

Does a Distal Surgical Margin Closer than 10 mm Increase the Risk of Recurrence in Locally Advanced Rectal Cancer in a Mid-Distal Location?

Orta-Distal Yerleşimli Lokal İleri Rektum Kanserinde 10 mm'den Yakın Distal Cerahi Sınır Nüks Riskini Artırır mı?

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ABSTRACT

Aim: Although many factors affecting recurrence, including surgical margin involvement, have been considered in rectum cancer surgery, there is no consensus on the definition of a safe distal surgical margin (DSM).We aimed to investigate the oncological safety of a DSM closer than 10 mm and the factors affecting relapse in mid-distal located rectum tumours.

Method: Patients who underwent sphincter-preserving rectal curative resection following neoadjuvant chemoradiotheraphy between February 2006 and June 2019 for mid-distal lying rectum tumours were investigated retrospectively. Patients with radial or distal surgical margin involvement, having a complete pathologic response, or being lost to follow-up were excluded from the study. Patients and tumour characteristics, clinical and pathological disease stages, and recurrence and disease-free survival rates were compared between groups created along a cut-off value of 10 mm in DSM (DSM <10 and DSM ≥10).

Results: The study group consisted of 23 patients (DSM <10, n=11; DSM ≥10, n=12). Most of the tumours were located distally (70% , n=16). Handsewn anastomosis was performed in 81.8% of patients in the DSM <10 group (Turnbull-Cutait, n=5; coloanal anastomosis, n=4) and in 33% of patients in the DSM ≥10 group (Turnbull-Cutait, n=2; coloanal anastomosis, n=2). During a median follow-up time of 72 (6-158) months, three cases of systemic recurrence developed while no local recurrence was faced. The recurrence rates and disease-free survival rates were similar (p=0.17 and p=0.184, respectively). Younger age, bulkier tumour, presence of perineural invasion, ypN stage, and number of metastatic lymph nodes were associated with recurrence (p=0.017, p=0.00, p=0.014, p=0.030, and p=0.024, respectively).

Conclusion: Our study supports the view that obtaining a DSM closer than 10 mm but without tumour can be sufficient in terms of oncological safety, allowing permanent colostomy to be avoided. Young age, large tumour size, presence of perineural invasion and increased number of metastatic lymph nodes stand out as risk factors for recurrence.

Keywords: Distal surgical margin, rectum cancer, recurrence, risk factor

ÖZ

Amaç: Rektum kanseri cerrahisinde sınır tutulumu dahil nükse etki eden birçok faktör tanımlanmışsa da güvenli distal cerrahi sınır (DCS) tanımı üzerinde fikir birliğine varılamamıştır. DCS'nin 10 mm'den yakın olmasının onkolojik güvenilirliğini ve nükse etki eden faktörleri incelemeyi amaçladık.

Yöntem: Şubat 2006-Haziran 2019 arasında orta-distal rektum yerleşimli malignitelerde neoadjuvan kemoradyoterapi sonrası küratif sfinkter koruyucu rezeksiyon yapılan olgular retrospektif olarak incelendi. Radyal ve DCS pozitifliği olan, takip yapılamayan veya patolojik tam yanıt gelişen olgular çalışma dışı bırakıldı. Distal cerrahi sınır 10 mm eşik değerine göre oluşturulan gruplar arasında (DCS <10 ve DCS ≥10) hasta ve tümör biyolojik özellikleri, klinik ve patolojik evreler ile nüks gelişimi, hastalıksız sağkalım oranları karşılaştırıldı.

Bulgular: DCS <10 grubunda 11, DCS ≥10 grubunda 12 olmak üzere 23 olgu ile çalışma grubu oluşturuldu. Olguların yaklaşık %70'de (n=16) distal yerleşim mevcuttu. DCS <1cm grubunda 9 (%81,8) olguda anastomozlar el ile (Turnbull-Cutait; n=5, koloanal anastomoz; n=4) yapılırken

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DCS ≥1cm olan grupta 4 (%33) olguda (Turnbull-Cutait, n=2; koloanal anastomoz, n=2) el ile rekonstruksiyon yapıldı. Median 72 (6-158) ay takip süresinde lokal nüks saptanmazken 3 olguda sistemik nüks gelişti. Gruplar arasında nüks ve hastalıksız sağkalım açısından istatiksel olarak anlamlı fark saptanmadı (p=0,217, p=0,184). Genç yaş (p=0,017), büyük tümör çapı (p=0,004), perinöral invazyon (p=0,014), ypN evresi (p=0,030), metastatik lenf nodu sayısı (p=0,024) ile nüks arasında negatif yönde anlamlı ilişki saptandı.

Sonuç: Çalışmamız 1 cm'den yakın ancak tümörsüz DCS elde edilmesinin onkolojik açıdan yeterli olabileceğini ve kalıcı kolostomiden kaçınılabileceği görüşünü destekler niteliktedir. Genç yaş, perinöral invazyon varlığı, metastatik LN sayısı ile büyük tümör çapı rekürrensle ilişkili risk faktörleri olarak öne çıkmaktadır.

Anahtar Kelimeler: Distal cerrahi sınır, rektum kanseri, nüks, risk faktör

Introduction

Significant improvement was achieved in local recurrence and survival rates for distally located rectal cancer surgery through neoadjuvant chemoradiotherapy (CRT) and the total mesorectal excision technique (TME) defined by Heald et al.[1] The development of stapler devices made it possible to perform even more sphincter-sparing surgery.

Despite these developments, it has been proven that there is microscopic involvement in up to 33% of resection margins and that the radial surgical margin (RSM) involvement adversely affects overall survival (OS) and disease-free survival (DFS).[2] Although the correlation of the distal surgical margin (DSM) with oncological outcomes has been examined in many publications, there is no exact distance accepted.[3] It is known that tumours can spread intramurally to a distance of 1 cm from the macroscopic margin.[4] In distal rectum cancer, surgeons try to achieve a minimum of a 2-cm DSM. While patients quality of life improves without stoma, it is not always possible to obtain a DSM of minimum 1 cm.

In our study, we aimed primarily to investigate the oncological reliability of DSM < 10 mm in patients with mid-distal rectal cancer who underwent sphincter-sparing curative surgery after neoadjuvant CRT. Secondarily, we investigated factors affecting recurrence in this group of patients.

Materials and Methods

Patient Selection and Parameters

After approval was obtained from the ethics committee of Acıbadem University (date: 12.03.2020; number: ATADEK 2020-04/39), patients who were clinically diagnosed with rectal cancer and underwent curative resection between February 2006 and June 2019 were retrospectively scanned from the digital data system of Bursa Acıbadem Hospital. One hundred and six cases were detected. The following cases were excluded from the study: patients with disease in TNM stages I and IV, upper rectum tumours, or synchronous tumours; patients who underwent abdominoperineal resection (APR) or received adjuvant or short-term radiotherapy; patients who were unable to receive radiotherapy due to morbidity or refusal of treatment; patients with complete pathological response, with DSM involvement (0 mm), or with RSM involvement (1 mm); and patients with incomplete follow-up. The final study group consisted of 23 patients who had a rectum tumour located in the middle or distal part of the rectum, had locally advanced disease, and underwent curative sphincter-sparing surgery (low anterior, very low anterior, coloanal anastomosis, or Turnbull-Cutait) after neoadjuvant CRT (Figure 1).

Demographic characteristics of the patients, biological characteristics of the tumours (perineural, venous, lymphatic, extranodal invasions, differentiation degree), DSM, RSM, total and metastatic lymph node (LN) numbers, tumour size, clinical T stage (cT), clinical N stage (cN), clinical TNM stage (cTNM), pathological T stage (ypT), pathological N stage (ypN), pathological TNM stage (ypTNM), relapse (local & systemic), and disease-free (DFS) and OS times were examined. DFS was accepted as the time until the first detection of systemic or local recurrence after

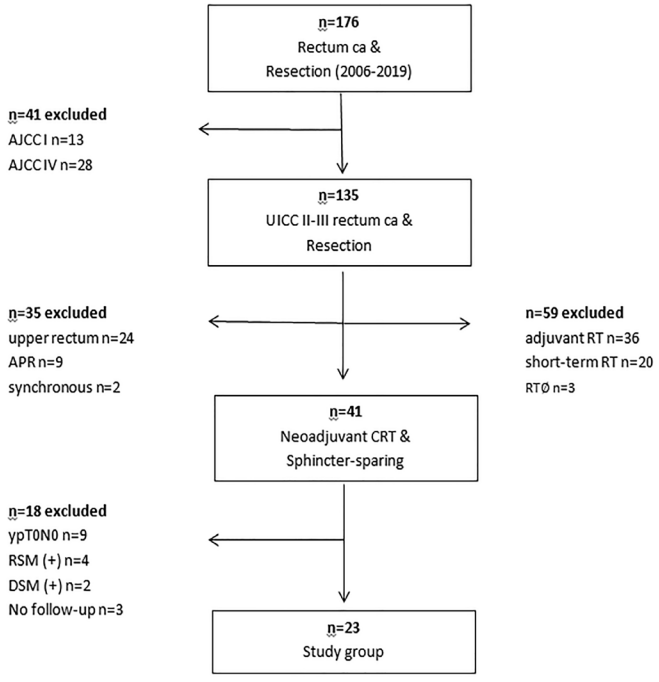

Figure 1. Patient selection flowchart

AJCC: AJCC Cancer Staging Manual. 8th ed (TNM Classification)
RTØ: Not given radiotherapy, ypT0N0: Complete pathological response, CRT: Chemoradiotherapy, APR: Abdominoperineal resection, DSM: Distal surgical margin, RSM: Radial surgical margin

curative resection, and OS was accepted as total survival. The patients were divided into two groups according to the threshold value of 10 mm DSM: patients with DSM <10 mm and patients with DSM ≥10 mm.

Staging, Neoadjuvant Therapy

Clinical staging was done using abdominal ultrasonography, thorax/abdominal computed tomography (CT) and pelvic magnetic resonance (MR) imaging techniques in patients with histopathologically proven adenocarcinoma. Neoadjuvant CRT was recommended for patients with cT3 and cT4 stage disease and/or nodal metastasis. In the protocol, 5-Fluorouracil/leucovorin or oral capecitabine and/or intravenous oxaliplatin were administered to the pelvic area simultaneously with radiotherapy at a total dose of 50.0 Gy (2 Gy/day, 5 days a week for 5 weeks). Surgical intervention was performed 10 weeks after the completion of radiotherapy.

Surgery

Intestinal cleansing was performed in all patients before surgery. Antibiotic prophylaxis was started 30 minutes before the operation and continued for 2 days postoperatively. Resection was performed in accordance with TME principles by surgeons experienced in colorectal surgery. The anastomoses were performed manually or with a stapler device according to the proximity of the tumour, the findings observed in the surgery and the surgeon's preferences. Routine protective ileostomy was performed. A 2-stage Turnbull-Cutait procedure without ileostomy was used in some patients.

Pathology and Surgical Margin

The resected specimen was sent to pathologist immediately after pinning. DSM was defined in pinned fresh specimen as the closest distance between the distal edge of the resection edge and the closest tumour cell. RSM was defined as the distance between the mesorectal radial edge and the closest tumour cell. The stapler donut was examined pathologically, but was not included in the surgical margin. Pathological staging was made on the basis of the American Joint Committee on Cancer-TNM staging system, version 8 (AJCC-8th) and expressed as "yp".[5]

Follow-up, Relapse and Adjuvant Therapy

Patients were followed up on by blood biochemistry, carcinoembryonic antigen, thoracoabdominal CT and colonoscopy at intervals (3-6-12 months) in accordance with the follow-up recommendations of the National Comprehensive Cancer Network (NCCN) guidelines.[3] In addition, cancer antigen 19-9 was measured at each control and annual pelvic MR was performed. Positron emission tomography was used optionally in cases of clinical suspicion. Digital and rectoscopic examinations were performed at every control. Locoregional recurrence was defined as clinical, radiological and/or pathological detection of the disease in the pelvis in the operation field, and systemic recurrence was defined as the detection of disease similar to the primary tumour outside the primary tumour area. Adjuvant treatment decisions were made in the multidisciplinary oncology council. 5-Fluorouracil/leucoverin (5-FUFA) or oxaliplatin/5-Fluorouracil/leucoverin (FOLFOX) regimens were used depending on the risk.

Statistical Analysis

All statistical analyses were performed using the IBM SPSS statistics program (ver. 26.0.0.0). Continuous (numerical) variables were expressed as median (lower-upper limit) and categorical variables were expressed as numbers and percentages unless otherwise specified. Differences between numerical variables were determined with the Mann-Whitney U test, and categorical comparisons were made using chi-square and Fisher's exact tests. The DFS curve was created by the Kaplan-Meier method. Overall and DFS results between groups were compared using the log rank (Mantel-Cox) test. The relationship between recurrence and parameters was analyzed using Spearman's rho correlation test. $P<0.05$ was considered significant in all statistical tests.

Results

A total of 23 patients (14 males and 9 females) were followed up on for a median of 72 (6-158) months. The median DSM in the whole study group was 10 mm (1-30). In 11 patients, DSM was found to be less than 10 mm (median 4 [1-5]), while in 12 patients, DSM was more than 10 mm (median 25 [10-30]). Tumours were in distal localization in approximately 70% (n=16) of the patients. While anastomoses were made manually (Turnbull-Cutait, n=5; coloanal anastomosis, n=4) in 9 (81.8%) patients in the DSM <10 mm group, manual reconstruction was performed in 4 (33%) patients in the DSM ≥10 mm group (Turnbull-Cutait, n=2; coloanal anastomosis, n=2). The demographic characteristics of the patients, tumour location, tumour diameter, and RSM and DSM distances are summarized in Table 1. In the DSM <10 mm group, it was observed that the number of females was significantly higher than males (n=7 vs n=2, p=0.036). There was no significant difference between other parameters. The biological properties of the tumours are detailed in Table 2. Extramural venous invasion was not detected in any of the patients. When lymphatic and venous invasion were combined as lymphovascular invasion (LVI), LVI was detected in three patients, and no relation was found between LVI and recurrence (r=0.150,

n=23, p=0.474; Spearman's rho correlation test). Tumour characteristics, LN numbers removed and metastatic LN numbers were similar between groups. The distribution of the clinical and pathological stages is summarized in Table 3. There was a significant difference between the groups only in terms of the ypN status (p=0.046).

While there was no local recurrence in any of the patients, three systemic relapses were detected in the group with DSM ≥10 mm. Liver and bone metastases developed in one patient after 8 months, and the patient died at the end of the 14th month. This patient was also the only patient who died in our study group. Lung metastasis developed at the end of the 43rd month in the second patient and liver metastasis at the 60th month in the third patient. During the median follow-up period of 72 (6-158) months, the systemic recurrence rate was 13.0% and the overall survival rate was 95.7%; there was no significant difference between the groups in terms of OS and DFS (Table 1). When the factors associated with recurrence were examined, there was a significant relationship between the presence of perineural invasion (PNI) (r=0.503, p=0.014), age (r= -0.492, p=0.017), large tumour diameter (r=0.575, p=0.004), pN stage (r=0.452, p=0.030), and metastatic LN number (r=0.469, p=0.024) (Tables 1, 2, 3).

Discussion

In our study, it was observed that obtaining a DSM of less than 10 mm in sphincter-preserving resections performed after neoadjuvant CRT in locally advanced rectal cancer did not pose an oncological risk, and the presence of large tumours, young age, metastatic LN count and PNI increased the risk of systemic recurrence.

After the application of the TME technique in rectal cancer, the 5-year local recurrence rate decreases to 4-6%, while systemic recurrence rates are around 20%.[6] Factors affecting relapse have been considered in many studies:

Table 1. Distribution of patient demographics, tumor localization and surgical margins by groups

	Total	<1 cm	1 cm	p	pδ
Gender, n(%)					
Male	14 (60.9)	4 (36.4)	10 (83.3)	0.036[1]	0.835
Female	9 (39.1)	7 (63.6)	2 (16.7)		
Age (years)*	53 (30-73)	51 (33-73)	55 (30-72)	0.378[2]	0.017
Localization, n(%)					
Middle	7 (30.4)	2 (18.2)	5 (41.7)	0.371[1]	0.912
Distal	16 (69.6)	9 (81.8)	7 (58.3)		
Tumor diameter (mm)*	20 (9-75)	20 (9-40)	22 (10-75)	0.773[2]	0.004
Radial surgical margin (mm)*	8 (2-20)	7 (2-15)	9 (2-20)	0.750[2]	0.979
Distal surgical margin (mm)*	10 (1-30)	4 (1-5)	25 (10-30)	0.000[2]	0.434
Recurrence*					
Yes	3 (13.0)	0 (0.0)	3 (25.0)	0.217[1]	na
No	20 (87.0)	11 (100.0)	9 (75.0)		
Overall survival*(months)	72 (6-158)	29 (6-158)	84 (8-128)	0.394[3]	na
Disease-free survival*(months)	60 (6-158)	29 (6-158)	78 (8-128)	0.184[3]	na

*Values are given as median (minimum-maximum)

[1]Fisher's exact test, [2]Mann-Whitney U, [3]Log Rank (Mantel-Cox)

[δ]Spearman's rho correlation test (Correlation with recurrence)

na: Not available, DSM: Distal surgical margin

Table 2. Distribution of biological features of tumors by groups and their relationship with recurrence

	Total	<1 cm	1 cm	p	p†
Lymph node total (n)*	29 (7-57)	26 (7-48)	30 (8-57)	0.387[1]	0.364
Lymph node metastatic (n)*	0 (0-17)	0 (0-3)	0 (0-17)	0.259[1]	0.024
Differentiation**					
Badly differentiated	5 (21.7)	2 (18.2)	3 (25.0)		
Moderately differentiated	13 (56.5)	7 (63.6)	6 (50.0)	0.805[2]	0.371
Well differentiated	5 (21.7)	2(18.2)	3 (25.0)		
Extranodal invasion**					
Yes	4 (17.4)	1 (9.1)	3 (25.0)	0.590[3]	0.458
No	19 (82.6)	10 (90.9)	9 (75.0)		
Lymphatic invasion**					
Yes	2 (8.7)	0 (0.0)	2 (16.7)	0.478[3]	0.587
No	21 (91.3)	11 (100.0)	10 (83.3)		
Venous invasion**					
Yes	2 (8.7)	1 (9.1)	1 (8.3)	0.949[3]	0.587
No	21 (91.3)	10 (90.9)	11 (91.7)		
Perineural invasion**					
Yes	4 (17.4)	1 (9.1)	3 (25.0)	0.590[3]	0.014
No	19 (82.6)	10 (90.9)	9 (75.0)		
Mucinous tumor**					
Yes	3 (13.0)	1 (9.1)	2 (16.7)	0.590[3]	0.284
No	20 (87.0)	10 (90.9)	10 (83.3)		
Signet ring cell tumor**					
Yes	2 (8.7)	0 (0.0)	2 (16.7)	0.478[3]	0.114
No	21 (91.3)	11 (100.0)	10 (83.3)		

* Values are given as median (minimum-maximum)

** Values are given as n (%)

[1]Mann-Whitney U [2]chi-square test, [3]Fisher's exact test

†Spearman's rho correlation test (Correlation with recurrence)

LVI, extramural venous invasion, metastatic LN number, PNI and especially RSM positivity have been considered as risk factors.[2,7,8,9,10,11,12] DSM stands out as another factor affecting the decision for sphincter-sparing surgery in patients without RSM involvement. In cases of involvement, the 5-year local recurrence rate increases to 24.1%, and the systemic recurrence rate increases to 35.5%.[13] Consensus has not been reached on the minimum safe distance. Repeated attempts at the treatment of local recurrence in rectal cancer have a low chance of success.[14] For this reason, surgeons

may prefer the APR technique, especially if DSM <10 mm is detected. However, life with a permanent stoma is not the first choice of any individual.

In the current NCCN rectal cancer guidelines, it is recommended to obtain a DSM of 5 cm for upper rectum tumours and 10-20 mm for sphincter-sparing surgery for middle and distal rectal tumours.[3] Sufficient DSM is associated with intramural and distal mesorectal lymphatic spread.[4] Distal intramural spread (DIS) rarely exceeds 2-3 cm.[10] Apart from its direct effect on mesorectal invasion, it has been found that there is a significant relationship between DIS, the number of metastatic LNs, T stage and tumour diameter.[9,15,16] LN metastasis plays a role in mesorectal tumour spread independent of DIS.[17] These results suggest that the risk of local recurrence may especially increase at a distance of <1 cm in patients with locally advanced disease.

No local recurrence was detected in any of the patients during a median follow-up period of 72 (6–158) months, while systemic recurrence was detected in 3 patients in the DSM ≥10 mm group. No statistically significant difference was found between the groups in terms of recurrence, DFS and OS (Table 1, Figure 2). However, considering that a minimum follow-up period of 5 years is required to detect 80% of local recurrences, the median follow-up period of 29 months for the group with DSM <10 mm may be misleading.[18] In a recent study of 88 patients with similar methodology, the local recurrence rate was 6.1% in the DSM <10 mm group and 5.5% in the DSM ≥10 mm group, which

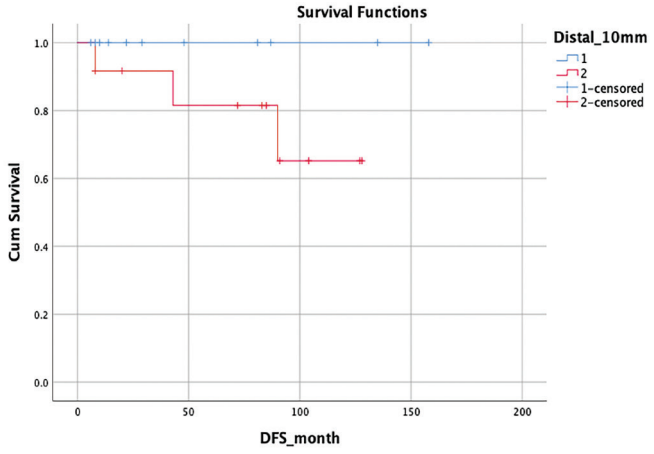

Figure 2. DFS (Disease-free survival); Log Rank (Mantel-Cox) p=0.184

Table 3. The distribution of clinical and pathological stages among the groups and their correlation with recurrence. All values are given as n (%)

A. Clinical stage		Total	DSM <1 cm	DSM ≥1 cm	p$^{\Phi}$	Recurrence p‡
	1	0 (0)	0 (0)	0 (0)		
cT	2	3 (13.0)	2 (18.2)	1 (8.3)	0.484	0.495
	3	20 (87.0)	9 (81.8)	11 (91.7)		
	0	5 (21.7)	3 (27.3)	2 (16.7)		
cN	1	6 (26.1)	4 (36.4)	2 (16.7)	0.339	0.950
	2	12 (52.2)	4 (36.4)	8 (66.7)		
	1	0 (0)	0 (0)	0 (0)		
cTNM	2	5 (21.7)	3 (27.3)	2 (16.7)	0.538	0.602
	3	18 (78.3)	8 (72.7)	10 (83.3)		
B. Pathological stage						
	1	4 (17.4)	3 (27.3)	1 (17.4)		
pT	2	7 (30.4)	4 (36.4)	3 (30.4)	0.343	0.120
	3	12 (52.2)	4 (36.4)	8 (66.7)		
	0	17 (73.9)	9 (81.8)	8 (66.7)		
pN	1	2 (8.7)	2 (18.2)	0 (0.0)	0.046	0.030
	2	4 (17.4)	0 (0.0)	4 (33.3)		
	1	8 (34.8)	6 (54.5)	2 (16.7)		
pTNM	2	9 (39.1)	3 (27.3)	6 (50.0)	0.163	0.077
	3	6 (26.1)	2 (18.2)	4 (33.3)		

$^{\Phi}$Chi-Square test, ‡Spearman's rho correlation test (Correlation with recurrence), DSM: Distal surgical margin

suggested that the results might change in the following period.[19] Another reason for the absence of local recurrence in our series might be performing APR in patients with worse pathological features (LVI, PNI, surgical margin positivity, poor differentiation).[17,20] In accordance with our methodology, there was no positive surgical margin and no extramural venous invasion in our study. The rates of LVI, PNI and poor differentiation were 13.4%, 17.4% and 21.7%, respectively.

It has been shown that tumour regression may occur in a scattered manner and small tumour deposits may remain after neoadjuvant CRT.[15,21,22] Mezhir et al.[16] calculated this rate as 55% and reported that DIS rarely exceeded 1 cm. Chiemelik et al.[23] found similar DIS (57%) rates and recommended a minimum DSM of 1 cm. Despite these findings, many clinical studies reported that DSM <1 cm did not increase the risk of recurrence.[4,9,11,17,18,19] Manegold et al.[19] reported that there was no difference between the groups in terms of recurrence when the 1 cm threshold was accepted for DSM following neoadjuvant CRT. Although similar results were reported in the Polish cohort study, it was a handicap to include patients with short- and long-term CRT without subgrouping in the study design.[24] It has been suggested to obtain 5 mm DSM by Kusters et al.[17] Han et al.[11] reported that DSM <1 cm did not increase local and systemic recurrence, even in patients not given RT. In another study sharing similar results, it was noted that the absence of neoadjuvant CRT increased the risk of local recurrence 2.2 times.[25] Andreola et al.[9] reported that DSM did not pose a risk for recurrence other than margin positivity,and Bujko et al.[4] reached the same result in a systematic review.

There are also authors who find DSM <1 cm risky.[12,13,26] Farhat et al.[26] reported that DSM increased recurrence. There were no homogeneous groups in that study because patients with stage 4 disease and patients who underwent APR and local excision were included. In another study, which reported that DSM < 8 mm increased the risk of recurrence, it was not possible to associate DSM with the results; this is because RSM positivity was included and patients with upper rectum tumours and stage 4 disease were included.[12] Zeng et al.[13] reported 12.4% local and 26.4% systemic recurrence in the median 61 month follow-up period in patients with a distal margin of 1-2 mm. Although 80% of the patients in the study group consisted of individuals with stage 2-3 disease, the neoadjuvant CRT ratio was 21.6%, leading to the results being questioned.

When the factors were examined that affected the recurrence of patients who underwent sphincter-sparing resection after neoadjuvant CRT, which was our secondary aim, a significant relationship was found between young age, large tumour size, number of LN metastases, presence of PNI and recurrence. The relationship between age and recurrence is a frequently studied parameter, and it is accepted that recurrence increases and survival is shortened under the age of 55 years.[27,28] In our series, the median ages of the patients with and without recurrence were found to be 37 (30-51) and 56 (33-73) years, respectively. It was observed that there was a significant negative correlation between age and recurrence (Table 1).

Although it is accepted that tumour size has an effect on the recurrence of colon tumours, the same relationship has not been generally accepted in rectal tumours. Few publications have reported that tumour diameter > 5 cm is a prognostic risk factor and is associated with the T stage.[29,30] In our series, tumour diameters in patients with and without recurrence were 4.4±2.2 and 2.0±0.8 cm, respectively (measured as mean ± standard deviation). A significant relationship was found between size and recurrence (Table 1). However, no relationship was found between the cT/pT stage and recurrence (Table 3).

It is known that LN metastasis increases recurrence in rectal cancer.[2,8,9,10,11,12,17,25,31] In our study, it was observed that the ypN stage was significantly higher in the DSM ≥10 mm group (p=0.046) and was significantly associated with recurrence (Table 3). The mean ± standard deviation numbers of metastatic LN in patients with and without recurrence were found to be 8.0±7.2 and 1.4±4.0, respectively. The relationship between the number of metastatic LNs and recurrence was confirmed in the analysis performed on the numerical parameters (Table 2). Our findings supported the negative role of LN metastases in recurrence.

Another independent prognostic factor that is accepted in colorectal malignancies is the presence of PNI.[8,13,25] In a recent study, it was observed that many structures, including lymph nodes, were shrunk or disappeared with neoadjuvant CRT, while the presence of PNI did not change.[31] Based on this, the author suggested that the presence of PNI might be associated with radioresistant cells and a poor prognosis. In our series, 3 (75%) of 4 patients with PNI had LN metastasis and a strong correlation was observed between PNI and recurrence (Table 2).

"Should the stapler doughnuts be part of the surgical margin?" is a common topic of discussion. Stapler doughnut involvement is an independent determinant of OS in proximal gastrointestinal malignancy surgery.[32] However, its role in rectal surgery is being discussed with increasing frequency after Pullyblank et al.[33] suggested that histological examination of the stapler doughnut has no effect on treatment. Many researchers have reported similar results, and it has even been suggested that this investigation causes a waste of time and resources.[34,35,36] Technically, the stapler doughnut cannot fully reflect the surgical margin

as it cannot surround the entire rectal stump. Therefore, it is recommended to consider the surgical margin as positive in patients with margin involvement but without stapler doughnut involvement.[37] Apart from these considerations, the fact that there is not enough tissue left to use for the stapler in distally located tumours is another technical difficulty. In our study, reconstruction was performed manually in approximately 82% of patients with DSM <10 mm.

Study Limitations

The limitations of our study were the 29-month median follow-up period of the target group, retrospective and single-centre study design, and the low number of patients. It should be kept in mind that the absence of extramural venous invasion and low number of patients with LVI (n=3), which are among the factors known to be effective on recurrence, in our study group may have affected our recurrence results.

The decision about surgical method in locally advanced rectal cancers is multi-factorial and complex. Oncologically safe DSM distance is controversial in mid-distal rectal cancer surgery. Controversial results may arise from differences in surgical experience, patient density, and treatment protocols as well as methodological differences. Considering the functional results, the remaining distance is more important than the removed one. Intersphincteric or partial sphincteric resections can reduce quality of life while enabling life without stoma. For a comfortable life, surgeons sometimes prefer to approach the tumour. As the evidence for safe DSM becomes more sufficient, there will be changes in our surgical practice. Before making a decision about APR, the involvement of the sphincter, the presence of poor prognostic factors, the presence of negative surgical margins and patient preferences should be evaluated in detail.

Conclusion

In this study, it was observed that DSM <10 mm did not pose an oncological risk, provided that all surgical boundaries were clean. Young age, presence of perineural invasion, metastatic LN number and large tumour diameter were identified as risk factors associated with recurrence.

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Ethics

Ethics Committee Approval: All of the procedures in our study complied with the institutional or national research committee ethical standards and the 1964 Helsinki Declaration or similar subsequent amendments/ethical standards.

Informed Consent: Informed consent was obtained from all patients participating in the study at the time of admission.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: A.Z, L.V.T., O.S.G., Concept: L.V.T., Design: L.V.T., O.S.G., Data Collection or Processing: L.V.T., Analysis or Interpretation: L.V.T., A.Z Literature Search: L.V.T., Writing: L.V.T.

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RESEARCH ARTICLE

Endoscopic Pilonidal Sinus Treatment (EPSIT) Experience of a Provincial Hospital in Eastern Turkey

Türkiye'nin Doğusunda Bir Taşra Hastanesinin Endoskopik Pilonidal Sinüs Tedavisi (EPSİT) Deneyimi

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ABSTRACT

Aim: Pilonidal sinus (PS) is an inflammatory disease of the sacrococcygeal region that negatively affects the life of the individual. Although there are many treatment modalities for the disease, a gold standard treatment method has not yet been determined. It was aimed to compare the endoscopic PS treatment method with other treatment methods in pediatric patients treated for PS in a second-line provincial hospital.

Method: After obtaining approval from Erzurum Regional Training and Research Hospital Ethics Committee with the decision number 2020/06-66, pediatric patients under 18 years of age who were operated for PS in Muş Provincial Hospital between January 2017 and January 2020 were retrospectively analyzed. Patients were operated in the prone position, under spinal anesthesia by using total excision + primary closure, total excision + limberg flap, and endoscopic PS treatment (EPSIT) + phenol application methods. Patients' age, gender, length of hospital stay, time to return to work or school, and minor and major complications were analyzed.

Results: Forty eight patients in pediatric age group were included in the study. The average age of the patients was 16,18 years; 20 (41.6%) of the patients were male and 28 (58.3%) were female. The hospitalization period was 3,48 days and the average follow-up period was 480 days (16 months). Time to return to work was 10,6 (3-28) days. Forty-eight patients underwent surgery. Limberg flap method was used in 13, primary closure method in 9 and EPSIT method in 26 patients. Six patients had recurrence, 5 patients developed minor complications such as seroma and necrotic fat tissue. The hospitalization period was 2 days and the time to return to work was 4.46 days in patients who underwent the EPSIT method, which was superior to the other two methods. The biggest disadvantage of the EPSIT method was the recurrence rate (n=4 patients, 15.3%).

Conclusion: Although the recurrence rate of the EPSIT method with phenol application is high, it is more advantageous than other methods due to the short time to return to work or school and shorter hospital stay.

Keywords: Pilonidal sinus, EPSIT, pediatric patient

ÖZ

Amaç: Pilonidal sinüs (PS) bireyin yaşamını olumsuz etkileyen sakrokoksigeal bölgenin enflamatuvar hastalığıdır. Hastalık için birçok tedavi modaliteleri olmasına rağmen henüz altın standart bir tedavi yöntemi belirlenmemiştir. Bu çalışmada, ikinci basamak bir devlet hastanesinde PS nedeniyle tedavi edilen pediyatrik hastalarda endoskopik PS tedavi yöntemi ile diğer tedavi yöntemlerinin karşılaştırılması amaçlanmıştır.

Yöntem: Erzurum Bölge Eğitim ve Araştırma Hastanesi Etik Kurulu'ndan 2020/06-66 karar numarası ile onay alındıktan sonra Ocak 2017-Ocak 2020 arasında Muş Devlet Hastanesi'nde PS nedeniyle ameliyat edilen 18 yaş altı pediyatrik yaş grubu hastalar retrospektif olarak incelendi.Hastalar spinal anestezi altında prone poziyonunda total eksizyon + primer kapama, total eksizyon + limberg flep ve EPSİT + fenol uygulaması yöntemleri uygulanarak ameliyat edildi. Olguların yaşları, cinsiyetleri, hastanede kalış süreleri, işe dönüş ya da okula başlama süreleri, gelişen minör ve major komplikasyonları incelendi.

Bulgular: Çalışmaya 48 pediyatrik yaş grubu hasta dahil edildi. Hastaların yaş ortalaması 16,18 yıl idi. Hastaların 20'si (%41,6) erkek, 28'i (%58,3) kadındı. Hastanede yatış süresi 3,48 gün ve ortalama takip süresi 480 gün (16 ay) idi. Hastaların işe dönüş süresi 10,6 (3-28) gün idi. On üçünde limberg fleb yöntemi, 9'unda primer kapama, 26'sında EPSİT yöntemi kullanılarak 48 hastay ameliyat yapıldı. Altı hastada nüks, 5 hastada seroma ve nekrotik yağ dokusu gibi minör komplikasyon gelişti. EPSİT yöntemi uygulan hastaların hastanede kalma süresi 2 gün, işe dönüş süresi 4,46 gün idi ve diğer iki yönteme üstün olduğu görüldü. Nüks oranının %15,3 (n=4) olması bu yöntemin en büyük dezavantajıdır.

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Sonuç: Fenol uygulamalı EPSİT yönteminde nüks oranı fazla olmakla birlikte işe ya da okula dönüş zamanının kısalığı ve hastanede yatış süresinin az olması nedeniyle bu yöntem diğer yöntemlerden avantajlıdır.
Anahtar Kelimeler: Pilonidal sinüs, EPSİT, pediyatrik hasta

Introduction

Pilonidal sinus (PS) is a common inflammatory disease of the sacrococcygeal region associated with obesity, sedentary lifestyle, local irritation and hirsutism. Sacrococcygeal PS is more common in young adults, especially in men.[1,2] The ideal method for PS treatment should have minimal excision and low recurrence rates. Moreover, the best treatment should have features such as short hospitalization time, rapid return to normal life, minimum loss of labor and minimal scar.[3] There are different approaches in surgical treatment of PS, and in recent years, endoscopic methods have started to be used in PS treatment with the more frequent application of endoscopic methods in different fields of medicine.

In this study, it was aimed to compare endoscopic PS treatment and other surgical methods applied in pediatric patient group in a second-line provincal hospital and to discuss the results on the verge of literature information.

Material and Methods

Pediatric patients under the age of 18 years who were operated for PS disease in Muş Provincial Hospital between January 2017 and January 2020 were retrospectively analyzed with the Kardelen software system of the hospital after obtaining approval from Erzurum Regional Training and Research Hospital Ethics Committee with the decision number 2020/06-66. Patients were operated in the prone position, under spinal anesthesia by using total excision + primary closure, total excision + Limberg flap, and endoscopic PS treatment (EPSIT) + phenol application methods. A routine drain was placed in the Limberg flap method and primary closure method.

Statistical Analysis

Age, gender, length of hospital stay, time to return to work, and minor and major complications of the patients were recorded. SPSS 22 program was used for statistical analysis. The one-way analysis of variance (ANOVA) was used for statistical analysis. Cases were expressed as numbers and percentages.

The Stages of The Endoscopic PS Treatment Process

1: While the patient is in the prone position, both gluteal areas are taped with a plaster and pulled laterally. The surgeon is arranged on the left of the patient with the monitor on the right of the patient.

2: Hairs and debris are cleaned by widening the sinus mouth with a clamp.

3: The cyst is entered with the cystoscope, the hairs and debris are cleaned with the brush sent through the cystoscope, the remaining parts are taken out with forceps.

4: Granulated tissue in the cyst cavity is cauterized with monopolar in the presence of 5% mannitol (energy used 20 watts)

5: The edges of the sinus mouth are protected with nitrofurazone cream, injected into the cyst cavity (80% phenol + 20% alcohol) and the operation is terminated with wound dressing.

(Figure 1, 2, 3, 4, 5)

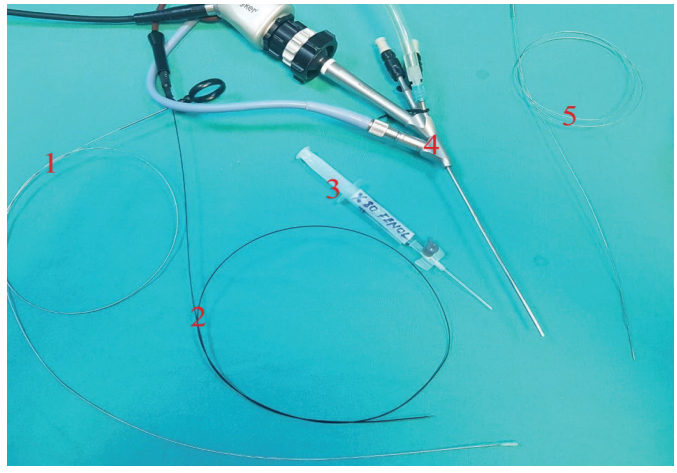

Figure 1. 1: Brush, 2: Monopolar cautery, 3: Phenol fluid, 4: Cystoscope, 5: Forceps

Features of the cystoscope: Cystoscope lensed with an angle of 5° has optical channel, irrigation channels and working channels. Working channel length is 14 cm, outer diameter of the channel is 6 charr (2 mm), inner diameter is 5 charr

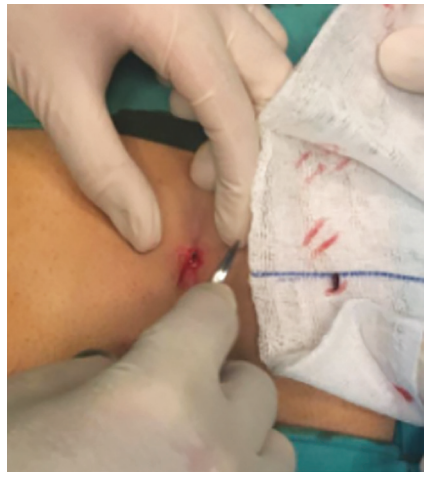

Figure 2. Cleaning the hairs with a clamp with a brush

Results

Forty eight patients under the age of 18 years who were operated for PS disease in Muş provincial hospital were examined. The mean age of the patients was 16.18±1.16 (12-18) years, 20 (41.6%) of the patients were male, 28 (58.3%) were female. The length of stay in the hospital was 3.48±1.9 days. The average follow-up period was 480±196 days (54-780). The time to return to work was 10.6±8 (3-28) days. Forty eight patients were operated, including 26 with EPSIT method, 13 with Limberg flap method and 9 with primary closure. The recurrence and minor complication rate in the EPSIT method was 4 (15.3%), the recurrence and minor complication rate was 1 (7.6%) in the Limberg method, and 1 (11.1%) patient operated with the primary closure method had recurrence (Table 1).

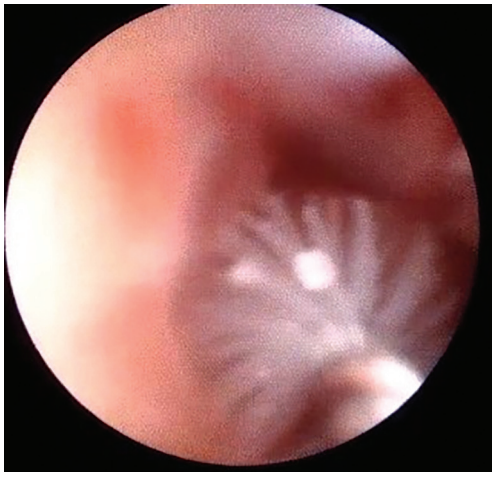

Figure 3. Removing remaining hair and debris

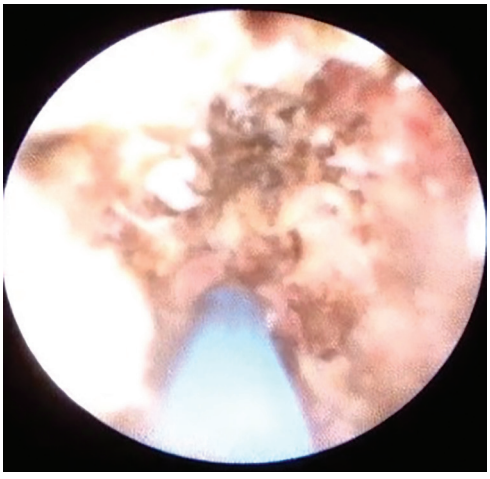

Figure 4. Monopolar cauterization of the cyst cavity

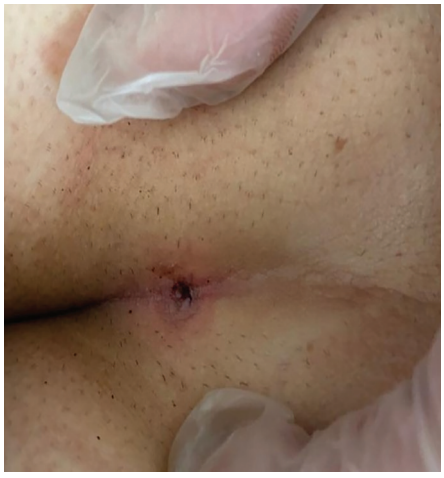

Figure 5. 7th day after surgery

Limberg surgery was performed in 3 of the patients who were operated with the EPSIT method and developed recurrence. Although the superficial tissue ultrasonografi finding of 1 patient was compatible with recurrence, the patient was followed up because he did not have active complaints.

EPSIT method was applied to the patient who was operated with the Limberg method and developed recurrence. The control follow-ups of the patient who developed recurrence following primary closure were not reached.

Stay in the hospital and time to return to work/school were significantly shorter in the EPSIT method, while recurrence rate was significantly higher in the EPSIT method compared with other methods ($p<0.05$). The effect size of the test was 0.76.

Discussion

PS is a common inflammatory disease of the sacrococcygeal region, which is seen especially in young men, significantly affects the quality of life, and can lead to absenteeism in work and school life.[4] The incidence of the disease is 26/100,000, and it usually occurs in male patients between the ages of 15-30, and it is twice as common in men compared to women.[1,2]

In the study conducted by Biçer et al.[5] in a group of pediatric patients, the mean age of the patients was 15.9 years and the male/female ratio was 1.7.In the study conducted by Pini Prato et al.[6], in a group of 43 pediatric patients, the mean age of the patients was 15 years and 53% of the patients were female. In our study, the mean age of the patients was 16.18 years and 58.3% of them were girls. The mean age of the patients was consistent with the literature, but unlike many studies in the literature, the rate of female patients was higher. Considering the sociocultural structure of our region; we thought that it was caused by the girls not working but staying at home, the lack of self-care, and the low number of patients in the study.

There are many treatment methods in PS treatment, however these treatments should be simple and effective. Although

Table 1. Patient characteristics, clinical data and results

Type of surgery	Number of patients	Mean age/ years	Gender M/F ratio	Stay in hospital/ days	Follow-up duration/ days	Time to return to work os school/ days	Minor complication	Recurrence rate	Second surgery after recurrence
EPSIT	26 (54.1%)	16.11	9/17	2	414,96	4.46	4 (15.3%)	4 (15.3%)	Limberg method in 3 patients
Total excision + limberg flap repair	13 (27%)	16.07	9/4	6.25	584,46	20.23	1 (7.6%)	1 (7.6%)	EPSIT in 1 patient
Total excision + primary closure	9 (18.7%)	16.55	2/7	4.11	516	14.66	0	1 (11.1%)	No follow-up

EPSIT: Endoscopic pilonidal sinus treatment, M: Male, F: Female

many techniques have been defined in the last century, there is still no clear treatment procedure.[4,7]

The main method used in PS treatment is surgical excision, and many methods are used to close the defect, such as total excision + primary repair, leaving the wound open, marsupialization, Karydakis method, Limberg flap, and V-Y advancement flap.[8] Total excision + primary repair and Limberg flap method are commonly used open surgical methods. Some surgeons report good results regarding primary closure, but the problematic side of this method is the high rate of recurrence and infection.[9,10] In the literature, the recurrence rate in the primary closure method varies between 0 and 42%. In the study by Can et al.[11], the recurrence rate was 18.4%. The recurrence rate was found to be 3% in 103 patients operated by Tocchi et al.[12] with the primary closure technique. In our study, recurrence developed in 1 (11.1%) patient in whom excision + primary closure method was used and no minor complications developed. The high rate of recurrence was considered due to the small number of patients.

The primary closure method is the ideal method in primary disease, but wide excision and flap methods should be used in most difficult-to-treat patients with recurrence and non-healing wounds.[13] In recent years, flap techniques have been at the forefront and have been shown to be superior to primary techniques. However, complications such as dehiscence, seroma and wound infection can be seen. The recurrence rate in flap methods is less than other methods and varies between 0-20%.[14] In a large study of 767 patients by Osmanoğlu et al.[15], recurrence was found in 11.6% of 300 patients who underwent lesion excision and primary closure, and 193 patients (4.7%) who underwent Limberg flap. The recurrence rate was 3.1% and the infection rate was 6.5% in 353 patients who underwent limberg flap surgery in the study by Mentes et al.[16]. In our study, the rate of recurrence and minor complications in the patient group who were operated with Limberg method was 7.6% in parallel with the literature.

The size of the incision is inversely proportional to wound healing. In the minimal open incision method, wound healing is faster and the hospital stay is shorter than the wide incision method.[17,18] In our study, the length of hospital stay and the speed of wound healing were inversely proportional to the size of the incision.

Patient satisfaction is low due to large scarrings in open methods and flap procedures.[19] On the other hand, minimally invasive techniques are frequently preferred by surgeons and patients because of their advantages such as early discharge from hospital and rapid return to work.[20] In recent years, with the more frequent use of endoscopic methods in different fields of medicine, endoscopic methods have been used in PS treatment. Endoscopic PS surgery is a new invasive technique that has many advantages over other techniques. This technique allows the surgeon to directly visualize PS, fistula tract and abscess, and to achieve hemostasis. In this technique, the PS and sinus tract are removed endoscopically, hair follicles and keratin debris are destructed, and the granulation tissue can be cauterized. Phenol applied with EPSIT has antiseptic, anesthetic and strong sclerosing properties. Since the external orifice is used for the procedure, it provides good aesthetic results, scar scars up to 5 mm, no stitches and tension. EPSIT has

advantages such as early return to work, minimal pain, no wound infection and no wound opening.[4,21,22]

In the study conducted by Meinero et al.[21], the mean time to return to work after surgery in a 12-month follow-up was 2±0.5 days and the recurrence rate was 5%. The recurrence rate was found to be 5% in the patient group of 77 patients in whom the EPSIT method was applied by Giarratano et al.[4] In the study conducted by Prato et al.[6], the average length of stay in the hospital was 24 h (12-72 h), the recurrence rate was 12% and the complication rate was 14% in a 4-month follow-up period. In our study, the follow-up period of the patients was 415 days (13.8 months) and the time to return to work was 4.46 days, and the rate of recurrence and minor complications was 15.3%. We think that the high rate of recurrence was due to the patients' lack of self-care and our new EPSIT experience. Patients should be offered postoperative wound care, personal hygiene, and hair epilation to reduce recurrence.

Although the recurrence rate is higher than the other two surgical methods, the EPSIT method is a minimally invasive procedure that can be preferred due to the short duration of hospitalization and short time to return to work or school life.

Study Limitations

The limitation of our study was that it was a retrospective study and a healthy comparison could not be made due to the low number of patients operated with other methods other than EPSIT. We believe that the examination of patients who are operated with EPSIT and other alternative methods in the same hospital will contribute more to the literature.

Conclusion

Although PS disease is common in pediatric patients, there are few articles in the literature. Studies on this subject should be increased. Although PS disease is common, a standard treatment method has not been defined yet. The treatment method is determined according to the surgeon's preference, the patient's request, and the extent of the disease. Although the recurrence rates are high, the EPSIT method is a simple, reliable and ideal method that can be accepted by physicians and patients due to the short duration of hospital stay, less time to return to school especially in children. Also, it can be performed even in secondary state hospitals.

Ethics

Ethics Committee Approval: After obtaining approval from Erzurum Regional Training and Research Hospital Ethics Committee with the decision number 2020/06-66.

Informed Consent: Written informed consent was obtained from all patients of parents.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Concept: R.P., M.C., Design: R.P., M.C., Data Collection or Processing: R.P., M.C., Analysis or Interpretation: R.P., M.C., Literature Search: R.P., M.C., Writing: R.P., M.C.

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

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RESEARCH ARTICLE

Effect of Body Mass Index and Fat Mass Measured Using a Tanita Body-fat Analyser on Caecal Intubation Time: A Prospective Clinical Study

Tanita Vücut Yağ Analizörü Kullanılarak Ölçülen Vücut Kitle İndeksi ve Fat Mass'ın Çekal Entübasyon Süresi Üzerindeki Etkisi: Prospektif Klinik Çalışma

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ABSTRACT

Aim: Factors such as the endoscopist's experience, bowel preparation and past abdominal surgery all affect caecal intubation time (CIT) in colonoscopy procedures. The present study investigated the effects of body mass index (BMI) and fat mass on CIT.

Method: The data of 110 patients who underwent colonoscopy and CIT measurement that was performed by a single endoscopist as part of colorectal cancer screening in our clinic between February 2020 and March 2020 were prospectively reviewed. The demographic data of the patients were recorded, along with any history of abdominal surgery, use of additional manoeuvers, BMI, fat mass measurements and CITs. The fat mass and BMI values were measured using a Tanita body-fat analyser device. The results were compared using statistical methods.

Results: CIT was found to be lower in females than in males (p<0.001). In addition, it was longer in patients with a history of abdominal surgery and in those who required additional manoeuvers during the colonoscopy (p=0.027) (p<0.001). No statistically significant relationship was found between BMI and CIT (p=0.199). In an evaluation of all the patients, a significant relationship was found between fat mass and CIT (p=0.034).

Conclusion: CIT decreases with increasing total body fat mass, regardless of the BMI. Our findings suggest that fat mass has a greater influence than BMI on CIT for a colonoscopy.

Keywords: Body mass index, caecal intubation time, fat mass, colonoscopy

ÖZ

Amaç: Kolonoskopi uygulamasında çekum entübasyon süresine (CIT) endoskopistin deneyimi, barsak hazırlığı ve geçirilmiş abdominal operasyonlar gibi faktörler etki etmektedir. Bu çalışmanın amacı vücut kitle indeksi (VKİ) ve fat massın CIT'ye etkisini araştırmaktır.

Yöntem: Şubat 2020-Mart 2020 arasında kliniğimizde kolorektal kanser taraması amacıyla tek endoskopist tarafından kolonoskopi yapılan ve CIT ölçülen 110 hastanın verileri prospektif olarak kaydedildi. Hastaların demografik verileri kaydedildi, geçirilmiş abdominal cerrahi, ek manevra kullanımı, VKI ve fat mass ölçüm değerleri ve CIT değerlendirildi. Fat mass ve VKİ değerleri Tanita vücut yağ analizörü cihazı ile ölçüldü. Sonuçlar istatistiksel olarak karşılaştırıldı.

Bulgular: CIT kadınlarda daha kısa bulundu (p<0,001). Geçirilmiş abdominal cerrahisi olan ve kolonoskopi sırasında ek manevra kullanılan hastalarda CIT daha uzun bulundu (p=0,027) (p<0,001). VKİ ile CIT arasında istatistiksel anlamlı fark bulunmadı (p=0,199). Hastaların tümü incelendiğinde fat mass ile CIT arasında istatistiksel anlamlı fark bulundu (p=0,034).

Sonuç: VKİ'den bağımsız olarak total vücut fat mass değeri arttıkça CIT kısalmaktadır. Kolonoskopi sırasında CI süresine fat mass'ın, VKİ'den daha fazla etkisinin olduğunu düşünüyoruz.

Anahtar Kelimeler: Vücut kitle indeksi, çekum entübasyon süresi, fat mass, kolonoskopi

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Introduction

Colonoscopy is an effective and important procedure used in the diagnosis and treatment of colorectal diseases.[1,2] Caecal intubation is the most important parameter when evaluating the success of a colonoscopy procedure, and it is essential for a comprehensive examination of the colon.[2] Caecal intubation time (CIT) is defined as the time needed to reach the caecum after inserting the endoscope into the anal canal.[3] Caecal intubation is considered complete with the ileocaecal valve and appendiceal orifice are visualised.[4] A prolonged CIT indicates difficulty in performing a complete colonoscopy.[5]

Many factors affect the CIT in colonoscopy, the most important of which are age, sex, history of abdominal surgery, insufficient bowel preparation, experience of the endoscopist, body mass index (BMI) and visceral fat tissue.[6,7] It is important to recognise these factors, as they may guide the operator in identifying patients who are prone to a prolonged colonoscopy time, thus aiding in selecting the appropriate sedation and analgesia for the procedure.[3]

A low waist circumference and visceral fat mass are known to prolong the colonoscopy duration.[8] Additionally, prolonged procedural time is seen in the presence of insufficient bowel preparation and the use of additional manoeuvers in patients with high BMIs.[8]

There is limited available data regarding the relationship between CIT, fat mass and BMI during colonoscopy. This prospective study aimed to evaluate the effect of fat mass and BMI on CIT.

Material and Methods

The data of 110 patients who underwent colonoscopy for colorectal cancer screening in our hospital between February 2020 and March 2020, and whose CIT was determined during colonoscopy, were prospectively reviewed. Detailed information about the study was provided to the patients, and their written informed consent was obtained. The study was conducted in accordance with the principles of the Helsinki Declaration, and was approved by the local ethics committee (number: 2011-KAEK-25 2020/02-07).

The study included outpatients aged between 18-80 years. In line with the World Health Organisation, patients were divided into two groups: younger than 65 and older than 65 years. Patients whose colonoscopy procedure could not be continued due to insufficient bowel preparation, those who did not give their informed consent and those with colonic polyps, diverticula, tumours or history of colon surgery, were excluded from the study.

The time taken to pass from the start of the anal canal to complete caecal intubation with visualisation of the ileocecal valve and the appendiceal orifice was determined for each patient in the endoscopy unit. The BMI and fat mass of each patient were measured before the procedure, using a Tanita body-fat analyser device. Colonoscopies were performed in a single centre, by the same endoscopist. For bowel preparation, all the patients were placed on a low-fibre diet for two days prior to the procedure and ingested a polyethylene glycol solution (Golytely®) in divided doses before the procedure. All the colonoscopy interventions were performed in the endoscopy unit under sedoanalgesia.

Statistical Analysis

Demographic data of the patients, previous non-colonic surgeries, the use of additional manoeuvers during the procedure, CIT, BMI and fat mass were recorded and evaluated.

The normal distribution of the CIT results was verified with a Shapiro-Wilk test and median CIT values were reported (interquartile range). Mann-Whitney U and Kruskal-Wallis tests were used to compare the CIT measurements between the groups. The relationships between CIT, age and fat mass were analysed using a correlation analysis, and the Spearman's correlation coefficient was calculated. The statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) software, and a p value of less than 0.05 was considered statistically significant.

Results

The study comprised 110 patients. No complications were recorded during or after the colonoscopy. However, caecal intubation could not be performed in two patients due to a long sigmoid colon and excessive loop formation. Of the patients, 51.8% were males and 48.2% were females; 72.7% of the patients were aged 65 years or younger, with 27.3% aged older than 65 years. A history of non-colorectal abdominal surgery (hysterectomy, myomectomy, prostatectomy, herniorrhaphy, caesarean section, etc.) was noted in 19% of the patients. Additional manoeuvers were required during the procedure in 27.3% of the patients. The patients were divided into four groups according to their BMI (Figure 1).

Demographic data of the patients, previous non-colonic surgeries, the need for additional manoeuvers and the relationship between BMI and mean CIT were evaluated (Table 1). It was found that CIT varied according to sex ($p<0.001$), with a longer median CIT in males, although there was no significant difference in CIT between the two age groups ($p=0.460$). The median CIT was longer in patients with a history of abdominal surgery ($p=0.027$), and in patients who required the use of additional manoeuvers

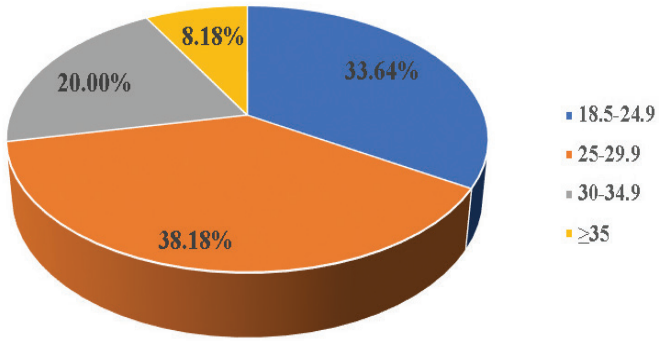

Figure 1. Distribution of BMI among the patients

Table 1. Distribution of the predictors of caecal intubation time (CIT)

Variables	n (%)	CIT (min)	p value
Sex			
Male	57 (51.82%)	9 (4)	<0.001[a]
Female	53 (48.18%)	7 (3)	
Age (years)			
≤65	80 (72.73%)	8 (3.75)	0.460[a]
>65	30 (27.27%)	8 (3.25)	
Previous surgery			
Yes	21 (19.09%)	9 (5.50)	0.027[a]
No	89 (80.91%)	8 (3)	
Use of additional manoeuvers			
Yes	30 (27.27%)	11 (3.50)	<0.001[a]
No	80 (72.73%)	8 (3)	
Body mass index			
18.5-24.9	37 (33.64%)	8 (4.50)	
25-29.9	42 (38.18%)	8 (4)	0.199[b]
30-34.9	22 (20%)	8 (3)	
≥35	9 (8.18%)	7 (2)	

CIT: Caecal intubation time was presented as median (interquartile range)

[a]Mann-Whitney U test, [b]Kruskal-Wallis test

(p<0.001). The relationship between CIT and BMI was not statistically significant (p=0.199).

CIT and the relevant variables were evaluated with a correlation analysis, and the association between fat mass, age and CIT is presented in Table 2. When all of the data were evaluated regardless of sex, no significant relationship was observed between age and CIT (p=0.21), while an inverse relationship was found between fat mass and CIT (p=0.034). In a subgroup analysis of the females, no association between fat mass and CIT was identified, whereas an inverse relationship between age and CIT in females was found (p=0.047). It was therefore concluded that CIT decreases with increasing age in females. There was no relationship between CIT, age and fat mass in males. When the complete patient group was analysed, CIT was found to decrease with increasing fat mass regardless of sex (p=0.034).

The relationship between CIT and BMI in males and females was evaluated (Table 3). No significant relationship was observed between CIT and BMI in both the male and female groups (p=0.631 and p=0.890) (Figure 2).

Discussion

When investigating the effect of BMI and fat mass on CIT, we need to minimise the number of variables. The most important factor affecting the success of a colonoscopy is the experience of the endoscopist and the procedural

Table 3. Comparison of CIT according to BMI within sex groups

	Female (n=53)		Male (n=57)	
	n	CIT	n	CIT
Body mass index				
18.5-24.9	19	7 (3)	18	9 (4.25)
25-29.9	15	8 (3)	27	9 (5)
30-34.9	14	6 (3.25)	8	8.50 (1.75)
≥35	5	6 (1)	4	8 (5.25)
p value	0.631[b]		0.890[b]	

CIT: Caecal intubation time was presented as median (interquartile range)

[b]Kruskal-Wallis test

Table 2. Relationship between caecal intubation time (CIT) and age and fat mass

CIT	Female (n=53)		Male (n=57)		Total (n=110)	
	r_s	p value	r_s	p value	r_s	p value
Fat mass	-0.23	0.097	-0.14	0.305	-0.20	0.034
Age	-0.28	0.047	0.05	0.717	-0.12	0.210

CIT: Caecal intubation time, r_s: Spearman's correlation coefficient

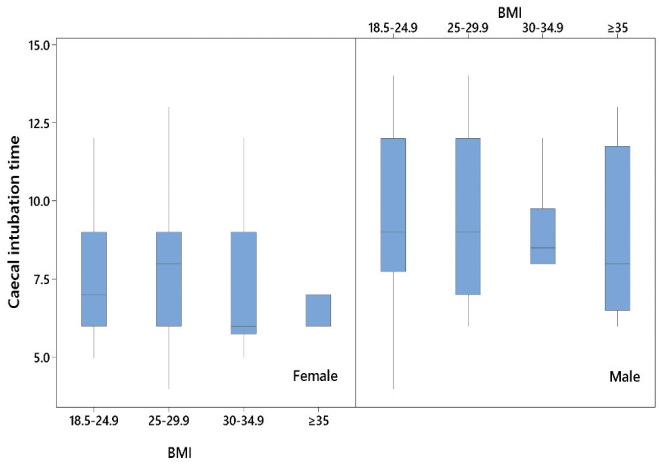

Figure 2. Caecal intubation time by BMI and sex
BMI: Body mass index

volume.[9,10] Thus, all the procedures in the present study were performed by a single endoscopist using the same standard protocol.

Numerous studies in the literature have suggested that sex may be significant in decreasing or increasing the CIT.[11,12] However, the most important factor affecting this parameter was found to be the sharp difference between the number of male and female patients. In the present study, there was almost no difference in the number of males and females and CIT was found to be longer among males (p<0.001). Previous studies have also identified a positive relationship between advanced age and CIT,[13] which has been attributed to the increase in colon length and the decreased colonic elasticity that naturally occurs with age. In our study, caecal intubation could not be performed in two patients due to a long sigmoid colon and excessive loop formation (1.78%). This rate is consistent with the findings in the literature.[14] In the overall study population, no significant relationship was found between age and CIT. The authors consider that the difference in the effects of sex and age on CIT can be attributed to the small sample size.

The literature shows that a history of abdominal surgery and intraabdominal adhesions secondary to previous abdominal surgeries can prolong the CIT.[15,16] The present study found that CIT was prolonged in the case of previous abdominal surgery (p=0.027), with hysterectomy, in particular, being found to complicate the colonoscopy.[17] Another finding of our study was that the use of additional manoeuvers during colonoscopy lengthens the CIT. Changing the position of the sedated patient during the procedure and applying compression to the abdomen to resolve the loops may prolong the CIT.[3]

BMI is commonly used to measure obesity, although it does not take into account the intraabdominal fat mass, does not differentiate between fat and muscle tissue, or provide information about the type of fat deposited.[18] While computed tomography is undisputedly the optimal approach to the measurement of intraabdominal fat tissue, this is an impractical method to use in large numbers of patients, and has a high cost.[7,8] The present study therefore evaluated the relationship between BMI, fat mass (measured with a Tanita body-fat analyser) and CIT.

The relationship between the technical difficulties encountered in colonoscopies and body weight has been investigated by many authors. Previous studies have suggested that obesity can either increase or decrease CIT.[19,20] Difficult colonoscopies and prolonged CIT in obese patients have been linked to insufficient bowel preparation.[8] Patients with a greater fat mass have loose colonic mesentery due to the presence of excessive visceral fat tissue. This causes the development of further bowel loops and the need to use additional manoeuvers during the procedure.[21] This may be another reason for the prolonged CIT in patients with high fat mass and BMI.

Conversely, some studies that reported a relationship between visceral fat tissue and CIT suggested that CIT shortens with increasing visceral fat tissue.[21,22] The present study results show that CIT decreases with an increase in fat mass (p=0.034), a finding that could be attributed to the direct support of the colon that visceral fat provides within the pelvis, which thereby allows for the smooth passage of the colonoscope.[22] In previous studies, visceral fat tissue was measured using computerised tomography (CT) scans prior to the procedure, a method which is both impractical and expensive, although it can be used for the isolated measurement of the abdominal visceral fat tissue. In the present study, the Tanita body-fat analyser was used due to its low cost and practicality. Furthermore, the method applied in the present study evaluates the total body fat mass ratio rather than the isolated intraabdominal visceral adipose tissue measured by CT scans. Despite this difference, the results of the present study are similar to those reported in the literature.

Prolonged CIT during colonoscopy may lead to consequences such as respiratory depression, hypotension, arrhythmia and aspiration.[20] For this reason, CIT becomes even more significant in patients with a high fat mass, who carry potential risks.

Conclusion

In conclusion, the present study shows that fat mass has a greater effect than BMI on CIT. Furthermore, a Tanita body-fat analyser can be used in place of CT due to its lower cost and practicality, to evaluate the relationship between body

fat mass and CIT. The present study is the first to evaluate the effect of fat mass measured by a Tanita body-fat analyser on CIT. The authors suggest that prospective multi-centre studies involving larger numbers of patients may provide more valuable data.

Ethics

Ethics Committee Approval: The study was conducted in accordance with the principles of the Helsinki Declaration, and was approved by the local ethics committee (number: 2011-KAEK-25 2020/02-07).

Informed Consent: Obtained.

Peer-review: Externally peer reviewed.

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RESEARCH ARTICLE

The Effects of Using Liposomal Bupivacaine and Aloe Vera Cream after Haemorrhoidectomy on Postoperative Pain, Need for Analgesics, Hospitalisation Period and Return to Work and Social Life

Hemoroidektomi Sonrası Lipozom Bupivacain ve Aleo Vera Krem Kullanımının Postoperatif Ağrıya, Analjezik İhtiyacına, Hospitalizasyon Süresine, İş ve Sosyal Yaşama Dönüşe Etkisi

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ABSTRACT

Aim: Post-haemorrhoidectomy pain adversely affects the patients' comfort, length of hospitalisation and return to work/school and social life. We investigated the effect of liposomal bupivacaine (LB) and aloe vera 2% cream (AVC) on post-haemorrhoidectomy pain and wound healing.

Method: We established four treatment groups: G1, G2, G3 and G4. Then, we applied perianal submucosal 300 mg LB to 20 patients in G1 intraoperatively; perianal 300 mg LB + local AVC to 20 patients in G2, 3 times a day, postoperatively; perianal AVC to 20 patients in G3 3 times a day, postoperatively and perianal placebo cream to 32 patients in G4 3 times a day, postoperatively. Patients' pain at rest at the 12th, 24th and 36th hours and the during defaecation at the 36th hour were scored using the visual analogue scale, "0" indicating "no pain" and "10" indicating "unbearable pain". We recorded their needs for narcotic analgesics within postoperative 12 and 24 hours and for NSAID within 36 hours, as well as their return to social life and work and full recovery periods.

Results: The difference was significant between the following groups: G1-G4 (p=0.042) & G2-G4 (p=0.002) in the need for narcotic analgesics within the first 24 hours, G2-G4 (p=0.002) in pain score at the 12th hour, G2-G4 (p<0.001) in pain score at the 24th hour, G2-G4 (p<0.001) & G3-G4 (p=0.001) in pain score at the 36th hour, G2-G4 (p<0.001) in pain score during defaecation at the 36th hour and G2-G4 (p<0.001) in the return to work and social life.

Conclusion: We recommend the combined use of LB and AVC after haemorrhoidectomy.

Keywords: Haemorrhoidectomy, liposomal bupivacaine, aloe vera cream, pain, return to work, need for analgesics

ÖZ

Amaç: Hemoroidektomi sonrası ağrı, hastanın konforunu, hastanede kalış süresini, işe, okula ve sosyal hayata dönüşünü belirleyen en önemli etkendir. Lipozom bupivacain (LB) ve aleo vera %2 kremin (AVC) hemoroidektomi sonrası ağrı ve yara iyileşmesindeki etkinliğini araştırdık.

Yöntem: G1, G2, G3 ve G4 adı altında dört farklı tedavi grubu oluşturuldu. Ligasure cihazı ile hemoroidektomi yapılan hastalardan G1'deki 20 hastaya intraoperatif perianal submukozal 300 mg LB, G2'deki 20 hastaya 300 mg LB (+) anal bölgeye postoperatif günde üç kez lokal AVC, G3'teki 20 hastaya postoperatif anal bölgeye günde üç kez AVC, G4'teki 32 hastaya postoperatif günde üç kez anal bölgeye plasebo krem uygulandı. Hastaların 12, 24 ve 36. saatteki istirahat ve de 36. saatteki defekasyon esnasındaki ağrıları visuel analog skalaya göre ağrısı yoksa "0", dayanılmaz ağrısı var ise "10" puan olacak şekilde skorlandı. Postoperatif 12 ve 24 saat içerisindeki narkotik analjezik ihtiyaçları, 36 saat içerisindeki NSAİD ihtiyaçları, sosyal hayata ve işe geri dönüş süreleri ile tam iyileşme zamanları kaydedildi.

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Bulgular: İlk 24 saatteki narkotik analjezik ihtiyacı açısından G1-G4 (p=0,042), G2-G4 (p=0,002), 12. saatteki ağrı skoru açısından G2-G4 (p=0,002), 24. Saatteki ağrı skoru açısından G2-G4 (p<0,001), 36. saat istirahat ağrı skoru açısından G2-G4 (p<0,001) ve G3-G4 (p=0,001), 36. saat defekasyon esnası ağrı skoru açısından G2-G4 (p<0,001), iş ve sosyal hayata dönüş açısından G2-G4 (p<0,001) arasındaki farklar anlamlıydı.
Sonuç: Hemoroidektomi sonrasında LB ve AVC'nin birlikte kullanılmasını öneriyoruz.
Anahtar Kelimeler: Hemoroidektomi, lipozom bupvacain, aleo vera krem, ağrı, işe dönüş, analjezik ihtiyacı

Introduction

Haemorrhoids are natural structures of the anal canal that consist of vascular tissues, loose connective tissues, muscle tissues (Treitz muscle) and vascular connections within the submucosal layer.[1] They are considered essential because they ensure continence by acting as fibrovascular pillows. Haemorrhoids above the dentate line are called "internal haemorrhoids" and those below are called "external haemorrhoids". Haemorrhoidal diseases occur when haemorrhoids are symptomatic. External haemorrhoids are fed by the inferior haemorrhoidal artery, whereas the internal ones are fed by the superior haemorrhoidal artery. External and internal haemorrhoids are drained through the systemic circulation via the inferior haemorrhoidal vein and the portal system via the superior haemorrhoidal vein, respectively. As such, they create the portosystemic junction region.[2] Although the literature on the incidence of haemorrhoidal disease presents rates from 4 to 40%, 75% of individuals suffer from haemorrhoidal diseases at some point in their lives.[3] The treatment methods of haemorrhoidal diseases can be divided into two groups: medical and surgical treatments. However, we recommend that conservative therapies be used in the first step.[4] The use of Ligasure in surgical treatment relieved the complaints of the patients in the postoperative perio.[5] Even though postoperative complaints can be decreased with the Ligasure treatment, pain and bleeding still persist as important problems. The pain experienced after haemorrhoidectomy lengthens the hospital stay, increases the need for additional analgesics and prolongs the return to social life and work. Our study investigated the effects of intraoperative, local, perianal and submucosal liposomal bupivacaine (LB) injection and aloe vera 2% cream (AVC) use in relieving the postoperative complaints of patients who undergo haemorrhoidectomy with Ligasure.

Materials and Methods

After informing the patients who were to undergo the haemorrhoidectomy procedure of the present study and treatment methods, and explaining that participating (or not) in the study would not cause any disruption in their treatment, the written and oral consents of the volunteer participants were obtained and they were included in the study. Then, we established four randomised treatment groups from the patients who underwent haemorrhoidectomy with the Ligasure device. Patients were assigned to the treatment groups by a simple probability randomisation method. We applied intraoperative, local, perianal, submucosal 300 mg LB injections to the group 1 (G1) patients; intraoperative, local, submucosal 300 mg LB injections & 1 cm^3 of local AVC in the perianal skin three times a day, postoperatively, to the group 2 (G2) patients; 1 cm^3 of local AVC in the perianal skin three times a day, postoperatively, to the group 3 (G3) patients; and 1 cm^3 of local placebo cream in the perianal skin three times a day, postoperatively, to group 4 (G4) patients. We then asked patients to score their pain between "0" and "10", "0" indicating "no pain" and "10" indicating "unbearable pain", according to the visual analog scale (VAS). The patients scored their pain at rest at the 12th, 24th and 36th hours and pain during defaecation at the 36th hour in the postoperative period according to the VAS. Then, we asked questions on the following points to the patients and recorded their answers: Need (mg) for peptidin HCl (Aldolan™) due to pain within postoperative 12 and 24 hours, amount (mg) of Dexketoprofen Trometamol (Arveles™) used in the first postoperative 36 hours, postoperative hospital stay (hours), postoperative return to social life (days), postoperative return to work (days), the day of full recovery in the postoperative period (the day when the postoperative complaints completely disappeared).

Statistical Analysis

Discrete numerical data were expressed as median (minimum-maximum) values, while continuous numerical data were expressed as mean ± standard deviation. To analyse the normal distributions of the groups, we used Shapiro-Wilks test. However, we used the Kruskal-Wallis test since their distribution was not normal, and used the one-way ANOVA test for **multiple comparisons** of the groups. The categorical data were expressed in numbers (percentages). In all the tests, a p value less than 0.05 was considered significant. All the analyses were done using IBM SPSS Statistics for Windows version 25.0.

Results

A total of 92 patients were included in this study, including 20 each in G1, G2 and G3 and 32 in G4. The mean age of the patients was 37.13±12.68 years. Of the patients, 32 (34.8%) were females and 60 (65.2%) were males (Table 1).

In the first postoperative 12 hours, there was no difference between the groups in terms of the need for the analgesic "peptidin HCl" (Table 2). However, a significant difference was found between G1 and G4 (p=0.042) and G2 and G4 (p=0.002) in terms of the need for "peptidin HCl" in the first 24-hour period (Table 2).

According to the VAS, we found significant differences in terms of pain scores between G2 and G4 (p=0.002) at the 12th hour, G2 and G4 (p<0.001) and G3 and G4 (p=0.006) at the 24th hour, and G1 and G2 (p=0.008), G1 and G4 (p=0.004), G2 and G3 (p=0.038), G2 and G4 (p<0.001) as well as G3 and G4 (p=0.001) at the 36th hour during rest in the postoperative period (Table 2).

In addition, according to the VAS, there was a significant difference between G2 and G4 (p<0.001) in terms of the pain scores during defaecation at the postoperative 36th hour (Table 2).

Table 1. Number and age of patients according to treatment groups

	Treatment groups				
	G1	G2	G3	G4	TOTAL
Number of patients n (%)					
Female	7 (35)	9 (45)	4 (20)	12 (37.5)	32 (34.8)
Male	13 (65)	11 (55)	16 (80)	20 (62.5)	60 (65.2)
Total	20	20	20	32	92
Age of patients (year)					
Mean ± standard deviation	42.7±14.06	33.5±11.43	38.2±12.27	35.25±12.07	37.13±12.68
Median (min-max)	43 (20-65)	30 (19-52)	35 (19-63)	34 (20-68)	35 (19-68)

min: Minimum, max: Maximum

Table 2. Postoperative analgesic requirements of patients according to treatment groups

	Treatment groups				
	Bupivacain (G1) n=20	Bupivacain (+) aleo vera (G2) n=20	Aleo vera (G3) n=20	Placebo (G4) n=32	p
Peptide HCl requirement in the first 12 hours postoperatively n (%)					G1-G2: =0.99 G1-G3: =0.42
*No need	18 (90)	19 (95)	15 (75)	20 (62.5)	G1-G4: =0.11
*25 mg used	2 (10)	1 (5)	3 (15)	9 (28.1)	G2-G3 =0.28
*50 mg used	0 (0)	0 (0)	1 (5)	2 (6.3)	G2-G4: =0.058
*Used more than 50 mg	0 (0)	0 (0)	1 (5)	1 (3.1)	G3-G4: =0.94
Peptide HCl requirement in the first 24 hours postoperatively n (%)					G1-G2: =0.821 G1-G3: =0.745
*No need	17 (85)	19 (95)	13 (65)	18 (56.3)	**G1-G4: =0.042***
*25 mg used	2 (10)	1 (5)	5 (25)	5 (15.6)	G2-G3: =0.119
*50 mg used	1 (5)	0 (0)	2 (10)	5 (15.6)	**G2-G4: =0.002***
*Used more than 50 mg	0 (0)	0 (0)	0 (0)	4 (12.5)	G3-G4: =0.537
Postoperative 12th hour resting pain score					G1-G2: =0.869 G1-G3: =0.988
*Mean ± standard deviation	0.8±1.4	0.4±0.88	1.1±1.55	1.75±1.65	G1-G4: =0.173
*Median (min-max)	0 (0-4)	0 (0-3)	0 (0-5)	2 (0-6)	G2-G3: =0.431
*Pain score "0" n (%)	14 (70)	16 (80)	11 (55)	10 (31.2)	**G2-G4: =0.002***
					G3-G4: =0.645

Table 2 contiuned

Postoperative 24th hour resting pain score *Mean ± standard deviation *Median (min-max) *Pain score "0" n (%)	1.05±1.43 0 (0-4) 1 1(55)	0.25±0.55 0 (0-2) 16 (80)	0.7±0.98 0 (0-3) 12 (60)	1.87±1.45 2 (0-4) 8 (25)	G1-G2: =0.158 G1-G3: =0.939 G1-G4: =0.270 G2-G3: =0.406 G2-G4: <0.001* G3-G4: 0.006*
Postoperative 36th hour resting pain score *Mean ± standard deviation *Median (min-max) *Pain score "0" n (%)	0.9±1.45 0 (0-4) 13 (65)	0.45±0.69 0 (0-2) 13 (65)	1.35±1.53 1 (0-6) 7 (35)	1.53±1.24 1.5 (0-4) 8 (25)	G1-G2: =0.008* G1-G3: =0.995 G1-G4: =0.004* G2-G3: =0.038* G2-G4: <0.001* G3-G4: =0.001*
Postoperative 36th hour pain score during defecation *Mean ± standard deviation *Median (min-max) *Pain score "0" n (%)	1.85±1.42 1.5 (0-5) 3 (15)	0.95±1.28 0 (0-4) 11 (55)	2.15±1.87 2 (0-7) 5 (25)	2.78±1.41 3 (0-6) 1 (3.1)	G1-G2: =0.227 G1-G3: =0.994 G1-G4: =0.149 G2-G3: =0.134 G2-G4: <0.001* G3-G4: =0.746
Postoperative hospital stay (hour) *Mean ± standard deviation *Median (min-max)	18.1±4.79 17 (6-28)	12.15±6.01 12 (6-22)	17.25±5.14 16 (6-30)	23.94±6.86 24 (16-48)	G1-G2: =0.008* G1-G3: =0.995 G1-G4: =0.004* G2-G3: =0.038* G2-G4: <0.001* G3-G4: =0.001*
Use of dexketoprofen trometamol at 36 hours postoperatively n (%) *No used *25 mg *50 mg *75 mg *100 mg and ↑	11(55) 1 (5) 4 (20) 1 (5) 3 (15)	14 (70) 1 (5) 3 (15) 2 (10) 0 (0)	8 (40) 2 (10) 4 (20) 5 (25) 1 (5)	0 (0) 1 (3.1) 5 (15.6) 12 (37.5) 14 (43.8)	G1-G2: =0.741 G1-G3: =0.999 G1-G4: >0.001 G2-G3: =0.316 G2-G4: <0.001* G3-G4: <0.001*

min: Minimum, max: Maximum

The differences between G1 and G2 (p=0.008), G1 and G4 (p=0.004), G2 and G3 (p=0.038), G2 and G4 (p<0.001) and G3 and G4 (p=0.001) were also significant in terms of the postoperative hospital stay (Table 2).

Also, the differences between G1 and G4 (p<0.001), G2 and G4 (p<0.001) and G3 and G4 (p<0.001) were found to be significant with regard to the use of Dexketoprofen Trometamol within the first 36 hours (Table 2).

In terms of the time of return to social life in the postoperative period, the differences between G2 and G4 (p<0.001) and G3 and G4 (p<0.001) were found to be significant (Table 3).

Our analysis on the time of return to work in the postoperative period showed significant differences between G1 and G2 (p=0.023), G2 and G4 (p<0.001) and G3 and G4 (p=0.003) (Table 3).

In terms of the full recovery in the postoperative period, the differences between G2 and G4 (p=0.001) and G3 and G4 (p<0.001) were found to be significant (Table 3).

Discussion

In haemorrhoidectomies, the pain in the wound area, which is one of the most important problems during the first 12 and 24 hours, does not only impair the patient's comfort, but also creates the need for additional analgesia and prolongs the hospital stay. As we analyse the data from the four different groups, we found a significant correlation

Table 3. Postoperative return to social life, return to work and complete recovery times

	Treatment groups				
	Bupivacain (G1) n=20	Bupivacain (+) aleo vera (G2) n=20	Aleo vera (G3) n=20	Placebo (G4) n=32	p
Return to postoperative social life (day) *Mean ± standard deviation *Median (min-max)	 4.2±2.17 3.5 (2-9)	 2.95±0.94 3 (2-5)	 3.55±1.23 3.5 (2-6)	 5.44±1.29 5.5 (3-8)	G1-G2: =0.145 G1-G3: =0.826 G1-G4: =0.16 G2-G3 =0.443 G2-G4: <0.001* G3-G4: <0.001*
Return to postoperative work (day) *Mean ± standard deviation *Median (min-max)	 8.75±3.58 8 (4-16)	 6±1.45 5.5 (4-9)	 7.35±1.81 7 (4-11)	 9.44±2.18 9 (6-15)	G1-G2: =0.023* G1-G3: =0.567 G1-G4: =0.971 G2-G3: =0.078 G2-G4: <0.001* G3-G4: =0.003*
Full recovery (day) *Mean ± standard deviation *Median (min-max)	 8.05±1.96 7 (6-13)	 6.95±1.19 7 (5-10)	 7.15±0.75 7 (6-8)	 8.56±1.54 8 (7-12)	G1-G2: =0.216 G1-G3: =0.339 G1-G4: =0.908 G2-G3: =0.989 G2-G4: =0.001* G3-G4: <0.001*

min: Minimum, max: Maximum

between G2 and G4 (p<0.001) in terms of pain scores at the postoperative 12th hour, and found no significant difference between the groups in terms of the peptidin HCl used in the postoperative 12-hour period. We also observed that there were significant differences between G2 and G4 (p<0.001) & G3 and G4 (p=0.006) in terms of pain scores at the postoperative 24th hour, and between G1 and G4 (p=0.042) and G2 and G4 (p=0.002) with regard to the need for peptidin HCI within the postoperative 24 hours. In terms of pain score and the need for narcotic analgesics in the first 24 hours, the correlation between G2 and G4 stands out. The combined use of LB and AVC in G2 significantly reduced the need for analgesia and resulted in lower pain scores. In their study, Kwok et al.[6] reported having performed submucosal Bupivacaine injections during band ligation treatment in haemorrhoids under local anaesthesia. After 15 minutes from the procedure, they asked the patients to score their pain according to the VAS immediately before their discharge from hospital. They noted that the patients reported a lower pain score in the Bupivacaine group compared to the control group.[6] In another study, Schmidt et al.[7] reported that patients who received Bupivacaine during haemorrhoidectomy had lower pain scores at the postoperative 12th and 24th hours and they needed less Opioid in the postoperative 72-hour period.

According to the VAS, the differences between G1 and G2 (p=0.008), G1 and G4 (p=0.004), G2 and G3 (p=0.038), G2 and G4 (p<0.001) and G3 and G4 (p=0.001) were significant in terms of pain scores at rest at the postoperative 36th hour. Again, according to VAS, there was a significant difference between G2 and G4 (p<0.001) in terms of the pain scores during defaecation at the postoperative 36th hour. Regarding the pain scores at rest in the 36th hour, we observed that the placebo group particularly differed negatively from all the treatment methods. Rajabi et al.[8] reported that the postoperative need for opioids decreased in patients who received the ischiorectal block treatment with Bupivacaine in haemorrhoidectomies. On the other hand, Eshghi et al.[9] report that they used aloe vera gel on the anal area for four weeks after haemorrhoidectomy, and as a result thereof, the treatment showed a significant success in pain relief and wound healing after defaecation compared to the control

group. However, the difference between G2 and G4 stands with regard to the pain during defaecation at the 36th hour. At this point, what puts those groups ahead of the other groups is the effect of the LB & AVC combination on pain relief. Rahmani et al.[10] report that they achieved statistically significant differences in the treatment group composed of patients for whom they used aloe vera cream in the treatment of chronic anal fissure with regard to the pain, bleeding and wound healing after defaecation, compared to the control group ($p<0.05$).

In all the three treatment groups (G1, G2 and G3), the need for Dexketoprofen Trometamol in the first 36 hours was less than that in the control group (G4). This proves that the need for analgesics could be decreases by applying LB and AVC either alone or in combination. In their multi-centre, randomised, double-blind, placebo-controlled study on haemorrhoidectomies, Gorfine et al. pointed out that there was a statistically significant reduction in terms of pain scores and the need for opioids within the first 72 hours in the Liposome Bupivacaine group ($p<0.05$).[11]

All the treatment groups differ positively from the control group in terms of the length of hospital stay. The main factors that affect the length of hospital stay are the pain and the bleeding.

In the healing process after haemorrhoidectomy, the pain level distinguishes itself as the most important determinant for returning to social life, work or school. The time to return to work and social life was shortened, especially when the pain at rest was reduced or completely relieved. In our study, there were significant differences between G2 and G4 and G3 and G4 in terms of the return to both social life and work. It is important to find differences in treatment groups who received the AVC treatment. There was no difference between the control and LB groups, indicating that the main determining effect at this point is AVC. In their study, Prakaso et al.[11] pointed out that the cream containing 1% and 2% aloe vera had a potential of wound healing owing to its ability to increase the proportion of CD4+/CD8+ lymphocytes in the wound area in their animal experiment for topical application of aloe vera. Also, in their study in which, they investigated TGF-β gene expression in the wound bed in terms of wound healing on Wistar rats using aloe vera gel. Takzare et al.[12] concluded that aloe vera proved to be effective in wound healing. In another study, Dat et al.[13] concluded that aloe vera had no significant effect in chronic wound healing in their meta-analysis on 347 cases. They report that there exist no high-quality clinical trial evidences to support the use of aloe vera topical agents for therapeutic purposes in acute and chronic wounds.[13]

Conclusion

We cannot address pain, wound healing and painless defaecation separately after haemorrhoid surgeries, since a discomfort caused by any of them would affect the others. All the three treatment methods used in our study contributed, to the comfort of patients in the postoperative period. However, we recommend opting for the combined use of LB and AVC in treatment.

Ethics

Ethics Committee Approval: This work has been approved by the Institutional.

Informed Consent: Obtained.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: M.K., U.E., Concept: M.K., Design: M.K., U.E., Data Collection or Processing: M.K., U.E., Analysis or Interpretation: M.K., U.E., Literature Search: M.K., U.E., Writing: M.K.

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RESEARCH ARTICLE

Periappendicular Inflammatory Masses

Periappendiküler Enflamatuvar Kitleler

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ABSTRACT

Aim: Periappendicular inflammatory mass (PIM) defined as a mass located at the right lower quadrant of the abdomen due to inflammation, and can not clearly distinguish from borders of appendix. The aim of this study is evaluating the PIM.

Method: The patients who hospitalized for PIM evaluated retrospectively. Patient's age, gender, length of hospital stay (LOS), performing colonoscopy, comorbidity, etiology, and treatment evaluated. Also, etiology elaborated with age, gender, LOS, treatment, levels of C-reactive protein (CRP), white blood cells, neutrophil % (Neu%), and performing colonoscopy.

Results: One hundred fourty four patients were included to study. The mean age was 41.35±17.9 years, and 54.2% of the patients were male. The mean LOS was 4.2±2.6 days. Colonoscopy performed only 28.5% of the patients. The most common etiology was plastron appendicitis (PA) (75%), and 32.4% of the PA was with abscess. 67.3% of the patients were treated conservatively (medical treatment or percutaneous drainage), and the rest treated surgically. The most common surgical approach was diagnostic laparoscopy and drainage. Malignancy reported at two right at age, LOS, treatment, CRP, Neu%, and colonoscopy between etiologies were statistically hemicolectomy patients. The most common comorbidities were hypertension and diabetes (12.5%, and 8.3%, respectively). 44.4% of PIM had negative ultrasonography, 71.5% had positive CT imaging. The differences significant ($p<0.05$).

Conclusion: Not only plastron appendicitis but also Crohn's disease, diverticulitis, mucocele, and malignancy should keep in mind when evaluating the inflammatory mass of the right lower quadrant. Age, LOS, treatment, inflammatory markers, and performing colonoscopy significantly vary due to etiology.

Keywords: Periappendicular, mass, plastron appendicitis, inflammatory, right lower quadrant

ÖZ

Amaç: Periapendiküler enflamatuvar kitle (PEK), batın sağ alt kadranda lokalize, enflamasyon sonucu oluşan, apendiks ile sınırları net ayırt edilemeyen kitle olarak tanımlanmaktadır. Çalışmamızın amacı PEK değerlendirilmesidir.

Yöntem: PEK nedeni yatırılan hastalar geriye dönük değerlendirildi. Hastaların yaş, cinsiyet, hastane kalış süresi (HKS), kolonoskopi durumu, yandaş hastalıkları, etyoloji ve tedavileri değerlendirildi. Ayrıca etiyoloji; yaş, cinsiyet, HKS, tedavi, C-reaktif protein (CRP), beyaz küre (BK), nötrofil yüzdesi (Nöt%) ve kolonoskopi durumu değerlendirildi.

Bulgular: Yüz kırk dört hasta çalışmaya dahil edildi. Yaş ortalaması 41,35±17,9 yıl olup, hastaların %54,2'si ise erkekti. HKS ortalaması 4,2±2,6 gündü. Kolonoskopi hastaların sadece %28,5'inde yapıldı. Plastron apandisit (PA) %75 ile en sık etiyoloji iken, PA'ların %32,4'simde apse gözlendi. Hastaların %67,3'ü konservatif (medikal veya perkütan drenaj), geri kalanı ise cerrahi olarak tedavi edildi. Tanısal laparoskopi ve drenaj yapılan en sık cerrahi girişimdi. İki hemikolektomi hastasında malignite saptandı. Hipertansiyon ve diyabet (sırasıyla %12,5 ve %8,3) en sık saptanan yandaş hastalıklardı. Etiyolojiler arasında yaş, HKS, tedavi, CRP, Nöt% ve kolonoskopi açısından istatistiksel olarak anlamlı fark saptandı ($p<0,05$).

Sonuç: Batın sağ alt kadrandaki enflamatuvar kitlelerin değerlendirilmesinde sadece plastrone apandisit değil Crohn hastalığı, divertikülit, mukosel ve maligniteler de akılda bulundurulmalıdır. Etiyolojiye bağlı olarak yaş, HKS, tedavi, enflamatuvar değerler ve kolonoskopi sonuçlarında anlamlı farklılıklar gözlenmektedir.

Anahtar Kelimeler: Periapendiküler, kitle, plastrone apandisit, enflamatuvar, sağ alt kadran

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Introduction

Periappendicular mass is the palpable mass located at the right lower quadrant of the abdomen (RLQA), can not be clearly distinguished from borders of appendix vermiformis, and known in terminology as plastron appendicitis (PA). PA is not correctly or accurately defined this condition because of the other inflammatory disease which presenting with mass. We defined periappendicular inflammatory mass (PIM) term for an inflammatory mass located at the RLQA, which can not clearly diagnosed at ultrasonography (USG) or computed abdominal tomography (CT). PA with or without abscess, inflammatory bowel disease (IBD) (complicated Crohn disease, terminal ileitis), diverticulitis, or malignancy (microperforation) of the cecum and appendix, mucocele, abscess of neighbor tissues (tuba-ovarian or psoas abscess) constitutes PIM.

The most common complaints of PIM are abdominal pain, which began more than three days before, fever, palpable mass in the RLQA. Inflammatory biomarkers increased according to the severity and type of etiology. Initially, USG than CT should perform for further imaging. Magnetic resonance (MR) enterography or elective colonoscopy should be done to clarify or exclude the diagnosing.[1,2,3,4,5,6,7]

Treatment of PIM is varied from conservative treatment to the right hemicolectomy according to the etiology and severity. Percutaneous or surgical drainage can perform for the treatment of abscess. Interval AP recommended for >40 years old patients for the risk of malignancy at PA.[1,2,3,4,5,6,7]

This study aimed to evaluate the management of the periappendicular inflammatory masses in our institute.

Material and Methods

After receiving institutional approval from the ethics committee of Prof. Dr. Cemil Taşçıoğlu State Hospital (06.08.2019/1391), patient's records between January 2015 and October 2019 who hospitalized for PIM evaluated retrospectively. The patients peroperatively detected as complicated appendicitis excluded from the study.

The patients record evaluated for age, gender, length of hospital stay (LOS), colonoscopy, etiology, treatment, pathology, co-morbidity, and morbidity. Etiologies elaborated for age, gender, LOS, treatment, laboratory test [C-reactive protein (CRP), white blood cell (WBC), and Neutrophil% (Neu%)], USG, CT and performing colonoscopy.

Age calculated as mean ± standard derivation; gender evaluated as male (M) or female (F). LOS calculated as mean ± standard derivation. The Etiology evaluated as PA, simple PA (SPA), or PA with periappendicular abscess (PAWPA), IBD, suspicion of malignancy, diverticulitis, and other rare etiologies (mucocele, psoas, and tuba ovarian abscess). Treatment evaluated as medical treatment (MT), percutaneous drainage (PD), diagnostic laparoscopy (DL), DL and drainage (DLD), appendectomy (AP), and right hemicolectomy (RH).

CRP (mg/L), WBC (10^3/uL), and Neu% (%) as mean ± standard deviation. Colonoscopy evaluated as performed yes or no. USG evaluated as performed but negative or performed and positive. CT evaluated as none, performed but negative or performed and positive.

Statistical Analysis

The statical analysis performed with SPSS 16.0. Age, LOS, CRP, WBC, Neu% calculated as mean ± standard derivation. The ratio of male/female, etiology, treatment, colonoscopy calculated as a percentage. Chi-square, Kruskal-Wallis, and ANOVA were used to evaluate the values, and $p<0.05$ was accepted as significant.

Results

One hundred forty four from 177 patients included study. The mean age was 41.35±17.9 years for all groups. Male was the most common gender, with a 52.4% ratio. The mean of LOS was 4.2±2.6 days. 28.5% of the patients performed a colonoscopy. Hypertension and diabetes were the most common comorbidities with 12.5% and 8.3% rates, respectively. The most common etiology of PIM was PA with a 75% rate, and 5.5% of the patients managed for suspicion of malignancy. 67.3% of the patients were treated conservatively (medical or percutaneous drainage), and 32.7% of the patients treated surgically. DL with drainage (25%) was the most common surgery, and right hemicolectomy performed to 4.9% of the patients. The pathology of the operated patients except for two right hemicolectomies (gastrointestinal stromal tumor and mucinous cystadenocarcinoma), reported as inflammation. The morbidity reported at seven patients (4.9%) and includes; recurrence at four patients, pulmonary complication at two patients and, surgical site infection at one patient (Table 1).

Suspicion of malignancy was the eldest group with 63.7±11.8 years, and other rare etiologies were the youngest group with 36.4±13.2 years. Male was the most common gender for all groups; however, the female was the most common gender at PAWPA, IBD, and other rare etiologies. The longest LOS reported at other rare etiologies, and the shortest LOS reported at SPA. Colonoscopy offered and planned six week after from discharge, but most of the patients should not perform colonoscopy. The most common colonoscopy performed group was IBD, subsequently diverticulitis with 76.4% and 66.6% rate, respectively. PA was the most common etiology of PIM with 75%, and abscess occurred

at 32.4% of the PA. The recurrence rate was 3.7%, and interval AP performed to 1.85% of the PA. PA was the most common performed MT (SPA) with 78%. PD performed only PAWPA. DL performed to SPA and IBD, and DLD performed to PAWPA and IBD. RH performed to IBD and suspicion of malignancy patients. The highest CRP level measured at other rare etiologies, and the lowest level at diverticulitis. The highest Wbc level measured at PAWPA, and the lowest level measured at other rare etiologies. The highest Neu% ratio measured at IBD, and the lowest ratio measured at diverticulitis. The differences at age, LOS, treatment, CRP level, Neu%, and performed colonoscopy between etiology groups were found statistically significant (p=0.013, p=0.004, p=0.0001, p=0.005, p=0.03, p=0.0001 respectively) (Table 2).

Table 1. The results of the study (*mean ± standard deviation)

Age (years)	**41.35±17.9**	
Gender	**n**	**%**
Male	78	54.2
Female	66	45.8
Length of stay (days)	4.2±2.6	
Colonoscopy	**n**	**%**
Yes	41	28.5
No	103	71.5
Etiology	**n**	**%**
Plastron appendicitis (PA)	108	75
Simple PA	73	67.6
Periappendicular abcess with PA	35	32.4
IBD	17	11.8
Malignancy?	8	5.5
Diverticulitis	6	4.2
Others	5	3.5
Treatment	**n**	**%**
Medical	82	56.9
Percutaneous drainage	15	10.4
Diagnostic laparoscopy	12	8.3
Diagnostic laparoscopy and drainage	24	16.7
Appendectomy	4	2.8
Right hemicolectomy	7	4.9
Comorbidity	**n**	**%**
Hypertension	18	12.5
Diabetes	12	8.3
Hearth Disease	7	4.9
Chronic obstructive pulmonary disease	4	2.8
Cerebrovascular accident	2	1.4
Chronic renal failure	3	2.1
Others	7	4.9

Table 2. The results of the etiology (*mean ± standard deviation)

Etiology	Age* (years)	LOS* (days)	Gender		Treatment						Laboratory		Colonoscopy	
			M	F	MT	PD	DL	DL+D	AP	RH	CRP* (mg/L)	WBC* (103/uL)	Neu%* (%)	No	Yes
PA	40.2±17.9	3.7±2.1	60	48	64	13	9	22	0	0	138.8±94.2	13.4±5.1	75±8.4	87	21
SPA	39.9±17	3.5±1.6	45	28	64	0	9	0	0	0	119.3±94.3	12.6 ±4.8	73.5±9	56	17
PAPWA	40.7±19.8	4.3±2.7	15	20	0	13	0	22	0	0	179.4±81.2	15.2±5.4	78.1±5.9	31	4
IBD	38.3±16.6	5.1±3.1	8	9	9	0	3	2	0	3	159.2±127.7	13.1±4.7	79.2±8.9	4	13
Malignancy?	63.7±11.8	5.7±2.4	4	4	4	0	0	0	0	4	133±108.9	13.2±5.7	72.7±8.6	3	5
Diverticulitis	45.5±14.9	6±4.7	4	2	4	0	0	0	2	0	84.3±79.2	12.9±4.4	72.5±8.7	2	4
Others	36.4±13.2	6.4±4.3	2	3	1	2	0	0	2	0	246±106	11.4±1.8	76.4±5.5	5	0
p	0.013	0.004	0.467		0.0001						0.005	0.212	0.03	0.0001	

LOS: Length of stay, M: Male, F: Female, MT: Medical treatment, PD: Percutaneous drainage, DL: Diagnostic laparoscopy DL + D: Diagnostic laparoscopy + drainage, AP: Appendectomy, RH: Right hemicolectomy, CRP: C-reactive protein, WBC: White blood cells, Neu: Neutrophil %. PA: Plastron appendicitis, SPA: Simple PA, PAWPA: Periappendicular abcess with PA. IBD: Inflammatory bowel disease others: mucocele, tuboovarian or poas abcess

The comparison of USG and CT results due to etiology is given at Table 3. 44.4% of the all PIM had negative, 55.6% had positive USG imaging. The most common negative USG imaging found at PAWPA group. 11.1% of the all PIM had none, 17.4% had negative, and 71.5% had positive CT imaging. Except other group the most common positive CT imaging found at diverticulitis group. The CT images of etiologies are given at Figure 1 and 2.

Discussion

The most common etiology of PIM were PA (SPA or PAWPA), IBD, diverticulitis, mucocele, and malignancy in recent study. Hepatic adenoma, xanthogranulomatous inflammation of terminal ileum, metastasis to an ectopic kidney, tubercular tuba-ovarian cyst, incidental teratoma or appendiceal torsion reported as a inflammatory palapable mass at RLQA in the literature.[8,9,10,11,12,13]

History of abdominal pain, which began 72 hours ago, palpable mass at RLQA, and fever are the most common complaint of PIM. Inflammatory biomarkers like CRP, WBC, Neu% increases due to the severity of etiology. Plain abdominal radiography can be inadequate for evaluating

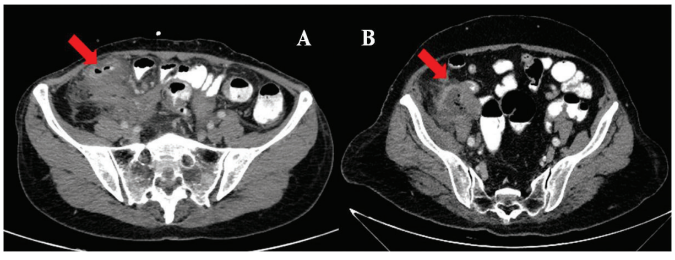

Figure 1. Tomographic images of A: plastron appendicitis, B: plastron appendicitis with periappendicular abscess

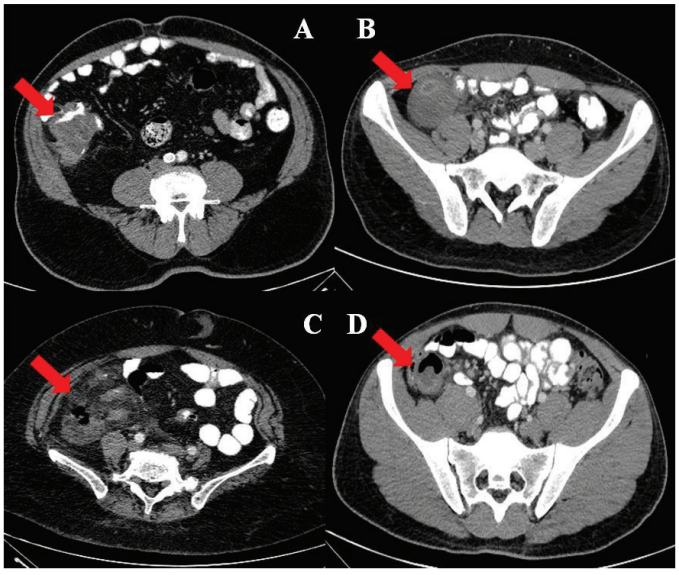

Figure 2. Tomographic images of A: malignancy, B: mucocele, C: diverticulitis, D: inflammatory bowel disease

PIM. USG is the initial imaging modality for the evaluation of PIM. A mass lesion in the RLQA, which cannot clearly distinguish from the appendix, and sometimes accompanied by a dense fluid, can found at USG or Contrast-enhanced CT. Colonoscopy should not prefer at the acute phase of inflammatory disease and prefer after six weeks to clarify the etiology. MR enterography should do for diagnosing the disease of the terminal ileum.

The evaluation of the etiology;

Plastron appendicitis is a formation of abscess secondary to perforated appendicitis, and follow surrounding by the omentum. The rate of enclosed inflammation is 3.8-5% of all appendicitis. The incidence of PA in adults reported as 4,8%. The mean age varies from 26 to 53 years, and male is the most common gender for PA in literature.[2] USG and CT have higher sensitivity, specificity, and accuracy in diagnosing acute appendicitis (86%, 88%, 91%, and 90%, 93%, 94%, respectively). The specificity of CT increased to 95%, while sensitivity decreased to 75% at complicated appendicitis such as PA or PAWPA. Abscess, extraluminal air, appendiceal wall enhancement, periappendicular fat stranding are useful criteria of complicated appendicitis.[14,15,16] USG or CT diagnosis is more common than clinical, with a rate of 14.2% vs 5.1%. The treatment of PA is still controversial. Conservative treatment with antibiotherapy for simple PA, and percutaneous or surgical drainage for PAWPA. There are a 7.2% recurrence and a 7.6% failure rate for conservative treatment. Immediate AP is not recommended due to the 35.6% risk of morbidity, while the risk decreased to 18.4% at delayed AP, 13.5% at nonsurgical treatment, and 11% at additional interval AP with nonsurgical treatment. The success ratio of nonsurgical treatment reported as 93%, and 20% of nonsurgical treatment needed drainage. Nonsurgical treatment has a 2% risk of misdiagnosed. Malignancy detected at following 1.2% of the nonsurgical treatment and >40 years old have an increased risk for malignancy. The recommended follow up at PA after successful conservative treatment consists of colonoscopy, CT, or MRI for especially >40 years old patients, and interval AP suggested for recurrent disease and malignancy risk.[2,17] In the recent study, the mean age was 39.9±17 years for SPA, and 40.7±19.8 years for PAWPA and male was the most common gender at SPA, however, female was the more common at PAWPA. LOS was shorter at SPA than PWPA (3.5±1.6 vs 4.3±2.7 days). SPA was more diagnosed than PAWPA at CT (72.6% vs 60%); however, the nondiagnosed ratio was similar at CT (20.5% vs 20%). 39.7% of the SPA and 51.4% of the PAWPA cannot diagnose at USG. MT or only DL was performed for SPA (87.6% vs 12.4%), however DL + drainage or PD was performed for PAWPA (62.9% vs 37.1%). 23.3% of the SPA and 11.4% of the PAWPA performed colonoscopy at follow

Table 3. Comparison of ultrasonography (USG) and computed tomography (CT) results due to etiology

Etiology	USG		BT		
	Performed but negative	Performed and positive	None	Performed but negative	Performed and positive
SPA	29 (39.7%)	44 (60.3%)	5 (6.8%)	15 (20.5%)	53 (72.7%)
PAWPA	20 (57.1%)	15 (42.9%)	6 (17.1%)	7 (20%)	22 (62.9%)
IBD	9 (53%)	8 (47%)	3 (17.6%)	2 (11.8%)	12 (70.6%)
Malignancy?	4 (50%)	4 (50%)	1 (12.5%)	1 (12.5%)	6 (75%)
Diverticulitis	2 (33%)	4 (67%)	1 (17%)	0	5 (83%)
Others	0	5 (100%)	0	0	5 (100%)
Total	64	80	16	25	103

SPA: Simple PA, PAWPA: Periappendicular abcess with PA, IBD: Inflammatory bowel disease others: mucocele, tuboovarian or psoas abcess

up. The ratio of recurrence reported as 3.7%, performing interval AP reported as 1.86%, and morbidity reported as 2.8%. The pathology of interval appendectomies reported as inflammation. We planned elective colonoscopy and offered interval AP to all PA; however, the compliance rate for recommendation is very poor. 43.5% of the PA was >40 years old, interval AP has not performed anyone, and only 27.7% performed a colonoscopy.

Inflammatory Bowel Disease (IBD): CD, which located at terminal ileum (terminal ileitis) or ileocolic region, should be occurred inflammatory mass at RLQA. CD reported, 0.85% of the operated for appendical inflammatory mass and 11.8% of the CT abnormalities in RLQA. 10-20% occurred spontaneous abscess, one third occurred palpable mass and 5.3% misdiagnosed as acute appendicitis at CD. Contrast-enhanced CT is useful for differential diagnosing of CD and complications. Colonoscopy or MR enterography can help clarify the diagnosis of CD. The treatment of CD includes medical treatment, percutaneous or surgical drainage, or right hemicolectomy due to the severity of the disease. PD preferred at simple and unilocular abscess. Surgical drainage should perform when PD is failure or not suitable, or multilocular. 44% of the abscess of CD was drained by percutaneously vs. 56% by surgically.[4,7,17,18,19] In the recent study, IBD occurred 11.8% of the PIM. Abscess occurred at 11.8% of the patients and drained surgically. DL performed to 17.6% of the CD patients for suspicion of acute appendicitis. Right hemicolectomy to 17.6% of the patients for the complication of CD. Chronic granulomatous inflammation reported for pathology. The rest of the patients treated medically. Colonoscopy performed to 76.4% of the patients.

Malignancy of appendix vermiformis and cecum misdiagnosed with complicated appendicitis and RLQ mass can be the initial sign. Malignancy of appendix vermiformis is very rare and constitutes 0.4% of all gastrointestinal tract. Carcinoid tumor is the most common malignancy; adenocarcinoma represents 10-20%, one-third of adenocarcinoma is mucinous. 6-8.3% of the right hemicolectomy which performed for inflammatory mass reported as a cecal mesenchymal tumor. Diagnosing of malignancy of appendix and cecum, which presenting with RLQ mass is difficult with clinical or radiological findings, and generally diagnosed at pathology. Colonoscopy can be a useful diagnosing modality for malignancy at selected patients. The surgical treatment constitutes; AP or extends to right hemicolectomy. The conservatively treated patients with malignancy suspicion must follow up closely, and elective colonoscopy planned immediately.[6,20,21,22,23] In the recent study, malignancy constitutes 5.5% of the PIM. Suspicion of malignancy with PIM reported at imaging. Right hemicolectomy performed to half of the patients due to the severity of inflammation. Pathology of the appendix was reported active inflammation at two patients, GIST at one patient, and mucinous adenocarcinoma at one patient. Elective colonoscopy performed for the conservative treated patients, and cecal adenocarcinoma reported at two patients pathology and redirected for elective surgery.

Diverticulitis: The left side is the most common side of the colonic diverticulum, and diverticulum at cecum or

appendix vermiformis is very rare. The incidence of cecal diverticulum was reported as 0.1%, appendical diverticulum was reported as 1.4% (0.2-0.66% from autopsy and 0.004-2.1% from AP specimens). These diverticulums should be congenital or acquired. The fifth decade is the most common decade for colonic diverticulitis. However, cecal diverticulitis reported as 44.54 years and appendiceal diverticulitis with an average age of 37-39 years. Most of the colonic diverticulum are asymptomatic, but 10-20% of cecal, and two-thirds of appendiceal diverticulum can complicate with inflammation, perforation, etc. or misdiagnosed as acute appendicitis. The appendiceal diverticulitis has four times higher perforation and mortality rate than acute appendicitis. The clinic or radiologic differential diagnosing of diverticulitis from acute appendicitis is not easy. The diagnosing rate of appendical diverticulitis reported as 0.007% in the literature. Cecal or appendicular diverticulitis can be treated conservatively if correctly diagnosed and not complicated. Especially appendical diverticulitis operated to presumed as acute appendicitis.[6,24,25,26] In the recent study, diverticulitis occurred 4.2% (n=6) of the PIM. Four of the diverticulitis were cecal (66.7%), and two were appendiceal (33.3%) diverticulitis. The mean age was 45 years, and the most common male was gender found similar to literature. All cecal diverticulums diagnosed at CT; however, all appendical diverticulums diagnosed at AP specimens. Cecal diverticulitis treated with medical treatment, and colonoscopy performed all patients. Appendical diverticulum treated surgically with AP.

Mucocele is a cystic dilatation of appendix vermiformis, which occurred by blocking with an intraluminal mucus and causing to cystadenocarcinoma from cystic retention (simple mucocele). Mucocele is very rare, occurred 0.25% of the appendectomies, and constitutes 8% of appendiceal malignancy. Mucocele should misdiagnose as plastron or complicated appendicitis. A well-encapsulated cystic mass in the RLQA, often associated with mural calcifications found at imaging. AP can be adequate for simple mucocele; however, a right hemicolectomy must perform for mucinous cystadenoma or cystadenocarcinoma.[27,28,29] In the recent study, 1.85% of the PIM occurred by the mucocele of the appendix. AP performed, and granulomatous inflammation reported at pathology.

Conclusion

In conclusion, not only plastron appendicitis but also CD, malignancy, diverticulitis, mucocele, and abscess of neighbor tissues must keep in mind when evaluating the inflammatory mass of right lower quadrant of the abdomen. Age, length of hospital stay, treatment, inflammatory markers, or performing colonoscopy could be significantly different between etiologies. Elective colonoscopy and interval AP at plastron appendicitis are recommending for >40 years old patients to exclude malignancy.

Ethics

Ethics Committee Approval: University of Health Sciences Turkey Okmeydanı Training and Research Hospital Clinical Research Ethics Committee (no: 48670771-514.10)

Informed Consent: Not obtained because the study was retrospective.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Concept: D.Ö.K., M.Y., B.G., S.E., S.H., Design: D.Ö.K., M.Y., B.G., S.E., S.H., Data Collection or Processing: D.Ö.K., M.Y., B.G., S.E., S.H., Analysis or Interpretation: D.Ö.K., M.Y., B.G., S.E., S.H., Literature Search: D.Ö.K., M.Y., B.G., S.E., S.H., Writing: D.Ö.K., M.Y., B.G., S.E., S.H.

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CASE REPORT

Colonic Metastasis of Palatine Tonsillar Melanoma Presenting as Colocolic Intussusception

Kolokolik İntususepsiyon ile Prezente Olan Palatin Tonsiller Melanomun Kolon Metastazı

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ABSTRACT

Primary mucosal melanomas account for 0.8%-3.7% of all the melanomas. More than half of the primary melanomas arise in the head and neck region, with nose and paranasal sinus being the most common site. Primary tonsillar mucosal melanoma is extremely rare, with only 27 cases reported in the literature till now. Incidence of metastatic melanoma to the colon, rectum and anus is 0.3%. Here, we present first case of the palatine tonsillar melanoma with isolated colonic metastasis.

Keywords: Primary tonsillar melanoma, mucosal melanoma, colonic melanoma, colocolic intussusception

ÖZ

Primer mukozal melanomlar tüm melanomların %0,8-3,7'sini oluşturur. Primer mukozal melanomların yarısından fazlası baş ve boyun bölgesinde, en sık olarak de burun ve paranazal sinüste ortaya çıkar. Primer tonsiller mukozal melanom son derece nadirdir ve şimdiye kadar literatürde sadece 27 hasta bildirilmiştir. Melanomun kolon, rektum ve anüse metastaz yapma insidansı %0,3'tür. Bildiğimiz kadarıyla bu olgu bildirimiyle, izole kolon metastazı olan ilk palatin tonsiller melanom olgusunu sunuyoruz.

Anahtar Kelimeler: Primer tonsiller melanom, mukozal melanom, kolonik melanom, kolo-kolik intusepsiyon

Introduction

Primary mucosal melanomas account for 0.8%-3.7% of all the melanomas.[1] More than half of the primary melanomas arise in the head and neck region, with nose and paranasal sinus being the most common site. Primary tonsillar mucosal melanoma is extremely rare, and only 27 cases have been reported in the literature so far.[2] Melanomas of the gastrointestinal (GI) tract are rare, accounting for 1%-3% of the total malignant tumours of the GI tract.[3] Incidence of metastatic melanoma to the colon, rectum and anus is 0.3%.[4] Here, we present a case of palatine tonsillar melanoma with isolated colonic metastasis. This is the first case of the palatine tonsillar melanoma reported in the literature.

Case Report

A 42-year-old woman had symptoms of soreness and non-healing ulcer over left tonsilar fossa for 8 months. However, she did not undergo any evaluation or treatment for the same (Figure 1). It was progressively enlarged. There was no bleeding or hoarseness of voice. The patient was referred to us for an intermittent colicky lower abdominal pain after 4 months. Abdominal pain was associated with abdominal distension and occasional non-bilious vomiting. It relieved with the passage of flatus and stool. There was no history of rectal bleeding or acute intestinal obstruction. There was a loss of appetite and loss of weight. No history of jaundice, bony pain or respiratory distress. On examination, an ill-defined lump was found palpable over the left hypochondrium. No

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hepatomegaly or splenomegaly or ascites was observed. A deeply pigmented ulcerated lesion in the left tonsilar fossa was found on oral cavity examination.

The woman was evaluated with a colonoscopy, which showed a large pedunculated ascending colon growth. Non-*negotiability* of *colonoscope* omits the possibility of endoscopic removal of tumour. The biopsy suggested malignant melanoma. A biopsy from oral ulcer also showed malignant melanoma. Contrast-enhanced CT scan (CECT) showed mildly enhancing polypoidal soft tissue lesion (4.2x4.1 cm) in the hepatic flexure with colocolonic intussusception involving hepatic flexure and ascending colon (Figure 2). Positron emission tomography (PET) scan showed FDG avid standardised uptake value (SUV: 13.7) ill-defined enhancing soft tissue density lesion arising from the left tonsil. FDG avid (SUV: 10.8) enhancing wall thickening was noted in descending colon in the left lumbar region with evidence of colocolonic intussusceptions. The patient was taken up for surgery as the presence of colocolic intussusception was easily reducible (Figure 3). A polypoid lesion was found at the hepatic flexure of the colon. The presence of multiple hard lymph nodes were found at the middle colic artery base with a maximum size of 20 mm. She underwent extended right hemicolectomy with ileocolonic anastomosis. The postoperative course was uneventful. The woman was discharged on postoperative day 10. Gross examination showed a polypoidal pigmented growth of 6.5x7.5 cm at the hepatic flexure of the colon (Figure 4). The surface of the polyp was irregular, and the cut surface was greyish white in colour with focal blackish areas. The rest of the colon and the terminal ileum were normal. The tumour

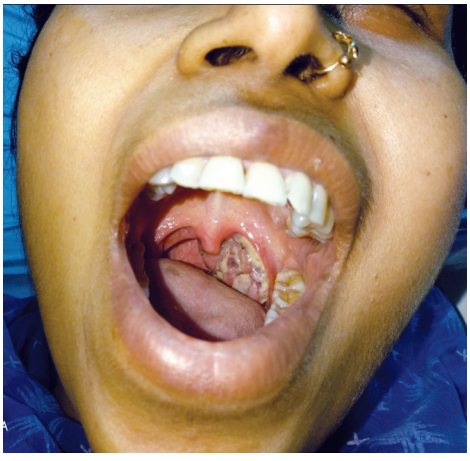

Figure 1. Oral cavity image, showing ulcero-proliferative growth over left tonsilar area

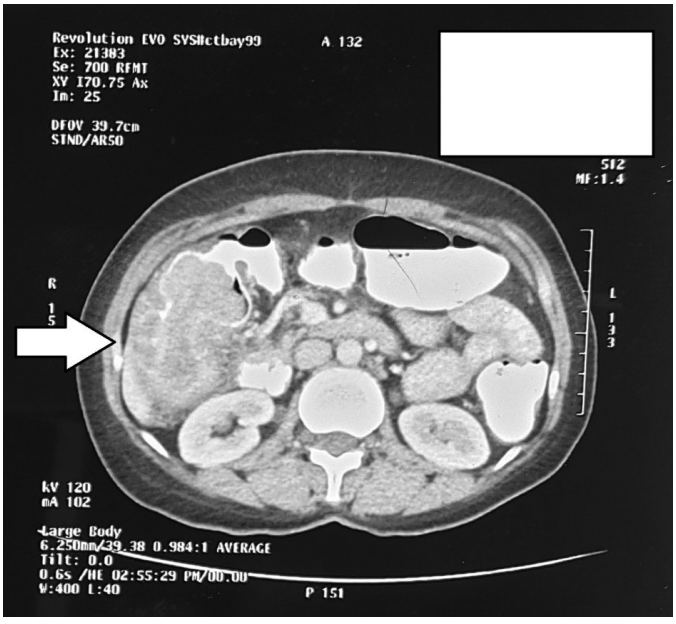

Figure 2. Contrast enhanced CT scan showing polypoidal right side colonic mass with colo-colic Intussusceptions

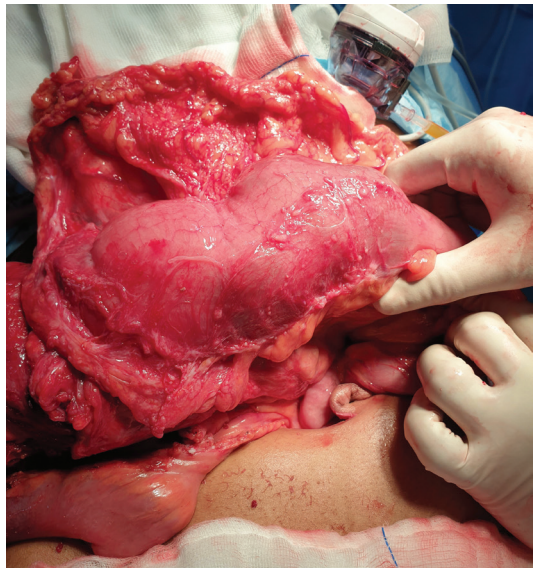

Figure 3. Intra operative picture showing manual reduction of colo-colic intussusceptions

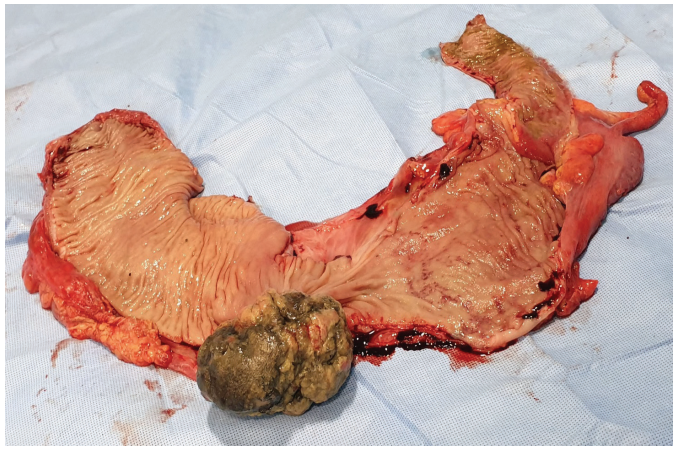

Figure 4. Extended right hemicolectomy specimen (cranial end on right side, caudal end on left side showing appendix) showing a polypoidal lesion.

was composed of neoplastic cells disposed in fascicles and sheets. Tumour cells showed anisonucleosis, spindle nuclei and vesicular chromatin with focal pigmentation. Twenty-one lymph nodes were retrieved in total, and 12 among them were positive for metastasis. On immunohistochemistry, the tumour cells were immunoreactive for vimentin, S100 and HMB45 and non-reactive for SMA, desmin, CD117 and DOG1 (Figure 5). At 1-month follow-up, she was found to be resumed her normal routine work. She was regular in her follow-up for tonsilar lesion and had planned for four cycles of methotrexate and 20 Gy in 5 fractions palliative radiotherapy.

Discussion

Melanoma of palatine tonsil and that of GI tract is rare. The small bowel is found to be most commonly affected in the GI tract melanoma.[5] GI metastases usually appear as multiple polypoid lesions. It can be melanotic or amelanotic. Our case was a solitary lesion with melanotic appearance. Clinical presentation in the large bowel pathology is mostly obstruction, bleeding or perforation. Metastatic melanoma presenting as intussusception is usually seen in the small bowel, but in our patient, large bowel lesion was presented with colocolic intussusceptions. Patients with GI tract involvement are found to have more than 50% metastatic melanoma involving other sites and organs.[6] In our case, there were no other sites of metastasis. Histopathological examination and immunohistochemistry are used for diagnosis. Prognosis is poor with median survival rate of less than 1 year. The 5-year survival rate is less than 10%. However, development in molecular biology has added a different dimension to management of these tumours. BRAF mutation (V600E) is a molecular target for treatment. Studies have shown the effect of BRAF inhibitors, such as dabrafenib, significantly improved progression-free survival in melanoma.[7,8] Complete surgical resection may provide long-term, disease-free survival as reported by Ollila et al.[9]

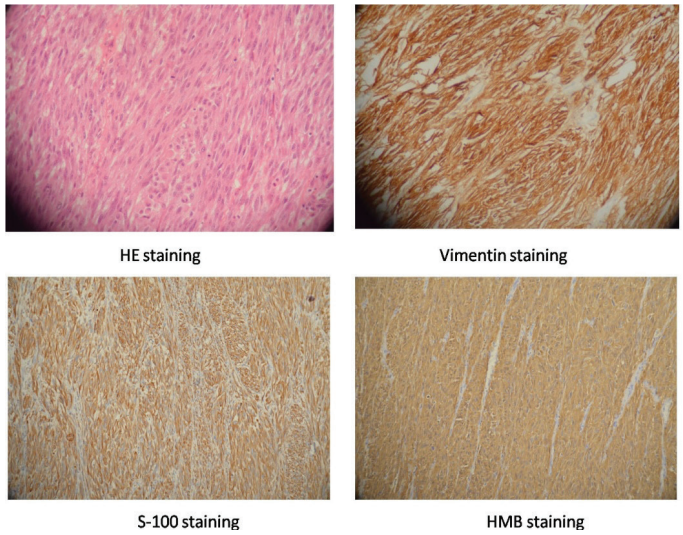

Figure 5. Histopathological examination showing classical pattern in hematoxylin and eosin staining and marker of melanoma viz. vimentin, S-100 and HMB-45 staining

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Ethics

Informed Consent: Written informed consent was obtained from the patient for publication and any accompanying images.

Peer-review: Externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: N.G., A.K., V.R., V.V., Concept: A.K., Design: A.K., Data Collection or Processing: V.V., Analysis or Interpretation: N.G., Literature Search: N.G., V.R., Writing: N.G.

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

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CASE REPORT

Iatrogenic Colon Perforation Due to Colonoscopy Presenting as a Diffuse Subcutaneous Emphysema

Diffüz Subkutanöz Amfizem ile Prezente Olan Kolonoskopiye Bağlı İatrojenik Kolon Perforasyonu

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ABSTRACT

Colonoscopy is a procedure frequently used for the screening, diagnosis and treatment of colorectal diseases. While colonoscopy is generally accepted as a safe procedure, it may lead to morbidity and mortality with serious complications such a colon perforation. This risk is higher when interventional procedures are applied. After colon perforation, extracolonic gas can pass into embryologically relevant body compartments. Free air due to perforation has been reported in the thorax, mediastinum, neck, scrotum and lower extremities. Herein, we present a patient who presented with diffuse subcutaneous emphysema after a colonoscopic procedure to investigate the aetiology of anaemia.

Keywords: Colonoscopy, iatrogenic colon perforation, subcutaneous emphysema

ÖZ

Kolonoskopi; kolorektal hastalıkların taraması, tanısı ve terapötik amaçla sıklıkla uygulanan bir işlemdir. Kolonoskopi genellikle güvenli bir prosedür olarak kabul edilirken, kolon perforasyonu gibi ciddi komplikasyonlarla mortalite ve morbitideye sebep olabilmektedir. Girişimsel prosedürler uygulandığında bu risk daha yüksektir. Kolon perforasyonunu takiben ekstrakolonik gaz, embriyolojik olarak ilişkili vücut bölmelerine geçebilir. Toraks, mediasten, boyun, skrotum ve alt ekstremitelerde perforasyona bağlı serbest hava bildirilmiştir. Biz anemi etiyolojisi araştırmak amacı ile yapılan bir kolonoskopik işlem sonrası yaygın subkutenöz amfizemle karşılaştığımız bir hastayı sunacağız.

Anahtar Kelimeler: Kolonoskopi, iatrojenik kolon perforasyonu, deri altı amfizem

Introduction

Colonoscopy has been widely accepted after its introduction in clinical use in the 1960s and has now become the main examination method in the screening, diagnosis, and treatment of colorectal diseases.[1] Complications that may occur after colonoscopy are colon perforation, gastrointestinal bleeding, intraabdominal organ injury and cardiopulmonary disorders. Although iatrogenic perforation is rare, it can cause serious morbidity and mortality.[2] With the increase of therapeutic interventions in colonoscopic examinations, perforation rates increased according to diagnostic colonoscopic examinations. In literature, ratios ranging from 0.03% to 0.8% for diagnostic colonoscopy and 0.15% to 3% for therapeutic colonoscopy have been reported.[3] Risk factors for colon perforation include age; female gender; multiple comorbidities; low body mass index; low plasma albumin level; presence of underlying intestinal pathology such as Crohn's disease and previous colon surgery; patients who underwent treatment procedures such as polypectomy, dilation and endoscopic mucosal resection; patients from the intensive care unit and doctors' experience. Depending on whether the perforation area is intraperitoneal, extraperitoneal or combined, free air travels in different anatomical and facial planes, causing clinical symptoms and signs.[3,4,5] We present a case of combined iatrogenic

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colon perforation, which resulted in a diffuse subcutaneous emphysema after the procedure.

Case Report

A 76-year-old female patient who presented to the general surgery outpatient clinic with a complaint of abdominal pain and had no pathological findings other than anaemia was prescribed a diagnostic colonoscopy. The patient had a history of hypertension and chronic obstructive pulmonary disease. After intestinal cleansing with preparations that have an osmotic effect, the procedure was performed on the patient. The examination was performed up to the level of the terminal ileum. Three polyps of 7-8 mm in diameter were observed in the transverse colon and the polyps were completely removed by forceps. In the sigmoid colon, a region with a suspected closed perforation was reported. Thoracic and rectal contrast-enhanced abdominal tomography was performed after the patient had a complaint of swelling and crepitation, particularly in the abdominal wall and neck, diffusing up to the eyelids in the follow-up of the patient two hours after the procedure. In her tomography, pneumoperitoneum, pneumomediastinum, pneumothorax and diffuse subcutaneous emphysema were reported. The patient's surgery was performed at the fourth hour after the procedure because of the development of an acute abdomen in the patient's serial examination. Due to being elderly and the comorbid diseases, a decision for an open surgery was made, and we entered the abdomen via a median incision under the navel. There was approximately 50 cc of reactional serous fluid in the abdomen at exploration. Common air values were seen in the mesocolon 10 cm above the pelvic peritoneum and a perforation area of approximately 1.5 cm in diameter was observed when the peritoneum was opened. Widespread air was seen in the mesocolon 10 cm above the pelvic peritoneum. No perforation was observed on the antimesenteric face. When the mesenteric peritoneum was opened, there was a 1.5 cm diameter perforation area. As the patient's Mannheim peritonitis index was low, a primary repair decision was made, and the first layer was repaired continuously with absorbable vicryl, while the second layer was repaired interruptedly with silk sutures. On the fourth postoperative day, the patient was discharged with full recovery.

Discussion

Although colonoscopy has been used recently, it has taken its place in the clinic as an important method in the diagnosis, screening and treatment of colorectal diseases. Complications after colonoscopy are rare but may cause serious morbidity and mortality. Colon perforation is the most common complication encountered during colonoscopy. Other than perforation, bleeding, intraabdominal organ injury and cardiopulmonary complications may occur. The fact that the increased number of therapeutic colonoscopies has shown that perforation during therapeutic colonoscopy is seen as more common than in diagnostic colonoscopies. In the literature, rates of 0.03%-0.8% for diagnostic colonoscopy and 0.15%-3% for therapeutic colonoscopy have been reported.[3] In an article published in our country, the rate in all the colonoscopic procedures was 0.05%, whereas it was reported 0.1% in therapeutic colonoscopy and 0.003% in diagnostic procedures.[4]

It is emphasized that three factors are important in the formation of iatrogenic colon perforations; mechanical effect, mucosal damage due to therapeutic interventions and/or increase in lumen pressure due to air insufflation are effective. In literature, ratios ranging from 0.03% to 0.8% for diagnostic colonoscopy and 0.15% to 3% for therapeutic colonoscopy have been reported.[3] Risk factors for colon perforation include age; female gender; multiple comorbidities; low body mass index; low plasma albumin level; presence of underlying intestinal pathology such as Crohn's disease and previous colon surgery, patients who underwent treatment procedures such as polypectomy, dilation and endoscopic mucosal resection; patients from the intensive care unit and doctors' experience.[3,5] Our patient was elderly and had comorbid diseases.

Colon perforations can be intraperitoneal, extraperitoneal (retroperitoneal) or combined. Intraperitoneal perforations are the most common; patients present with abdominal pain and acute abdominal signs.[6] In extraperitoneal perforations, free air spreads to the mediastinum, thoracic cavity, pericardial space, abdominal space and subcuteous space due to the continuity in the fascial planes described by Maunder et al.[7] Accordingly, clinical symptoms and signs occur. In our case, a combined type perforation was involved. There was free air in the intraabdominal area and other cavities.

Iatrogenic colon perforation is frequently observed in the sigmoid colon as in our patient. The second most often occurs in the cecum. There are many factors affecting patients' clinical status. These can be listed as the place of perforation, adequacy of colon cleansing, period between the procedure and the hospital admission, age and presence of comorbid diseases. Patients with perforation determined during the procedure have a better clinical course. However, in patients with late determination and septic symptoms, the course is worse.[8,9,10] Although our patient is elderly and has comorbid diseases, there was no morbidity due to adequate bowel cleaning and early intervention (Figure 1, 2, 3, 4).

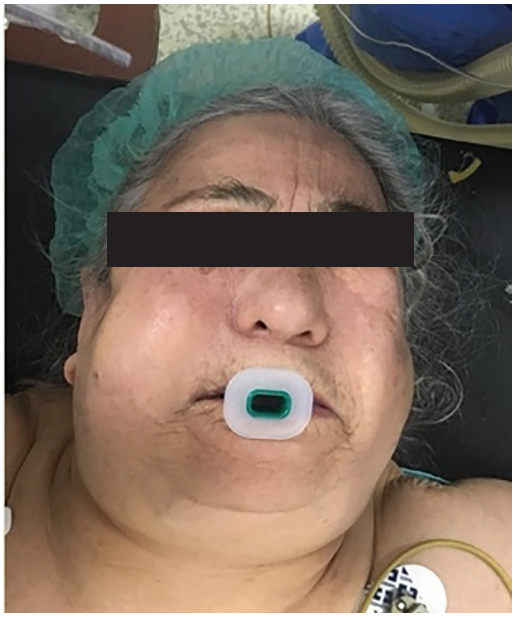

Figure 1. Swelling due to subcutaneous emphysema is seen around the eyes, face and neck

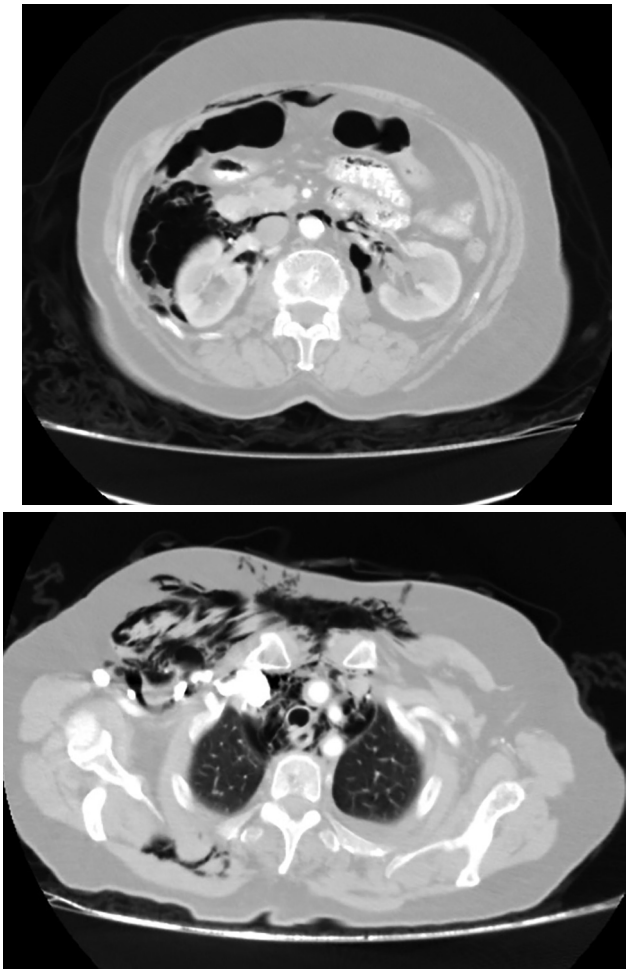

Figure 2, 3. Pneumoperitoneum, pneumomediastinum, pneumothorax and diffuse subcutaneous emphysema on computed tomography

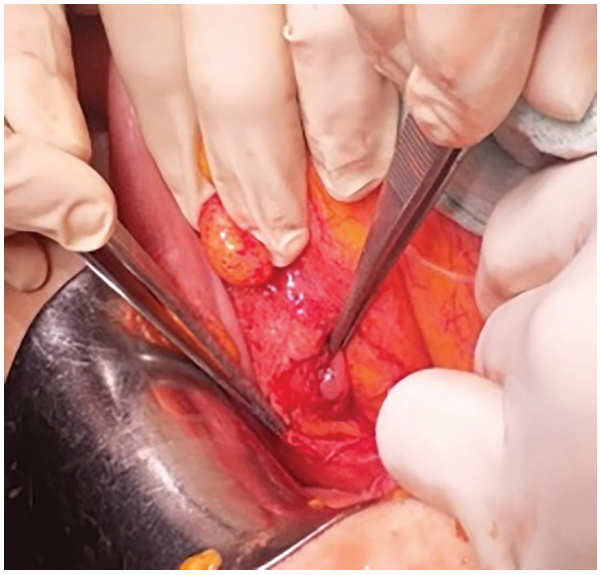

Figure 4. Perforation area in the antimesenteric area in the colon

The treatment should be decided according to patients' clinical status and hospital admission period. Non-operative follow-up, endoscopic clip, primary repair, resection anastomosis and colostomy are the methods to be performed.[9,11] We treated the patient with primary repair since peritoneal contamination was not excessive in patients' abdominal exploration.

As a result, it is the most common complication seen after colonoscopy. Diffuse subcutaneous emphysema after perforation is a rare condition, especially in elderly patients with comorbid diseases. It is therefore necessary to be careful about the follow-up and complications.

Ethics

Informed Consent: Obtained.

Peer-review: Externally peer reviewed.

Authorship Contributions

Concept: Ö.F.C., A.B., Design: Ö.F.C., A.B., Data Collection or Processing: Ö.F.C., A.B., Analysis or Interpretation: Ö.F.C., A.B., Literature Search: Ö.F.C., A.B., Writing: Ö.F.C., A.B.

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

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

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CASE REPORT

Small Bowel Adenocarcinoma Presenting with Brain Metastasis

Beyin Metastazı ile Başvuran İnce Barsak Adenokarsinomu

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ABSTRACT

Although the small bowel (SB) comprises majority of the length of alimentary tract and its surface mucosal area, adenocarcinoma of SB is rare in comparison to other gastrointestinal malignancies. The most common presenting symptom is intermittent and crampy abdominal pain. Because of the rarity of these lesions and the non-specific and variable nature of the presenting symptoms, delay in diagnosis is common. In this article, we have presented a case of adenocarcinoma of the jejunum with only neurologic symptoms due to brain metastasis.

Keywords: Adenocarcinoma, brain metastasis, cancer, small bowel

ÖZ

Her ne kadar ince barsaklar gastrointestinal (Gİ) traktın uzunluk ve mukozal yüzey alanı olarak çoğunluğunu oluşturuyor olsa da ince barsak adenokarsinomu diğer Gİ malignitelere oranla çok nadirdir. En sık başvuru nedeni kramp şeklinde aralıklı karın ağrısıdır. Bu hastalığın nadir olması ve başvuru semptomlarının nonspesifik ve değişken olması tanıda gecikmeye neden olmaktadır. Bu makalede beyin metastazına bağlı sadece nörolojik semptomlar ile başvuran bir jejunal adenokarsinom olgusunu sunuyoruz.

Anahtar Kelimeler: Adenokarsinomu, beyin metastazı, kanser, ince barsak

Introduction

Cancer of the small bowel (SB) represents around less than 2% of all gastrointestinal (GI) malignancies. The frequency of adenocarcinoma of the SB is about 40% in all SB tumours. Adenocarcinoma of SB is mostly present in the duodenum followed by jejunum and ileum.[1] Because of its rare occurrence, nonspecific clinical features of presentation and difficulty of imaging the SB, the disease is usually advanced with either regional or distant metastasis at the time of diagnosis. Brain metastases were identified in less than 4% of all GI tumours. Although early treatment is associated with prolonged survival and improved outcomes, brain metastasis reflects a late presentation of GI cancers and remains an unpromising situation.

Case Report

A 67-year-old man with history of diabetes mellitus, hypertension, hyperlipidaemia and disease of the coronary arteries and placement of stent at 3 years ago was presented with the complaint of speech impairment and vertigo. He did not show any symptoms of GI disease, and there was no weight loss. No history of haematemesis or melaena was found in the patient. The patient underwent a cranial magnetic resonance imaging that showed intracranial mass in the frontal lobe (Figure 1). Thus, the patient underwent a surgical resection of the metastasis by craniotomy. Postoperative recovery was uneventful. Histopathology of the specimen revealed metastatic adenocarcinoma; immunohistochemical staining results were consistent with GI system carcinoma.

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The patient was then undergone colonoscopy and upper GI endoscopy without any abnormalities. Abdominal computed tomography (CT) scan showed a 10-mm serosal hyperdense nodule in the medial section of the splenic flexure that was reported as possible subserosal haemorrhage or calcific granuloma (Figure 2). Positron emission tomography CT (PET-CT) scan showed a hypermetabolic involvement in the left lower quadrant of the abdomen of 41x38 mm in diameter with metabolic activity (SUV_{max}: 8.3).

The patient underwent an exploratory laparotomy based on the results of CT and PET-CT scan with a high suspicion of the presence of small intestinal malignancy. A jejunal mass was seen covered by the greater omentum just inferior to the splenic flexure without any dilatation of the proximal bowel loops (Figure 3). Jejunal segmental resection with lymphadenectomy of the involved segment was done. Postoperative recovery was uneventful. The patient was discharged on postoperative day 3.

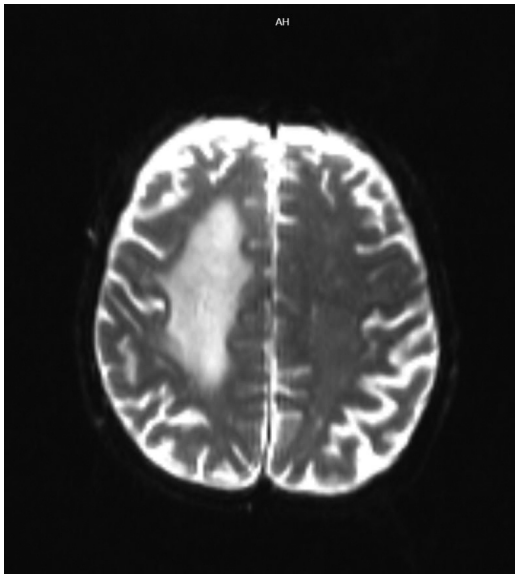

Figure 1. Cranial magnetic resonance image showing intracranial mass

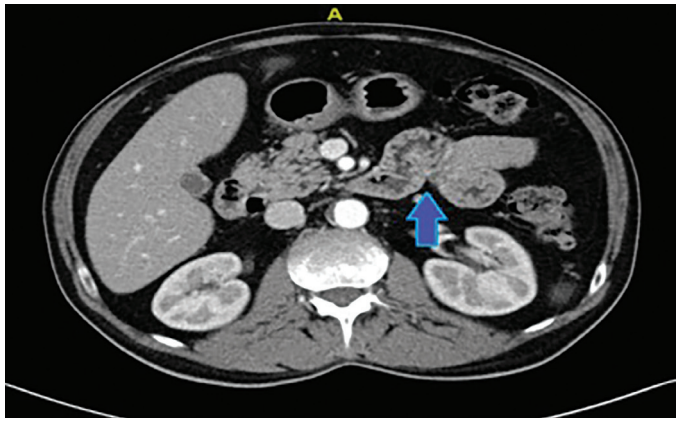

Figure 2. Abdominal computerised tomography images showing the primary tumour

Histopathology of the specimen revealed adenocarcinoma of the small intestine. The proximal and distal resection margins were clear of tumour cells with the presence of three metastatic lymph node involvements. T3N2M1 was the pathological stage of the lesion. The patient was referred to an oncologist for adjuvant chemotherapy. However, the patient was died on postoperative month 8 because of recurrent cranial metastasis.

Discussion

SB adenocarcinomas are rare, and metastatic disease is associated with poor prognosis. There are limited reported cases in the literature on SB adenocarcinoma presenting with neurologic symptoms due to brain metastasis. In this report, we presented the case of a patient diagnosed with SB adenocarcinoma after surgical removal of intracranial mass.

SB adenocarcinomas have poor prognosis. Expected 5-year survival rate is less than 30%. Almost one-third of patients have distant metastasis, and one-third have lymphatic metastasis at the time of diagnosis. Upper GI endoscopy and colonoscopy should be performed to visualise proximal and distal SB tumours and also to clarify underlying diseases such as inflammatory bowel disease. Clinical staging can be done with chest-abdomen-pelvis CT scan. SB resection is performed with necessary lymphatic dissection. Surgery alone may be curative for stages I and II of the disease, while adjuvant chemotherapy is necessary for stages III and IV patients. Currently, surgical treatment is the only curative option for stages I and II. Fluoropyrimidine and platinum combination may be considered in systemic therapy.[2] Our patient underwent SB resection with lymphadenectomy, and the final pathology revealed stage T3N2 of the disease.

Most common sites of metastasis for SB adenocarcinomas are lymph nodes, liver and peritoneum.[3] Incidence of brain metastasising SB adenocarcinoma is unclear due to its rarity. Reported survival is median 10 (range: 3-28) months.[4] Surgical removal, and/or whole brain radiotherapy, is the

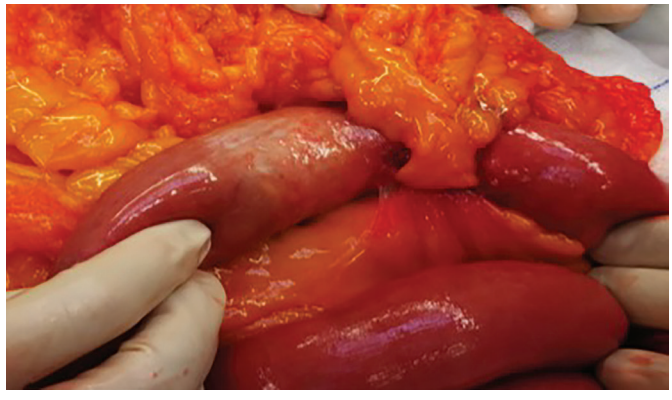

Figure 3. Intraoperative image of the primary tumour covered by omentum

most preferred treatment of choice for brain metastasis of SB adenocarcinomas.[5] As the primary tumour was asymptomatic, our patient had to undergo upfront cranial mass removal. He received adjuvant whole brain radiotherapy after small bowel resection surgery.

In conclusion, SB adenocarcinomas are rare cause of GI malignancies. Resection with local lymphadenectomy is the procedure of choice for local disease. However, distant metastases exist at the time of diagnosis in one-third of patients. Metastatic disease has poor survival, even curative resection of the primary tumours and metastases can be achieved.

Ethics

Informed Consent: Patient's informed consent was obtained.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: I.A.J., Ö.I., Concept: Ö.I., Design: Ö.I., Data Collection or Processing: I.A.J., Ö.I., Analysis or Interpretation: I.A.J., Ö.I., Literature Search: I.A.J., Ö.I., Writing: I.A.J., Ö.I.

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

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LETTER TO THE EDITOR

Getting Better in Open Abdomen Surgery

Open Abdomen Cerrahisinde Daha İyiye

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Keywords: Open abdomen, surgery, getting better
Anahtar Kelimeler: Açık batın, cerrahi, daha iyi

Dear Editor,

Open abdominal surgery, which is recommended worldwide after injury control surgery for major trauma, abdominal compartment syndrome (ACS) and abdominal sepsis, can be life-saving many times.1 When ACS develops, many systems such as bowel, lung, heart, kidney and central nervous system are adversely affected.[1] When ACS is not treated, it is 100% mortal.[2] Organ hypoperfusion, microperfusion deterioration, ischemia, acidosis and developing bacterial translocation in the intestines further increase the compartment. Acute renal failure develops due to decreased renal perfusion in the kidneys, increased resistance in renal venous structures, increased activation in renin angiotensin system, increased antidiuretic hormone, and oliguria.[1] With the developing ACS, the diaphragm is elevated and has a negative effect on the lung by causing decrease in lung compliance, development of atelectatic areas and hypoxia.[3] Intracranial pressure also increases with ACS. This causes cerebral hypoperfusion and therefore a decrease in Glaskow Coma scale score. In addition, a decrease in the preload of the heart develops due to the negative effect that develops on the renal and mesenteric veins in ACS, and an increase in afterload develops due to increasing peripheral vascular resistance. It results in a decrease in cardiac output and hypoxia.[1] Therefore, ACS should be suspected when dyspnea, abdominal distension, tachypnea, orthopnea, oliguria, decrease in mean arterial pressure and increase in positive fluid balance are detected. Open abdominal surgery can be applied not only in ACS, but also in traumatic and hemorrhagic shock and non-traumatic patients in septic shock. In cases of intra-abdominal sepsis, if source control could not be done, ACS is present and reoperations are planned, open abdominal surgery is recommended. In patients with open abdomen in whom many methods such as Bogota-bag, negative pressure system and full or semi-dynamic abdominal closure systems are applied in surgical treatment, unfortunately, applying only surgical methods cannot be life-saving. Before proceeding with abdominal closure methods, the patient's hemodynamics should be stabilized absolutely. For this reason, all affected systems should be handled individually. A general surgery specialist who wants to work in this field, is devoted to the open abdominal, does not work in consultation method and makes morning and evening patient visits regularly, and makes data entry and treatment regularly, is needed. A team consisting of general surgery, neurology, cardiology, chest diseases, general internal medicine, anesthesia and reanimation, vascular surgery and psychiatry specialists should evaluate the patient absolutely. It should be ensured that the hemodynamics is stabilized and then the abdomen should be closed.

As a result, open abdominal surgery should not only be a subject that general surgeons deal with alone, but should be a subject that should be intervened with a multi-disciplinary approach.

Ethics

Peer-review: Externally peer reviewed.

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

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