



The diagnostic values of procalcitonin and interleukin 6 in acute appendicitis

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ABSTRACT

Objective: Despite the recent use of computed tomography scan and diagnostic laparoscopy, acute appendicitis is still highly misdiagnosed. Timely diagnosis of acute appendicitis is more crucial in children and elderly patients because of vague symptoms and rapid progression to perforation in these age groups, which may result in high rates of morbidity and mortality. The aim of the present study was to find the diagnostic values of procalcitonin and interleukin 6 (IL-6) for diagnosing acute appendicitis in our center.

Material and methods: Patients who were suspected of acute appendicitis and who were referred to the emergency department of a tertiary care urban hospital in 2016 were enrolled in the study. A 5 ml blood sample was obtained from each patient before appendectomy and was examined for procalcitonin and IL-6. Then, the resected specimen of the appendix was studied by a pathologist, and a definite diagnosis was made.

Results: Eighty patients including 53 (66.3%) men who underwent appendectomy were enrolled in the study. The diagnosis of acute appendicitis was histopathologically confirmed in 60 (75%) patients including 18, 20, and 22 patients with inflammatory, suppurative, and gangrenous/perforated appendicitis, respectively. The sensitivity and specificity of procalcitonin versus IL-6 for diagnosing acute appendicitis were 65% and 80% vs. 76% and 55%, respectively. The sensitivity and specificity of concurrent procalcitonin and IL-6 for diagnosing acute appendicitis were 90% and 55%, respectively.

Conclusion: Our study suggests that parallel measurement of procalcitonin and IL-6 decreases unnecessary negative appendectomies.

Keywords: Appendicitis, interleukin 6, procalcitonin

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INTRODUCTION

Appendicitis is the most common cause of surgery of the abdomen with an incidence rate of 11 in 10,000 annually and most commonly occurred in the second to fourth decade of life especially in young adults (1, 2). Timely diagnosis of acute appendicitis is crucial especially in children and elderly patients because of vague symptoms and rapid progression to perforation in these age groups, which may result in high rates of complications including wound infection, intra-abdominal abscess formation, and mortality (3, 4). Despite the recent use of computed tomography scan and diagnostic laparoscopy, acute appendicitis is still highly misdiagnosed at a rate of 1-5%, with the highest number of negative appendectomy seen in elderly women (5). Hence, additional preoperative testing may be helpful for the timely diagnosis of acute appendicitis. Although the role of the measurement of inflammatory cytokines, such as procalcitonin, interleukin 6 (IL-6), and C-reactive protein, which are involved in acute and chronic inflammatory responses in addition to the measurement of white cell count and bilirubin for diagnosing acute appendicitis, has been investigated in few studies, the results varied with no consensus about the best test (6, 7).

The aim of the present study was to find the diagnostic values of procalcitonin and IL-6 in the diagnosis of acute appendicitis and their associations with the severity of the disease in our center.

MATERIAL AND METHODS

Patient selection

In this prospective study, patients who were suspected of acute appendicitis and who were referred to the emergency department of a tertiary care urban hospital in 2016 were enrolled in the study. Patients with an Alvarado score of >5 or in whom the diagnosis of acute appendicitis was documented using computed tomography scan were included in the study. Exclusion criteria comprised patients with a history of autoimmune disease; who underwent transplantation; receiving immunosuppressive, antibiotic, and/or immunomodulator drugs; who were in sepsis; or who were markedly overweight with a body mass index >25. All patients were visited and examined by the same surgeon.

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Inflammation, 4 Volume Set Jean-Marc Cavaillon, Mervyn Singer, 2018-02-20 Dieses Fachbuch erl utert die molekularen Grundlagen von Entz ndungen spannt den Bogen zu Infektionskrankheiten und den Zusammenhang zwischen Entz ndungen und chronischen Erkrankungen behandelt abschlie end den Heilungsprozess und zeigt Therapiem glichkeiten Clinical Approaches to Hospital Medicine Kevin Conrad, 2017-11-09 This book provides an update on recent clinical practice and an in depth view of selected topics relevant to hospital medicine It is divided into four sections that explore clinical administrative systems and ethical issues Each section places an emphasis on the opportunities challenges and potential directions of this burgeoning subspecialty An important topic covered extensively is how hospitalists are being called to lead on the current opioid epidemic given that they are well suited in responding to complicated challenges crossing all specialties Other chapters explore worldwide practice patterns and practical application of philosophical tools in daily practice This up to date resource provides hospitalists advanced nurse practitioners medical students and administrators with the latest research trends and issues in hospital medicine **Principles and Practice of Critical Care** P. K. Verma, 2019-09-08 This edition is presented in a totally new and reader friendly format The focus of this volume is on holistic management of critically ill adult patients and it builds upon concepts one step at a time allowing one the opportunity to develop competence at one s own pace *Inflammation* Jean-Marc Cavaillon, Mervyn Singer, 2017-10-02 The leading reference on this topic of increasing medical relevance is unique in offering unparalleled coverage The editors are among the most respected researchers in inflammation worldwide and here have put together a prestigious team of contributors Starting with the molecular basis of inflammation from cytokines via the innate immune system to the different kinds of inflammatory cells they continue with the function of inflammation in infectious disease before devoting a large section to the relationship between inflammation and chronic diseases The book concludes with wound and tissue healing and options for therapeutic interventions A must have for clinicians and biomedical researchers alike **Advances in Clinical Chemistry** , 2012-12-31 Volume 59 in the internationally acclaimed *Advances in Clinical Chemistry* contains chapters submitted from leading experts from academia and clinical laboratory science Authors are from a diverse field of clinical chemistry disciplines and diagnostics ranging from basic biochemical exploration to cutting edge microarray technology Written by authors representing the diverse field of clinical chemistry and diagnostics reviews in *Advances in Clinical Chemistry* cover a range of cutting eduge research ranging from basic biochemical exploration to microarray technology New Trends in Biomarkers and Diseases: An Overview Juan Antonio Vilchez, María Dolores Albaladejo-Otón, 2017-09-29 Biomarkers are any measurable biochemical characteristics of an organism that reflect a particular physiological state Biomarkers can take many different forms including particular proteins or peptides antibodies cell types metabolites hormones enzyme levels compounds related to genomics etc A biomarker can also be a substance introduced into a patient to assess the internal organ systems role In medicine biomarkers considered as

compounds isolated from serum urine or other fluids can be used as an indicator of the presence or severity of a particular disease state The use of biomarkers is becoming a fundamental practice in medicine Biomarker research involves a significantly greater scope of laboratory medicine This monograph presents information on several types of biomarkers for general pathologies preeclampsia metabolic syndrome iron metabolism bone disease liver function renal function cardiovascular pathology including atrial fibrillation peripheral artery disease thrombotic disorders and sepsis Additional information on endocrine and salivary biomarkers is also presented New Trends in Biomarkers and Diseases An Overview is an ideal reference for medical students pathology trainees and clinical researchers seeking information on biomarkers in medicine

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