



# 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 91% 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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