



Acute Appendicitis Neglected to Rupture: Review Article

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ABSTRACT

Background: Ruptured appendicitis leads to longer hospital stays and is associated with many post-operative complications, morbidity, and mortality. Earlier identification and proper treatment of acute appendicitis may prevent perforation. **Objectives:** The study objective was to review the incidence of occurrence and leading risk factors of acute appendicitis neglected to rupture in Saudi Arabia. **Methods:** PubMed database and EBSCO Information Services were used for articles screening. All related papers with the subjects to study regarding the incidence of occurrence and leading risk factors of acute appendicitis neglected to rupture in Saudi Arabia and other articles have been used. We excluded additional papers that are not relevant to this topic. data of our study was collected as per the particular manner in which the group members would study it. **Conclusion:** There is a profound effect of acute appendicitis neglected to rupture on both patients and healthcare organizations; hence efforts should be focused on implementing complex multidisciplinary prevention strategies. We propose that health care workers in the surgical center undergo instruction to stress the importance of integrating these measures into everyday practice as well as through the quality of service provided to acute appendicitis patients and avoiding acute appendicitis neglected to rupture.

Key Words: acute appendicitis neglected to rupture, management, risk factors, incidence, prevention measures.

eIJPPR 2020; 10(4):133-137

HOW TO CITE THIS ARTICLE: Mohammed Abdelazeem Hamid Elnaiem, Alshammari Abdullah Zidane B, Ahmed Obaid Aladham Alanazi, Alanazi Ibrahim Awadh R, Alshammari Reem Hamoud S, Nasser Ghadeer S Alshamari and *et al.* (2020). "Acute Appendicitis Neglected to Rupture: Review Article", International Journal of Pharmaceutical and Phytopharmacological Research, 10(4), pp.133-137.

INTRODUCTION

Health is very important to us [1, 2]. One of the most common causes of acute abdomen is found in children and adults is Appendicitis. It has an estimated lifetime risk of 8.6% among males, and 6.7% among females [3]. Appendicitis occurs most often between all age groups from 5 and 45 with a mean age of 28. The incidence is approximately 233/100,000 people [4]. The cause of appendicitis is usually from occlusion of the appendiceal orifice lumen. When the lumen of the appendiceal orifice

gets occluded, bacteria will build up in the appendix and cause acute inflammation with aperture and formalization of an abscess [5].

Acute pain in the abdomen is the first submitting complaint of patients which brings him to the hospital with acute inflammation of the appendix (appendicitis). The succession of diagnoses for central abdominal cramping pain supervened by vomiting with pain transmitted to the iliac fossa of the right side was the first substantive by Murphy but may be existing only in 50% of cases [6]. There is no certain test for diagnoses of appendicitis, but

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 01 May 2020; **Revised:** 14 August 2020; **Accepted:** 19 August 2020



the reasonable use of urine and blood simple tests, especially inflammatory restraint data, in addition to some radiological tests, can give exclusion of other causes of acute abdomen and support the diagnosis of acute appendicitis [7].

Ruptured appendicitis leads to longer hospital stays and may be associated with many post-operative complications, morbidity, and mortality. Earlier diagnosis and management of acute appendicitis may prevent perforation. A delay in treatment is a major determinant of rupture and so, the occurrence of ruptured appendicitis may be a sentinel event that indicates the problems that are presented in access to health care [8-10].

Study Objectives:

The study objective was to review the incidence of occurrence and leading risk factors of acute appendicitis neglected to rupture in Saudi Arabia.

PARTICIPANTS AND METHODS:

Study Design: A review article.

Study duration: Data was collected during the period from 1– 31 November 2019.

Data collection: Medline and PubMed database searches were performed for articles about acute appendicitis, especially in Saudi Arabia and to show the signs,

symptoms, and complications of ruptured appendicitis, published in English around the world. The keyword search headings included “acute appendicitis, ruptured appendicitis, diagnosis of ruptured appendicitis, Saudi Arabia”, and a combination of these was used. References list of each included study was searched for further supportive data.

Statistical analysis: No software has been utilized to analyze the data. The data was extracted based on a specific form that contains (Author’s name, study type, objective, summary, results, and outcomes). These data were reviewed by the group members to determine the initial findings. A double revision of each member’s outcomes was applied to ensure the validity and minimize the mistakes.

RESULTS:

The search of the aforementioned databases returned a total of 53 studies that were included for title screening. 32 of them were included for abstract screening, which leads to the exclusion of 15 articles. The remaining 17 publications full-texts were reviewed. The full-text revision leads to the exclusion of 12 studies, and 5 were enrolled for final data extraction (Table 1).

The included studies had different study designs and population types.

Table 1: Author, objectives and outcomes of the included studies

Study	Objective	Outcomes	Ref.
Chung-Jung Lin et al.	This study aims to identify which clinical symptoms/signs and computed tomography (CT) signs can provide help in the difference between ruptured and simple appendicitis.	In addition to clinical findings, a CT scan can determine the appendiceal rupture in acute appendicitis precisely. Also, it can further show the presence of local inflammatory mass, facilitating management decision in the emergency department (ED)	[11]
Williams, Regan F., et al.	Distinguishing between acute appendicitis and Ruptured acute appendicitis in children preoperatively is critical. Because the treatment of these conditions is now diverging,	Pediatric surgeons differentiate AA from RA, not appendicitis preoperatively with high accuracy and sensitivity, although the specificity for diagnosing ruptured appendicitis is lower. The specificity of the preoperative diagnosis was improved by the scoring system. The scoring system’s validity and utility should be checked in further studies in larger patient populations.	[12]
Sirikurnpiboon S. et al.	The purpose of this study is to determine the risk factors of perforation in elderly patients who have shown signs of clinical acute appendicitis.	In male elderly patients, the incidence of perforated appendicitis was higher. It was also high in patients that had certain clinical features like fever and also, anorexia. An important factor in appendiceal rupture is how long the pain lasted in the preadmission period. Early diagnosis may decrease the incidence of perforated appendicitis in elderly patients.	[13]
Min-Hsuan et al.	The aim was to determine factors associated with ruptured appendicitis	The perforated appendix is significantly associated with longer duration of abdominal pain, younger age, fever, muscle guarding, and elevated C-reactive protein level.	[14]

	in children diagnosed with appendicitis.	To evaluate individuals with suspected appendicitis, these factors have to be considered closely.	
Khairy G et al.	For the determination of the incidence of the factors and negative appendectomies that are likely to decrease the risk-rate of removing the normal appendices surgically.	The rates of negative findings on appendectomy did not decrease much even though there are some advancements in the diagnostic and imaging techniques, a factor that is still in managing the patients with suspected acute appendicitis. To routinely use a CT scan or diagnostic laparoscopy for all the patients that have been suspected to have appendicitis is not cost-effective or safe.	[15]

DISCUSSION:

The detection, identification, and diagnosis of appendicitis are not always easy or direct. About 20-33% of cases expected of having acute appendicitis came to the hospital with atypical manifestations [16]. The great importance of diagnosis is the expectation of liability to the rupture of the inflamed appendix, which results in great morbidity and prolonged hospital stay.

The most efficient method to diminish the occurrence of ruptured appendicitis is to decrease catching the patients to the theater even despite enhancing the rate of undesirable appendectomy [17].

The clinical evaluation of acute appendicitis has an overall precision rate (sensitivity and specificity) of 45–81% and 36–53% respectively. Improvements in clinical skills and advances in investigative tools (CT) scan and (US) promoted the successful diagnosis of patients with doubted appendicitis because the clinical manifestations of appendicitis are always imprecise [18].

Anyhow, the physicians had to trust patients' speeches, i.e the while when symptoms, as abdominal cramps, nausea, vomiting, or loss of appetite, stated by the patient was considered as the beginning of appendicitis indicators [19]. In a previous study, the frequency of occurrence of burst appendicitis was 32%–72% frequently resulted from late diagnosis due to ambiguous history taking and physical examination [20–23]. Another previous study found ruptured appendicitis was reported in 50% of patients which is supported by the results of the previous research. The threatening factors related to ruptured appendicitis were male sex, temperature =38°C, loss of appetite, in addition to period of pain in the preadmission time [24].

New research by Augustin et al. [25] found that the risk of appendicular rupture elevated 36 hours after the beginning of pain. Also, in another study, Singh et al. [26] it was found a significant relationship between perforated appendicitis in children and a period of pain in the preadmission time of more than 72 hours.

A study by Eko et al. [27] reported that period of pain and other manifestations in the preadmission period should not surpass 18 hours to decrease the postoperative complications and morbidities and length of hospital stay. In contrast, Abou-Nukta et al. [28] concluded that postponing appendectomy by 12–24 hours after starting

symptoms did not significantly associate with an increase in the rate of appendicular rupture, length of hospital stay or operation time.

Also, a recent study by Teixeira et al. [29] reported that prolongation in the time from acute appendicitis diagnosis to appendectomy did not increase the rate of perforation [30].

Henceforth, while appendectomy due to acute appendicitis is considered one of the commonest abdominal operations carried out by general surgeons, rates of the postoperative complications and morbidity remain between 9% and 18%, respectively [31]. The death rate of ruptured appendicitis in geriatric patients was from 2.3% to 10% and mostly associated with infection and primary associated original illness [32-34]. A previous study reported, there was a 1.9% rate of deaths from infection of the surgical site and associated disease, which is supported by the results of previous studies [13].

CONCLUSION:

Acute appendicitis should still be considered important one of the causes of acute abdomen in surgical patients. Delay in bringing the patient to the hospital is associated with increased rates of appendicular rupture and postoperative complications. There is a profound effect of acute appendicitis neglected to rupture on both patients and healthcare organizations; hence efforts should be focused on implementing complex multidisciplinary prevention strategies.

We propose that health care workers in the surgical center undergo instruction to stress the importance of integrating these measures into everyday practice as well as through the quality of service provided to acute appendicitis patients and avoiding acute appendicitis neglected to rupture.

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