

Prospective Single Centre Study of Acute Appendicitis

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Abstract

Background: Acute appendicitis is the most common surgical emergency, and appendectomy is the treatment of choice in the majority of cases. A correct diagnosis avoids the negative appendectomy. The aim of this study is to describe the clinical and diagnostic work-up and management.

Methods: This prospective single center observational study was performed in surgical department of RGMC, Kalwa over a period of 1 year from 2018 to 2019. All patients admitted to surgical wards with a clinical diagnosis of acute appendicitis were included in the study.

Results: A total of 108 patients were studied, 44 female and 64 males, with a median age of 27 years, except one male of age 80 years. All patients underwent an Ultrasound of abdomen and pelvis, and 8 patients both C.T scan and Ultrasound. About 100 patients underwent open appendectomy and 08 patients had exploratory laparotomy with appendectomy. The complications occurred in 04 patients.

Conclusions: The result of present study shows the strong role of clinical findings, laboratory data and imaging techniques. Appendectomy remains the most effective treatment of acute appendicitis. Mortality rate is low.

Keywords: Acute, Appendicitis, Appendectomy, Ultrasound, Laparotomy, CT scan

Introduction

Acute appendicitis (AA) is the most common surgical disease with a lifetime risk of 7–8% [1]. Traditionally, appendectomy has been the treatment of choice for acute appendicitis. Mortality rate after appendectomy is very low and may range from 0.07 to 0.7% rising to 0.5 to 2.4% in patients without and with perforation [2, 3]. Furthermore, overall postoperative complication rates ranged between 10 and 19% for uncomplicated AA and reaching 30% in cases of complicated AA. Improving the diagnostic pathway is the cornerstone for decreasing the negative appendectomy rate and the risk of wrong diagnosis. Before the wide spread use of CT scans, the diagnosis of acute appendicitis was mainly based on symptoms, signs, and laboratory data [4].

Several diagnostic scoring systems for acute appendicitis have been described. The most commonly used are the Alvarado score and AIR—Appendicitis Inflammatory Response (Andersson) score [5,6]. Both of these scoring systems can increase the diagnostic accuracy, thus guiding the decision-making and decreasing the need of potentially harmful and expensive imaging.

Acute appendicitis treated successfully only with antibiotics remains a potential cause of recurrent appendicitis. Postoperative wound infections and post-appendectomy adhesion, bowel obstruction occurring many decades after the index surgery are commonly described sequelae of appendectomy. Therefore, the comparison of surgery and antibiotic therapy still represent a challenging and debated issue [7].

The effort to distinguish non-complicated from complicated appendicitis is paramount in ensuring appropriate patient management. Utilizing a CT scan to diagnose cases of suspected AA has been demonstrated, it has high sensitivity (0.99) and specificity (0.95) [8-10]. However, even a CT scan struggles to differentiate between uncomplicated and complicated appendicitis [11, 12]. The present study was carried out with an objective to study the clinical, diagnostic, treatment, and pathological profile of patients with acute appendicitis.

Materials and Methods

This prospective observational study was performed in Surgical Department over a period of one year from 2018 to 2019. All patients admitted to surgical wards with suspected clinical diagnosis of acute appendicitis confirmed by clinical findings, laboratory data and imaging modalities and seen by a surgeon were included in the study. Patient demographics included- age, sex, previous episodes of suspected appendicitis, comorbidities, previous antimicrobial therapy, and clinical data (axillary temperature, diffuse tenderness, right lower quadrant pain, right lower quadrant tenderness, vomiting) and laboratory findings at admission (white blood count (WBC), radiological diagnosis (ultrasound (US) and computer tomography (CT) findings) were noted.

Observations and Results

A total of 108 patients were studied, among them 64 (59.25%) were males and 44 (40.74%) were females. The median age of patient was 27 years. The age distribution of patients is shown in table 1. 6 patients had previous episodes of acute appendicitis. Seven patients were immunosuppressed, and 4 patients suffered from other comorbidities. About 97 patients had no comorbidities.

Table 1: Age distribution of patients

Age (In years)	No. of Patients	Percentage
01-10	07	6.48%
11-20	36	33.33%
21-30	33	30.55%
31-40	13	12.03%
41-50	07	6.48%
>50	12	11.11%

The right lower abdominal pain with duration of 3 to 4 days was present; only 4 (3.70%) patients had abdominal pain of duration 8 to 10 days. The vomiting was present in 66 patients. The generalized abdominal distension with fever was present in 5 patients, (Table 2).

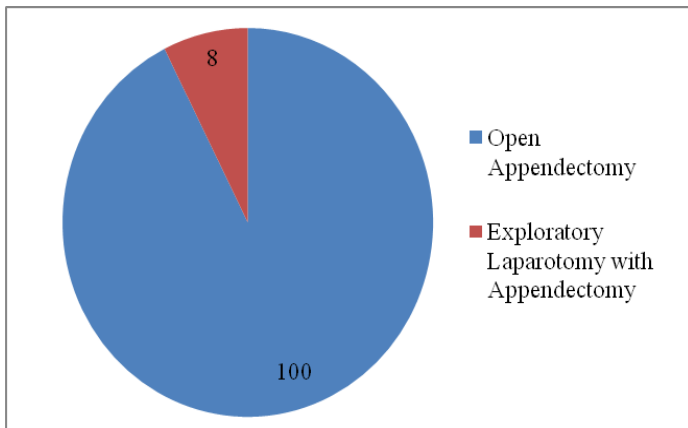
Table 2: Distribution of patients according to history

History	No. of Patients	Percentage	
Pain in Abdomen	1-2 days	51	47.22%
	3-4 days	40	37.03%
	5-7 days	13	12.03%
	8-10 days	04	3.70%
Vomiting	66	61.11%	
Abdominal distension with fever	05	4.62%	
Constipation	10	9.25%	
Burning Micturation	06	5.55%	
Similar Episodes	06	5.55%	

The pulse rate of more than 100 per minute was present in 9 patients, and 50 patients had pulse rate between 90 to 100 per minute. 24 patients were having recordable temperature (fever). The clinical examination showed generalized distension with guarding in 08 patients; 103 patients had right iliac fossa tenderness on palpation, of which 89 patients showed rebound tenderness in right iliac fossa

About 08 patients underwent both ultrasound abdomen and CT scan of abdomen and pelvis. The chest X- ray, abdomen X- ray and ultrasound was done in all 108 patients. CBC and Viral Markers (HIV, HBSAG & HCV) were done for all patients. All the 108 patients underwent surgery, out of which 100 patients underwent open appendectomy and remaining 08 patients underwent exploratory laparotomy with appendectomy (lavage and drainage), (Figure 1). The post-operative complications like wound infection with subcutaneous gap was seen in 5 patients and seroma was seen in 4 patients.

Figure 1: Patients underwent surgery



Discussion

The acute appendicitis is one of the most common clinical challenges for every surgeon, because of its diagnostic dilemma. The clinical presentation varies from symptoms like right lower abdominal pain, fever to diffuse (generalized) peritonitis and sepsis [13]. The most

common clinical symptom is right lower quadrant abdominal pain. These symptoms are present in other septic conditions, like infectious gastrointestinal disorders or genitourinary tract disorders in young patients.

The median age of 27 years shows the prevalence in young population. Our data showed that right lower quadrant pain and tenderness were the most frequently reported symptoms, followed by vomiting, fever, and diffuse tenderness. Laboratory findings showed a high prevalence of white blood count (WBC) >10,000 cells/ml. The studies have shown that white cell count is the most significant laboratory marker, WBC more 10,000/cmm has a range of sensitivity between 65 and 85% and specificity between 32 and 82%, [14].

The radiological imaging plays important role in diagnosis of acute appendicitis. The clinical suspicion of appendicitis with support by accurate imaging reduces the rate of negative appendectomy by almost 15%. The most commonly used imaging techniques are ultrasonography (US) followed by computed tomography (CT) [14]. In this study, about all patients undergo underwent Ultrasound and only 08 patients had both ultrasound and CT scan. The study shows that the clinical examination supported by laboratory findings help in diagnosis of acute appendicitis. The radiological documentation of the clinical suspicion is must, and when Ultrasound is not sufficient for definitive diagnosis, a CT scan is the ideal option, with a sensitivity of 98.5% and a specificity of 98% [15, 16].

The incidence of postoperative complications in literature ranges from 3 to 28.7% [17, 18]. The most common complications in the literature are small bowel obstruction, surgical site infection, stump leakage, abdominal abscess, and stump appendicitis [19, 20]. In this study there are no complications like stump

appendicitis, stump leakage as reported in literature for complicated appendicitis [21]. The reported incidence of surgical site infection from the literature ranges between 1.2 and 12%, in current study the rate of surgical site infection was 5%. The incidence of small bowel obstruction is reported around 2%, but in this study its occurrence was nil at 7 days and 30 days. The hospitalization of 3 days was the average length of hospital stay reported in literature [22]. The overall mortality rate following appendectomy in cases of complicated appendectomy is up to 2.4% [2, 3], but present study did not show any mortality.

Conclusion

The study concludes current worldwide trend in the diagnostic work-up and therapeutic management of acute appendicitis. Ultrasound is used in about 40% cases and CT in one third. The more than 90% of patients are treated with surgery. The hospital stay is short, with few complications at 7 and 30 days postoperatively.

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