Medical and Research Publications
International Open Access

Research Article **Journal of MAR Gastroenterology (Volume 2 Issue 5)**

Conservative Management of Acute Appendicitis

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Received Date: February 21, 2023

Published Date: March 01, 2023

Abstract

Background: *The most frequent clinical condition that requires an appendectomy is acute appendicitis. In recent years, antibiotic treatment has also been used to treat acute, simple appendicitis without surgery.*

Objective- *To assess the outcome of conservative treatment in the management of acute appendicitis.*

Methods: *All individuals who had received a radiological diagnosis of acute appendicitis were included in the study based on inclusion and exclusion criteria. Based on clinical symptoms, signs, and laboratory tests, the modified Alvarado score (MAS) was computed. For 48–72 hours, injections of metronidazole and ceftriaxone were given. Patients who responded to intravenous antibiotics were shifted to ciprofloxacin and metronidazole tablets for seven days, and they were then monitored for six months. Treatment failure/recurrence patients were those who didn't respond to conservative treatment or experienced a recurrence. The analysis was done using SPSS.*

Results: *Totally 100 patients were enrolled in the study, 57 males and 43 females with a ratio of 1:1.32. Majority were in age group of 21-30. Ultrasound was performed in 80 patients, CT scan in 20 patients. 28 patients had MAS between 4-6 and 72 had between 7-9. 80 patients were successfully managed conservatively. 14 patients had failure of conservative treatment and 6 patients had recurrence.*

Conclusions: *In this study, patients with MAS 4-6 had a higher success rate with conservative treatment than those with MAS 7-9. Acute appendicitis that is complicated should be treated surgically, but acute appendicitis that is not complicated can be treated conservatively as long as rigorous guidelines are followed every month for six months to check for recurrences.*

Keywords: *Appendicitis, Abdominal pain, Antibiotics, Conservative treatment, Recurrence.*

Introduction

The most common cause of an urgent abdominal emergency is acute appendicitis. Aretaeus the Cappadocean first described an appendicitis case in 30 AD. Claudius Amyand conducted the first appendectomy in the year 1735. Reginald Fitz first used the term "appendicitis" in 1886. **[**1,2**]**. Prior to the development of antibiotics, acute appendicitis could develop into difficult appendicitis, which led surgeon McBurney to recommend appendectomy in all cases of acute appendicitis. **[**2,3**]** Nonetheless, appendectomy has its own risks, including mortality and morbidity. During the era of antibiotics, surgeons tested a cautious approach to treating acute appendicitis.**[**4**]**

The non-operative care of acute appendicitis has not yet been well investigated, but it is well established for uncomplicated acute diverticulitis and salpingitis.**[**5**]** Recent investigations revealed that an antibiotic-first approach can safely treat the majority of individuals with acute, uncomplicated appendicitis. **[**6**]** The treatment of acute appendicitis involves the use of increasingly powerful antibiotics. Surgery cannot completely replace antibiotic therapy in the treatment of acute appendicitis. In this regard, we intended to research the effectiveness of antibiotic therapy in acute appendicitis.

Materials and Methods

It was a prospective study conducted for a period of 2 years (January 2021 to January 2023) in a tertiary care hospital. Institutional Ethics committee approval was taken before start of this study. A total of 100 cases of acute appendicitis were studied during the study period.

Inclusion criteria

After two days of the onset of symptoms, radiologically diagnosed acute appendicitis cases with age >10 and a Modified Alvarado score (MAS) >4 were seen.

Exclusion criteria

Recurrent cases of appendicitis. Appendicitis treated elsewhere and referred to us. Patients with HIV. Patients on immunosuppressive therapy as they don’t respond for conservative management. Pregnant women, as pregnancy is an immunosuppressive state. Appendicitis with complications. Patients who were allergic to antibiotics in the study protocol.

Methodology

All patients who came to our emergency room with lower abdominal discomfort were clinically examined for symptoms of acute appendicitis. To identify acute appendicitis and rule out other potential diagnoses as well as acute appendicitis complications, an ultrasound examination was conducted. According to the inclusion and exclusion criteria, all patients who had radiologically confirmed acute appendicitis without any other complications were included in the study. The patients were advised to seek conservative therapy for acute appendicitis, with all the benefits and drawbacks of the course of action being discussed. After obtaining written informed agreement, this trial included patients who were willing to receive conservative treatment. Detailed history was taken and abdomen was examined thoroughly and signs of acute appendicitis were noted. The ultrasound findings were documented. MAS was calculated and documented.

Every 12 hours, a clinical examination was performed. Patients who responded to intravenous antibiotics were shifted to oral medicines: 500 mg of ciprofloxacin and 400 mg of metronidazole three times daily for a total of seven days. Open or laparoscopic appendectomy was performed on those individuals whose clinical status was declining or not improving. For a total of six months, the patients were observed at 10 days and once a month. Depending on the clinical appearance and the patient's preference, the illness recurrence would either be treated conservatively or surgically. The patients were divided into groups based on whether or not their conservative treatment was successful after finishing their treatment and being followed up for six months. Conservative treatment failure is once more broken down into treatment failure and recurrence.

Statistical Analysis

The statistical analysis was performed using SPSS for windows version 22.0 software (Mac, and Linux). The findings were present in number and percentage analyzed by frequency, percent, and Chi-squared test. Chi-squared test was used to find the association among variables. The critical value of P indicating the probability of significant difference was taken as <0.05 for comparison.

Results

Factors	Number	Percentage
Age (Mean±SD)	36.34±12	-
Gender Males	57	57
Females	43	43
Anorexia	78	78
Nausea and Vomiting	84	84
Radiating abdominal pain	85	85
Rebound tenderness	52	72
Fever	59	89
Leucocytosis	95	95

Table 1- Demographic, Clinical and Pathological factors in study participants

As per table 1 the study was male preponderance with 57% are males. The range of age was from 18-70 years with mean age of 36.34 years. Radiating abdominal pain was seen in 85% of patients followed by nausea and vomiting in 84%. Anorexia in 78%, Rebound tenderness was seen in 52 patients and absent in 48 patients. 95 patients in this study had leucocytosis and 59 patients had fever.

Investigation	Number (%)	p-value
CT scan	20 (20)	0.22
Ultrasound	80 (80)	
Complications		
Complicated appendicitis	14 (14)	0.01*
Appendicular mass	6 (6)	
Perforation	6 (6)	
Appendicular abscess	2 (2)	
Uncomplicated appendicitis	86 (86)	
Time of Resolve		0.02*
48 hours	30 (30)	
72 hours	56 (56)	

Table 2- Investigation for Diagnosis and Complications in study participants

As per table 2 CT scan was performed in 20 cases and ultrasound was done in 80 cases for diagnosis of acute appendicitis. 14 patients had complicated acute appendicitis and 86 had uncomplicated acute appendicitis. In 14 cases with complicated acute appendicitis, 6 cases had appendicular mass, 6 cases had perforation and 2 cases had appendicular abscess and ot was statistically significant ($p<0.05$). Acute appendicitis was resolved in 48 hours in 30 patients and in 56 cases it resolved in 72 hours and it was significant. ($p<0.05$)

Outcome	**Number (%)**	**p-value**
Successful	80 (80)	0.01*
Failure	14 (14)	
Recurrence	6 (6)	

Table 3- Outcome of Conservative treatment in study participants

As per table 3 conservative treatments is successful in 80% of patients and it was significant; while all cases of complicated appendicitis were failure of conservative treatment either require iv antibiotics with extraperitoneal drainage. Recurrence was seen in 6 patients.

Outcome	**Modified Alvarado score**		**p-value**
	4-6	**7-9**	
Successful	**30**	**50**	**0.11**
Failure		**20**	
Total	**30**	**74**	

Table 4- Outcome of Conservative treatment with MAS

As per table 4 MAS was in between 4-6 in 30 patients and was 7-9 in 50 patients with an average of 7.29with successful outcome but it was not significant.

Discussion

Long ago, it was believed that if acute appendicitis was left untreated, it would proceed from being simple to being difficult. Yet, only 20% of patients develop complicated appendicitis, meaning that 80% of patients can be handled without surgery, preventing surgical complications. Patients without and with perforation have appendectomy death rates that range from 0.07 to 0.7 and 0.5 to 2.4%, respectively. The incidence of post-appendectomy complications range from 10 to 20% and can reach 30% for both perforated and unperforated appendicitis. **[**3**]**

The mean age of presentation in the current study was 36.34±12. Gedam et al. report that the average age in their study was 30.459.71 years. **[**7**]** According to Rajasekhar et al. and Lohar et alstudy, .'s the majority of patients were in the age range of 21 to 30. **[**8,9**]** In contrast to a study by Gedam et al., where the male to female ratio was 1:1.09, this study had a female predominance with a male to female ratio of 1:1.32. **[**7**]** Contrary to a study by Ekka et al., where 100% of patients reported experiencing stomach pain, 84% of patients in the present study reported experiencing this condition. **[**10**]**

In contrast to a study by Berry et al., where anorexia was observed in 61% of patients, 90% of patients in the current study had anorexia.**[**11**]** In this study, 45% of patients had fever, whereas 76% of patients in Reddy et al's study had fever. **[**12**]**

Leukocytosis was present in 16 94% of the patients in our investigation, whereas Ekka et al. reported leukocytosis in 66.4% of the patients in their study. **[**10**]** All patients (100%) had right inguinal fossa soreness, and 34 patients had rebound tenderness. An eastern Indian study found that 89.6% of patients had right inguinal fossa discomfort and 72.8% had rebound tenderness.

In the present study, conservative treatment failed in 12% of patients. In a study done by Mumtaz et al, 11.1% of patients had failure of conservative treatment which was similar to our present study. **[**13**]** In a study done by Gedam et al the success rate was 74.65%, and failure rate was 14.08% which was similar to the present study. **[**7**]** In a study done at Sahlgrenska University Hospital with a sample size of 442 patients, 342 patients (77.4%) treated conservatively had successful outcome and 100 patients (22.6%) didn’t responded to conservative treatment. **[**14,15,16**]** All the recurrent cases were surgically treated in our present study.

Conclusion

According to the current study, 80% of conservative treatments were successful overall. However, in the current trial, there were 14% failures and 6% recurrences. According to the current study, patients with MAS 4-6 had a higher success rate with conservative treatment than patients with MAS 7-9. Simple acute appendicitis can be treated conservatively as long as the prescribed regimen is faithfully adhered to each month for at least six months in order to check for recurrences.

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