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Conservative Management of Acute Appendicitis in a Tertiary Care Center

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Abstract

Background and Aim: Appendectomy is the most favored treatment of appendicitis in most of the cases. Considered safe and routine surgery few patients develop complications of surgery like recurrent pain, obstruction, wound complications and rarely fistula and death. Present study was done with an aim to study the outcome of conservative treatment in acute appendicitis using antibiotic therapy.

Material and Methods: The present study was a prospective study conducted at the medical institute and associated hospital for a period of 2 years. All the patients attending our emergency department with pain in the lower abdomen were assessed clinically for signs of acute appendicitis. Injection ceftriaxone and injection metronidazole was given for 48-72 hours. Patients who responded for i.v. antibiotics were switched to tablet ciprofloxacin and tablet metronidazole for 7 days and followed for 6 months.

Results: In this present study, 200 patients were included. 168 patients had migratory abdominal pain in the present study. Anorexia was seen in 180 patients and absent in 20 patients. 174 patients had nausea and vomiting. Tenderness in the right inguinal fossa was seen in all the patients. Rebound tenderness was seen in 68 patients and absent in 132 patients.

Conclusion: The overall success rate of conservative treatment according to the present study was 82%. However, there were 12% failures and 6% recurrences in the present study. The success rate of conservative treatment in patients with MAS 4-6 is more than the patients with MAS 7-9 according to the present study.

Keywords: Acute appendicitis, Anorexia, Lower Abdomen, Tenderness

Introduction

Acute appendicitis is one of the commonest causes of acute abdomen with life time risk of 7-8%. Appendectomy is the most favored treatment of appendicitis in most of the cases.[1] Even after clinoradiological diagnosis 10 percent of cases after appendectomy appendix is found normal.[1-3] Considered safe and routine surgery few patients develop complications of surgery like recurrent pain, obstruction, wound complications and rarely fistula and death.[4,5] Based on epidemiologic, radiologic, and pathologic studies, several authors no longer consider appendicitis as an invariably irreversible progressive disease.[6-10] Rather, they envisage 2 types of appendicitis: simple appendicitis with no tendency to progress, and complex appendicitis.[6,7]

In the pre-antibiotic era, acute appendicitis progressed from uncomplicated to complicated appendicitis, so it prompted the surgeon McBurney to implement appendectomy for all the cases of acute appendicitis. But appendectomy has its own complications, morbidity and mortality. In the antibiotic era surgeons gave a trial of conservative treatment for acute appendicitis. The nonoperative conservative management of uncomplicated acute diverticulitis and salpingitis has been well established but the non-operative management of acute appendicitis is yet to be explored. Most authors

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conclude that antibiotic treatment alone is less effective than an appendectomy and therefore promote appendectomy.[11-15] However, the methodologic quality of the included studies was low to moderate, there was considerable statistical heterogeneity, and these inferences continue to be questioned.[14,15] In addition, potential longterm disadvantages of surgery in children have not been evaluated adequately.

Recent studies showed majority of patients with acute, uncomplicated appendicitis can be treated safely with an antibiotics-first strategy. Antibiotics which are more effective is used in the treatment of acute appendicitis. Antibiotic therapy is not a complete substitute for surgery in the management of acute appendicitis. In this regard, we aimed to study the outcome of conservative treatment in acute appendicitis using antibiotic therapy.

Material and Methods

The present study was a prospective study conducted at the medical institute and associated hospital for a period of 2 years. Institutional Ethics committee approval was taken before start of this study.

Inclusion criteria: Radiologically diagnosed acute appendicitis cases with age>10 years attending within 2 days of symptom onset with Modified Alvarado score (MAS) more than or equal to 4.

Patients having guarding, rigidity, perforation, abscess, lump on clinical examination and radiological reports were excluded from study.

All the patients attending our emergency department with pain in the lower abdomen were assessed clinically for signs of acute appendicitis. Ultrasound examination was done to diagnose acute appendicitis and to exclude other differential diagnosis and complications of acute appendicitis. All the patients who were diagnosed as acute appendicitis radiologically without any other complications were enrolled into the study considering the inclusion and exclusion criteria. The patients were counseled for conservative treatment of acute appendicitis, explaining all the pros and cons of the treatment. The patients who were willing to undergo conservative management were included in this study after taking written informed consent. All the demographic date like age, sex, occupation, contact details and address were recorded from the patient. 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. Patients were advised nil by mouth for 24 hours and administered intravenous antibiotics ceftriaxone every 12 hours and metronidazole every 8 hours with dose depending on age of the patient for 48-72 hours. Paracetamol infusion was given every 8 hours to relieve the pain of the patient. The clinical assessment was done every 12 hours. Patients who responded for i.v. antibiotics were switched over to oral antibiotics- tablet ciprofloxacin 500 mg with tablet metronidazole 400 mg thrice a day for a total of 7 days. In those patients, whose clinical condition were deteriorating or not improving, open or laparoscopic appendectomy was performed. The patients were followed at 10 days and every month for a period of 6 months. The disease recurrence would be managed either conservatively or surgically depending on the clinical presentation and upon patient preference. After completion of treatment and follow up for 6 months period, the patients were grouped into successful/failure of conservative treatment. Failure of conservative treatment again divided into treatment failure and recurrence. Treatment failure was clinical deterioration or lack of clinical improvement in admitted patients treated conservatively. Recurrence was defined as onset of appendicitis in a follow up patient successfully treated initially with conservative treatment.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

In this present study, 200 patients were included. The minimum and maximum age in the present study was 17 and 72 years. The mean age in this study was 35.10. 88 males and 112 females were included in this study. 168 patients had migratory abdominal pain in the present study. Anorexia was seen in 180 patients and absent in 20 patients. 174 patients had nausea and vomiting. Tenderness in the right inguinal fossa was seen in all the patients. Rebound tenderness was seen in 68 patients and absent in 132 patients. 188 patients in this study had leucocytosis and 90 patients had fever (Table 1).

CT scan was performed in 18 cases and ultrasound was done in 182 cases for diagnosis of acute appendicitis. MAS was in between 4-6 in 56 patients and was 7-9 in 144 patients with an average of 7.29. 24 patients had complicated acute appendicitis and 176 had uncomplicated acute appendicitis. Acute appendicitis was resolved in 48 hours in 62 patients and in 114 cases it resolved in 72 hours. Conservative treatment failed in 24 cases in this study. In those 24 cases, 12 cases who had appendicular mass was treated with i.v. antibiotics for 5 days, 8 cases who had perforation was operated and in 4 cases who had abscess, extraperitoneal drainage was performed. 176 cases were followed for a period of 6 months and 12 cases recurred over a period of 6 months (Table 3).

Table 1: Distribution of clinicopathological factors in the present study

Clinicopathological factors	Number	Percentage (%)
Migratory abdominal pain	168	84
Anorexia	180	90
Nausea and vomiting	174	87
Tenderness	200	100
Fever	90	45
Leucocytosis	188	94

Table 2: Outcome of conservative treatment in the present study

Conservative treatment outcome	Number	Percentage (%)
Successful	164	82
Failure	24	12
Recurrence	12	6

Table 3: Outcome of conservative treatment with different MAS

Conservative treatment	Modified Alvarado score	
	4-6	7-9
Successful	56	120
Failure	0	24
Total	56	144

Discussion

Worldwide the standard of care for appendicitis is appendectomy and considered simple and routine surgery.[1] However the mortality rate of operation ranges from 0.07 to 0.7 and from 0.5 to 2.4% in patients without and with perforation respectively. Overall post appendectomy complication rates are around 10-19% for appendicitis without perforation and can reach up to 30% with perforation.[6,7] So if appendectomy treated successfully with antibiotics, morbidity and mortality can be avoided.

Advantages of conservative management over surgical management include: i) Antibiotics offer an alternate source of treatment for acute appendicitis when access to surgical areas are not easily available. ii) Antibiotic treatment offers a low cost treatment for acute appendicitis patients. Hansson et al, reported 25-50% reduction in the cost of hospital expenses among conservatively treated patients than patients treated surgically. 5 iii) Conservative treatments with antibiotics avoid the anaesthesia risks of surgery and also eliminate the morbidity and mortality associated with surgery. iv) In remote areas where the diagnostic facilities are lacking acute abdominal pain might be misdiagnosed as acute appendicitis leading to negative appendectomies. In such scenarios conservative treatment avoids unnecessary removal of appendix. According to a study by Sebastiano, neuroproliferation is involved in the pathophysiology of acute abdominal pain even in the absence of inflammation of appendix. There is an increase in the neurotransmitters like substance P and vasoactive intestinal polypeptide in such cases of neuro immune appendicitis.[16] This neuroimmune appendix might be the aetiology of acute abdominal pain in negative appendicitis.

In the present study, the mean age of presentation was 35.10±9.45. According to Gedam et al, the mean age in their study was 30.45±9.71 years.[17] The majority of patients were seen in the age group of 21-30 years which was consistent with the study of Rajasekhar et al and Lohar et al.[18,19] There was female predominance in this study with male to female ratio 1:1.32 which was compared to a study by Gedam et al, which was 1:1.09.[17]

Abdominal pain was seen in 84% of patients which was contrary to the study conducted by Ekka et al, which was seen in 100% of patients.[20] Anorexia was seen in 90% of patients in the present study, whereas anorexia was seen in 61% of patients in a study by Berry et al.[21] 87% of patients had nausea/vomiting in this present study, which was similar to a study by Kodliwadmath. 45% of patients had fever in this study, but Reddy et al reported fever in 76% of patients in their study. 16 94% of patients in this study had leukocytosis, but Ekka et al reported leukocytosis

in 66.4% of patients in their study.[20] Tenderness in right inguinal fossa was seen in all 100% of patients and rebound tenderness was seen in 68 patients. An eastern Indian study reported tenderness in right inguinal fossa in 89.6% and rebound tenderness in 72.8% of patients.[20]

In the present study, ultrasound was performed in 91% of cases. CT scan was performed in the remaining 9% of cases in this study as ultrasound can't able to detect the features of acute appendicitis. In the present study, 28% of patients had MAS in between 4-6 and 72% had in between 7-9. The conservative treatment was successful in all the patients with MAS of 4-6. According to the results of the present study, majority of patients recovered in 72 hours, so at least 72 hours should be awaited to detect the response for conservative treatment. 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.[21] 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.[17] In the present study the recurrence rate among successfully treated acute appendicitis cases was 6%. In a study done by Gedam et al, the recurrence rate was 13.11% which was higher than our present study.[17] According to a study by Malik, the recurrence rate was 10% which was slightly higher than our present study.[23]

Conclusion

The overall success rate of conservative treatment according to the present study was 82%. However, there were 12% failures and 6% recurrences in the present study. The success rate of conservative treatment in patients with MAS 4-6 is more than the patients with MAS 7-9 according to the present study. Uncomplicated acute appendicitis can be managed by conservative treatment provided they were strictly followed every month for at least 6 months period to detect recurrences.

Ethical approval was taken from the institutional ethical committee and written Informed

Consent was taken from all the participants.

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Conflict of Interest: None declared

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