

ANTIBIOTIC THERAPY VERSUS APPENDICECTOMY IN UNCOMPLICATED ACUTE APPENDICITIS IN TERMS OF EFFICACY

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ABSTRACT

Objective: To compare antibiotic therapy and appendectomy in uncomplicated acute appendicitis in terms of efficacy.

Study Design: Randomized controlled trial.

Place and Duration of Study: Surgical Ward Forward Treatment Centre (FTC), 5 Mountain Medical Battalion Forward Kahuta Azad Jammu Kashmir (AJK), from Oct 2011 to Mar 2013.

Material and Methods: A total of 103 patients with clinical diagnosis of acute appendicitis (AA) were admitted during the duration of study and divided into two groups by consecutive sampling. The antibiotic group consisted of 51 patients who received intravenous antibiotics for 48 hours and oral antibiotics for another 8 days. The appendectomy group comprised of 52 patients who all underwent standard appendectomy. All the patients were followed up at 1 month and 1 year for assessing efficacy and post treatment complications.

Results: The efficacy of antibiotic treatment is 90.625% as compared to appendectomy which was 88.46% ($p=0.759$) at 1 month follow up after treatment. At one year post treatment, the comparison between the efficacy of antibiotic therapy (71.87%) and appendectomy (87.14%) remains statistically insignificant ($p=0.055$).

Conclusion: Antibiotic therapy is comparable to appendectomy in AA in terms of efficacy at 1 month and 1 year post treatment.

Keywords: Acute Appendicitis, Antibiotic therapy, Appendectomy, Efficacy.

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INTRODUCTION

Inflammation of the vermiform appendix is the most common cause of the acute abdomen in young adults. For more than 125 years now after appendectomy was first advocated by Fitz in 1886¹ and McBurney in 1889², this is one of the most common operations performed on the acute abdomen³. Despite availability of modern investigative modalities such as CT scan, acute appendicitis (AA) can still be difficult to diagnose and negative appendectomy rate ranges from 10%–20%⁴⁻⁸. The procedure is not without complications like all other surgeries such as surgical site infections, intra peritoneal abscesses and adhesions. Post operative small bowel obstruction requiring surgical intervention occurs in about 1.3% cases by 30 years⁹. Also the 30-day

mortality is calculated to be 0.24% with increased standard mortality ratio¹⁰. On the other hand, the first line treatment for many other intra-abdominal inflammatory processes, such as diverticulitis, comprises of antibiotic therapy in the initial phase¹¹. However, in view of the potential complications associated with open appendectomy, it sounds pretty reasonable to start conservative antibiotic therapy in cases of acute appendicitis (AA). A number of studies have been done to look into possible conservative antibiotic therapy of AA with or without interval appendectomy. Many pediatric surgeons and centres practice this approach in pediatric patients with AA¹²⁻¹⁴. In 1953, Harrison¹⁵ reported 42 of 47 cases of AA being successfully treated using antibiotic therapy. Additionally, in 1959, Coldrey¹⁶ treated conservatively with promising results. One randomized trial that compared appendectomy with antibiotic therapy in men (aged 18–50 years) found that 88% improved without surgery, and 14% had recurrent

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appendicitis within one year¹⁷. However, some studies and meta-analyses either support appendectomy as the first line treatment of AA or can't prove the efficacy of antibiotics as first line therapy¹⁸⁻²⁰. Therefore, the concept of treating AA with antibiotics alone remains controversial to-date.

The rationale of this study is to find out an effective treatment option for treating AA diagnosed clinically in a healthcare facility located in a remote area comparing surgery with conservative antibiotic therapy. The results of this study will help in establishing protocols for treating AA in remote areas.

MATERIAL AND METHODS

This randomized controlled trial was carried out at Forward Treatment Centre, 5 Mountain Medical Battalion which is a 50 bedded hospital located at Forward Kahuta, a remote area in Azad Jammu Kashmir (AJK). The study was conducted from Oct 2011 to Mar 2013. Patients of both genders above the age of 12 years with clinical diagnosis of acute appendicitis (Alvarado score of 6 and more) were included in the study. Patients with co-morbidities such as diabetes mellitus, ischemic heart disease, hypertension and patients with previous abdominal surgeries were excluded from the study. After permission from the hospital ethical committee, a total of 103 patients were included in the study by non probability consecutive sampling. They were divided into two groups of 51 (group A antibiotic group) and 52 (group B appendectomy group) respectively by computer generated table of random numbers. Written informed consent was taken from all the patients. Hospital registration number, name, age, gender, address and phone numbers were noted. Group A received intravenous antibiotics (Ciprofloxacin 200 mg twice and Metronidazole 500 mg thrice daily) for initial 48 hours. On clinical improvement, the patients were discharged with oral antibiotics (tab ciprofloxacin 500 mg twice and tab metronidazole 400 mg thrice daily) for 8 days. Out of 51 patients in group A, only 32 (62.74%)

completed the 10 day antibiotic treatment. Fourteen patients (27.4%) did not show any improvement in initial 48 hours of intravenous antibiotic therapy. These patients underwent appendectomy and were excluded from the study. Four (7.8%) patients in group A opted surgery over antibiotic therapy and therefore, also excluded from the study and 1 (1.9%) patient left hospital against medical advice quitting the study. Only 32 patients completed the full antibiotic treatment. Group B underwent appendectomy the same day with single dose prophylactic antibiotic and post operative intravenous antibiotics if the appendix was found to be gangrenous. All the information was recorded on a specially designed proforma. It included demographic data of the patient, group allocated and pre/per/post treatment data. The patients were followed up in OPD at 1 month and 12 month period. Those who did not report to OPD at specified time were contacted using telephone calls. Recurrence and re-operations were registered. Efficacy of antibiotic therapy was defined as definite clinical improvement such that surgical intervention was not needed for a follow up period of one year. Efficacy of appendectomy was defined on surgery as confirmed appendicitis or any other indication for surgery.

The data had been analyzed by SPSS version 21. Mean and standard deviation (SD) for the quantitative variable i.e. age were calculated. Frequency and percentages were presented for all the qualitative variables including gender, confirmed appendicitis on surgery, recurrence of appendicitis in antibiotic group etc. Chi-square test was used to compare the qualitative variables such as gender. Independent sample t-test was used to compare age between the two groups. *Ap*-value <0.05 was considered as significant.

RESULTS

Out of 103 eligible consecutive patients in the study, 51 were enrolled in the group A and 52 in the group B. A total of 19 patients from group A were excluded from the study because of

forementioned reasons. Out of 32 patients in group A who did complete the scheduled antibiotic treatment, a total of 9 patients (28.125%) had recurrence in the following year. Only 3 (9.37%) patients had recurrence in the first month and 6 (18.75%) patients had recurrence between 1-12 months time. A total of 52 patients underwent appendectomy on the first day. Out of these 52 patients, 46 (88.46%) had appendicitis or some other condition requiring surgery. When compared with group A, the efficacy of appendectomy was slightly lesser than the efficacy of antibiotic treatment at one month (88.46% versus 90.625%, p -value=0.759). However at 1 year post treatment, the efficacy of antibiotic therapy reduced to only 71.87% as compared to the appendectomy 88.46% but this remained statistically insignificant (p -value = 0.055) as shown in table-I. The age distribution ranged from 13-54

managing acute appendicitis with antibiotics^{11,14,17,21-23}. In general, use of antibiotics alone is gaining popularity and acceptance along with avoidance of surgery^{12,13,24}. The results in present study can be compared with many other studies. This study shows that the efficacy of appendectomy and antibiotic treatment is comparable to each other at 1 month (88.46% versus 90.625%, p -value=0.759) and 1 year (88.46% versus 71.87%, p -value=0.055) follow up post treatment. This is in accordance with Hansson et al²¹ who demonstrated the efficacy to be 89.2% in appendectomy group and 90.8% in antibiotic group at one month. However, at one year the efficacy of antibiotic group reduced to 78.2% which was statistically significant when compared with appendectomy group. Similarly, Von et al²⁵ found out the recurrence of appendicitis in 12% patients (efficacy 88%) at 1

Table-I: Comparison of two groups in terms of efficacy.

Group	Efficacy at 1 month	Efficacy at 1 year
Group A	29/32 90.625%	23/32 71.87%
Group B	46/52 88.46%	46/52 88.46%
p -value	0.759	0.055

years in the study. Mean age in group A was 25.22 ± 7.581 years. Mean age in group B was 25.06 ± 9.017 years ($p=0.933$). Group A had 11 males (34.4%) and 21 females (65.6%). Group B had 18 males (34.6%) and 34 females (65.4%) ($p=0.982$).

DISCUSSION

Acute appendicitis remains one of the most common clinical diagnoses in cases of acute abdomen. In remote and far flung areas where sophisticated investigations and imaging is not available, clinical evaluation remains the only mode of diagnosis. However, significant mortality and morbidity are associated with appendectomy itself³ apart from the burden on resources and finances of both hospital and patients. In recent studies, many researchers have shown promising results by conservatively

managing acute appendicitis with antibiotics^{11,14,17,21-23}. In general, use of antibiotics alone is gaining popularity and acceptance along with avoidance of surgery^{12,13,24}. The results in present study can be compared with many other studies. This study shows that the efficacy of appendectomy and antibiotic treatment is comparable to each other at 1 month (88.46% versus 90.625%, p -value=0.759) and 1 year (88.46% versus 71.87%, p -value=0.055) follow up post treatment. This is in accordance with Hansson et al²¹ who demonstrated the efficacy to be 89.2% in appendectomy group and 90.8% in antibiotic group at one month. However, at one year the efficacy of antibiotic group reduced to 78.2% which was statistically significant when compared with appendectomy group. Similarly, Von et al²⁵ found out the recurrence of appendicitis in 12% patients (efficacy 88%) at 1

to state that antibiotic treatment is both effective and safe as primary treatment of acute appendicitis. Our results also draw us to similar conclusion. Mean age of the study population in both groups of current study (25.22 ± 7.581 years in group A and 25.06 ± 9.017 years in group B) is also comparable with the mean age reported by Eriksson and Granstorm²⁸ (mean age=27.8 years) and Malik and Bari²³ (28.7 and 32.6 years respectively).

CONCLUSION

Antibiotic treatment is comparable to appendectomy in treating uncomplicated acute appendicitis in terms of efficacy at one month and one year after initial treatment.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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