Comparison of Antibiotic treatment and Appendectomy for noncomplicated Acute Appendicitis during Covid-19 pandemic

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ABSTRACT

Aim: To evaluate the efficacy of antibiotic treatment as the primary option for non-complicated acute appendicitis in pandemic situation.

Study Design: Prospective interventional study.

Setting & Duration of Study: CMH Lahore, a 700 bedded tertiary care hospital, for 4 months from 15th April 2020 to 15th august 2020.

Methodology: A total of 110 cases meeting inclusion criteria, aged 13-65 years of both genders with suspicion of noncomplicated appendicitis were included in the study, using probability sampling. They were divided in two groups on randomization basis. Group A for antibiotic therapy and Group B for appendectomy. Group A patients admitted in the ward 48 hours for IV antibiotics, were re-evaluated after 24 hours. If condition improves, the patient was discharged on oral antibiotics for next 10 days & if condition does not improve, antibiotics were prolonged for 48 hours. If deteriorating or patient, chooses to change group, they underwent appendectomy. If condition improved, they were discharged on oral antibiotics for next 10 days. Group B patient were discharged after 2 post-operative doses of I/V antibiotics. Post-operative I/V antibiotics for 48 hours & 3 days oral antibiotics were given when appendix was gangrenous or perforated.

Results: In a population of 110 patients, we studied the comparison of the groups having antibiotics and appendectomy as treatment for acute appendicitis. There is no significant difference in outcomes on basis of mean pain score and mean duration of hospital stay. Both ways of treatment can be adapted accordingly.

Conclusion: Non-complicated acute appendicitis can be managed non-operatively in crisis situations like COVID-19 pandemic causing overburdening of hospitals.

Keywords: Acute appendicitis, antibiotic therapy, appendectomy, pandemic.

INTRODUCTION

Acute appendicitis has been the most commonly reported problem by the people of young age and children¹. It has been affected the humanity in large numbers. The risk for the females having appendicitis is 6.8% and for males it is $8.6\%^2$.

Acute appendicitis is not difficult to diagnose but sometimes if it is missed, it can lead to serious condition³.

As, we are aware of the fact, that every intervention in human body has some side effects and complications. As long as appendicitis is concerned the most common complications are infections and abscess in the abdominal cavity. These are the immediate short term complications of the appendicitis while long term be, ileus and incisional hernia⁴.

Some studies have showed that if the inflammation and fibrosis is uncontrolled. It can also lead to inflammatory bowel disease, infertility and cancer may be⁵.

As we all know that appendectomy had been the gold standard treatment for uncomplicated acute appendicitis. First appendectomy had taken place in 1735, and since then it had been the main treatment of the acute appendicitis. And recently open appendectomy had been replaced by the laparoscopic one for the reason being less invasive and having lesser complications and less hospital stay. In long term it leads to better life expectancy and early recover⁶.

As normally, we consider antibiotics a safer choice for many abdominal infections. But for acute appendicitis it has still not been discussed much and established. Many studies have been done and under consideration due to having error chance^{7, 8}.

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Similarly, a study included several randomized control trials to see the effectiveness of antibiotic treatment for uncomplicated acute appendicitis. It included follow up of the clinical trials for five years to infer the effectiveness. The follow up was correlated with the diagnostic facilities. The results were that there was 39% recurrence in five years after taking antibiotics. Also more follow ups are required to reach on a final conclusion⁹.

Many other recent studies have shown that antibiotic therapy is a safe alternative to surgical management for uncomplicated acute appendicitis with potential to greatly reduce the human and financial costs associated with surgery. Although the studies showed that there is a higher relapse rate but the complication rate and the hospital stay duration rate was much less in the patients treated with antibiotics¹⁰.

Most patients older than 18 years can therefore be offered antibiotic treatment as first line therapy. If symptoms progress within 24 hours, they can undergo appendectomy. Recurrence has been seen in patients who were on antibiotics. Recurrent episode seemed to exhibit milder clinical course than first episode¹¹.

This study is designed to compare efficacy of antibiotic therapy against appendectomy in situations like covid-19 pandemic for non-complicated acute appendicitis where we all want to avoid the surgery and anesthesia and its complications.

The objective of the study was to evaluate the efficacy of antibiotic therapy, as the primary treatment of non-complicated acute appendicitis, in chocking situation of hospitals.

MATERIAL AND METHODS

This study was conducted at CMH Lahore after approval from IRB, a 700 bedded tertiary care hospital for 4 months from 15th April 2020 to 15th August 2020. A total of 110 cases meeting inclusion criteria were included in the study using probability sampling. Patients aged 13-65 years of both genders with suspicion of non-

complicated appendicitis were included in the study, while the patients of suspected perforation, patients who has already taken antibiotics, clinical signs of generalized peritonitis, allergic to antibiotics, patients on corticosteroid and anti-coagulant therapy, pregnant females, patient with co morbid conditions such as CLD, diabetes, renal insufficiency and non-compliant or unwilling patients were excluded from the study.

All the patients with right lower guadrant pain presenting to OPD and emergency were examined by the senior registrar. Every patient got total leukocyte count and all female patients underwent a gynecological evaluation and ultrasound abdomen and pelvis to rule out other causes of pain. The patients fulfilling the inclusion criteria were counselled about all aspects of ongoing study and the patients giving consent were included in two groups by randomization i.e. Group A for antibiotic therapy and Group B for Appendectomy. Group A patients were admitted in the ward for 48 hours for IV antibiotics. They were re-evaluated after 24 hours. If condition improves, the patient was discharged on oral antibiotics for next 10 days & if condition does not improve, antibiotics were prolonged for 48 hours. If deteriorating or the patient chooses to change group, they underwent appendectomy. If condition improved, they were discharged on oral antibiotics for next 10 days. During ward stay patient was allowed to take oral sips. Group B patients were discharged after 2 post-operative doses of I/V antibiotics. Post-operative I/V antibiotics for 48 hours & 3 days oral antibiotics were given when appendix was gangrenous or perforated. Specimen for culture & sensitivity was taken from the base of appendix. All appendix specimens were sent for histopathology. Pre, per and post-operative data was collected.

Patients were called for follow up at 1 week, 1st & 3rd months .The patients with recurrent attacks were given antibiotics therapy, second time. On second recurrent attack, patient underwent appendectomy. The variables such as age, gender, hospital stay and pain duration were recorded for all the patients. Histopathology and culture sensitivity reports were also maintained with patient's record. All the information from the Performa was entered into S.P.S.S. version 23 and was analyzed through statistical package. The gender was presented as frequency / percentage, while age, hospital stay were recorded as mean \pm standard deviation. The outcome measures in 2 groups were separately described and were compared by calculating pain duration, hospital stay by applying t-test with P value of <0.05 was considered significant.

RESULTS

Table I: Study Groups

Variables	Group A (n=55)	Group B (n=55)	P-value
Age in years			
13-25 years	35(63.6%)	30(54.5%)	0.908
26-45 years	15(27.2%)	12(21.8%)	
46-65 years	05 (9%)	13(23.6%)	
Gender			
Male	33 (60.0%)	31 (54.4%)	0.840
Female	22 (41.8%)	24 (43.8%)	
TLC	11108±3430.70	11126±3353.99	0.979

Table II: Comparison of Antibiotic treatment and Appendectomy for Non complicated Acute Appendicitis during covid-19 pandemic

	Group A(n=55)	Group B (n=55)	Pvalue
Days of pain	3.69±1.66	3.51±1.68	0.582
Days of hospital stay	3.12±1.49	3.03±1.53	0.511
VAS score of pain:			
At discharge	2.1	3.1	< 0.001
After one week	1.01	2.01	< 0.001
After two months	1.01	1.01	0.41

A total of 110 patients were enrolled. Among them, there were 64 males (58%) and 46(41.8%) female patients with a ratio of 1.2:0.8. The range of age was from 13-65 years (mean 27.09 \pm 13.54 year). Their mean age, gender and TLC were compared to each other as discussed in Table I.

Table II shows that 16 patients had appendectomy out of 55 patients. And out of those 16, 5 had it during the initial hospitalization and after the persistent symptoms, while 10 had appendectomy, when they arrived for follow up visit. Also, 10 patients had appendectomy after the recurrent episode in six months.

The mean of the stay at hospital was not much different in both groups that were 3.70 ± 1.67 in group A and 3.52 ± 1.68 in group B. As far as the pain score was concerned, it was significantly reduced in the group A, at discharge and also at one week time (2.0 and 1.0), than in group B (3.0 and 2.0). There was no significant difference in the mean pain period in both the groups but the score of pain was much lower in the group A than in group B, at the time of discharge from hospital and after two weeks also. Similar were the findings with the mean duration of hospital stay in both groups.

DISCUSSION

Acute appendicitis is a worldwide problem and there are many researches going on the subject to improve the modalities of treatment. Till now appendectomy has been the ideal treatment option for this condition but recently the role of antibiotics to combat the acute infection is also a favorite topic for research. As some studies also showed, the interval appendectomy, an ideal solution for the problem. Also it has been seen that use of antibiotics is becoming favorable treatment options for people due to the fear of having surgery in our population. Specially as it is in the days of Covid epidemic that everybody is avoiding contact with hospitals in order to avoid reception of virus¹².

A study showed us the results that the patients who had antibiotic treatment were not as satisfied as the appendectomy patients. There was a sub analysis in the study that the patients who had first antibiotic treatment and then had appendectomy because of no cure were not satisfied whereas the patients who had the treatment modalities independently were more satisfied of their outcome. However it was also seen that the patients who had antibiotic treatment leading to appendectomy would again chose antibiotics first if they ever had appendicitis again. Same are the effects in our study that there is not significant distinction in each approach¹³.

Similarly, a study states that although they have not been capable of displaying the superiority of antibiotic remedy relative to appendectomy for appendicitis, they did locate that 186 of 256 patients with ordinary acute appendicitis (72.7%; 95% Cl, 66.8%-78.0%) have been successfully treated with antibiotic therapy alone. This compares favorably with the results from preceding randomized trials and a recent population-based prospective study. In their study, 70 of the 256 antibiotic treated patients (27.3%) had an appendectomy¹⁴.

A systematic review and meta-analysis of almost 20 studies and 3600 patients were done and it has been yielded that antibiotic therapy has been the single one gold standard treatment for the acute appendicitis. The studies showed that it was also considered the single best because of the less than 30% failure rate at one year follow up, lower complications as compared to appendectomy and also the avoidance of the chance of the appendix to get ruptured if the surgery is delayed. All these factors collaboratively declared the antibiotic therapy a better treatment option for acute appendicitis¹⁵.

It has been observed that there is not much difference in the both ways of treatment in terms of length of hospital stay, pain intensity and leaves from work place. Our results are in line with those reported in a meta-analysis which states that the recurrence rate of appendicitis after 12 months is 22.6% after antibiotic use and our study showed it to be 19.2%. The antibiotic treatment has 10% fewer complications, 92% fewer appendectomies in the first 30 days and very less duration of the hospital stay¹⁶.

CONCLUSION

It is concluded that non-complicated acute appendicitis can be managed non-operatively in crisis situations like COVID-19 pandemic causing overburdening of hospitals. **Conflict of interest:** Nil

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