ORIGINAL ARTICLE

Outcomes of Antibiotics as Primary Therapy in Uncomplicated Acute Appendicitis at PUMHS Nawabshah

Gulshan Ali Memon¹, Khawar Saeed Jamali², Syed Kashif Ali Shah¹, Habib-ur-Rehman¹, Shahnawaz Leghari¹, Shahida Baloch¹

ABSTRACT

Objective: Over bearing, appendectomies have continuously been pushing the surgical wisdom to connote on non-operative option of treatment so this study was designed with an objective to assess the outcomes of antibiotics as primary therapy for un–complicated acute appendicitis.

Methods: A total of 96 patients of both genders from 16 to 60 years of age having uncomplicated acute appendicitis enrolled in this study were treated with antibiotics and were discharged on third day with having oral treatment on ciprofloxacin (500mg) twice a day and metronidazole (400mg) thrice a day for 07 days. Routine follow up was taken on days 15, 30, 90 180 and 360 and outcomes were recorded.

Results: Among 96 patients, 10 (10.41%) worsened in symptoms (pain on visual analogue scale) were confirmed with WBC & Ultrasound reports and under went for appendectomies during initial hospital stay. While within 9 months, during follow up 11 (11.45%) patients were readmitted in hospital and operated after confirmation on re-examination and re-investigations. Total of 21 (22%) patients were subjected to appendectomy.

Conclusion: Under proper observation, antibiotic treatment can be safe and effective in un-complicated acute appendicitis with reduced recurrence.

Key words: Acute appendicitis, Appendectomy, Antibiotic treatment.

How to cite this article: Memon GA, Jamali KS, Shah KA, Rehman H, Leghari Sand Balcoh S. Outcomes of antibiotics as primary therapy in uncomplicated acute appendicitis at PUMHS Nawabshah J Dow University of Health Sciences 2017; 11(1): 6-10

INTRODUCTION

The reality of appendicitis is as old as mankind itself. French surgeon Claudius Amyand while performing Herniotomy, removed perforated appendix from hernial sac of an 11-year old boy on December 6, 1735 at St. George’s Hospital in London¹. Then, after long time Mr. Abraham Goves performed first ever proper appendectomy in august 1883².

While, Reginald Fitz pronounced the appendectomy as an effective treatment of acute appendicitis in early 1886³. There after every surgeon believed that every subject of acute appendicitis invariably ends on perforation and this dogma kept all appendicitis with appendectomy as a standard option of treatment⁴.

The estimated lifetime rate of appendicitis ranges from 7 to 14%, on the basis of sex, life expectancy and accuracy of diagnosis and puts a large burden on health care system⁵. As only in USA, about 300,000 appendectomies performed each year as the most common emergent abdominal surgery⁶,⁷.

Despite the fact that appendectomy is generally well tolerated, but being a major surgical intervention can be associated with post-operative dreadful morbidity⁸,⁹.

So, these over bearing appendectomies have continuously been pushing the surgical wisdom to connote on non-operative option of treatment, as because, before advent of antibiotics many of the appendicitis were resolved spontaneously as reported earlier by Fitz in his article concerning 247 patients in 1886¹⁰. And in this line of thinking, Mr. Coldrey also proposed a conservative treatment with his inference on 471 patients with low mortality and morbidity in 1959¹¹.
Outcomes of antibiotics as primary therapy in uncomplicated acute appendicitis at PUMHS Nawabshah

Since then, the idea regarding the rational option of the treatment in acute appendicitis remains to be defined. However, most of the researches from basic science and epidemiological studies have provided evidence that perforated and non-perforated appendicitis are pathophysiological distinct entities\textsuperscript{12,13}. Further studies have envisaged that non-perforated appendicitis behaves similarly to non-perforated diverticulitis and thus may have no added risk of progressing to perforation\textsuperscript{14,15}. Recent studies have shown that acute appendicitis in children be treated with antibiotics\textsuperscript{16,17}. Conclusions from meta-analysis of randomized control trials support that the first strategy treatment with antibiotics is safe and effective in majority of patients\textsuperscript{18,19,20}. Hence in this pathophysiological perspective of acute appendicitis, the selection of reasonable (Surgical or non-surgical) treatment remains on lock horns with questions as to what and how the treatment be selected. Therefore, this study was designed with an objective to assess the outcomes of antibiotics as primary therapy for un–complicated acute appendicitis.

MATERIALS & METHODS

A total of 96 patients of both genders from 16 to 60 years in age having no H/O previous episode of appendicitis, surgery or co-morbidities presented with acute uncomplicated appendicitis from April 2014 to April 2016, were enrolled in this cross sectional study at surgical unit one of People’s University of Medical and Health Sciences (PUMHS) Nawabshah. Informed consent for participation in this study taken from every patient. Sample technique was consecutive. Uncomplicated acute appendicitis were diagnosed on the clinical history, physical examination, ultrasound reports and WBC reports. Un-complicated acute appendicitis means as an inflamed but grossly intact non-gangrenous , non-suppurative appendix with no associated complications\textsuperscript{1}, and this group were allocated to surgical or conservative treatment. After keeping NPO, Intravenous fluids + antibiotics (ciprofloxacin 500mg ½ x BD) plus metronidazole (500mg ½ x 8hmyl) and analgesics with diclofenac sodium (50-75mg ½ daily) were administered for two days to group A. Daily follow up of these patients were done with clinical examination, fever and CBC. Patient resistant and refractive to antibiotherapy with worsening symptoms confirmed on Ultrasound were subjected to appendectomy. Patients with clinical improvement confirmed on CBC and US were discharged on third day and received oral treatment with ciprofloxacin (500mg) twice a day and metronidazole (400mg) thrice a day for 07 days.

Outcomes:

1) Primary objective is to assess the cure rate of uncomplicated acute appendicitis with antibiotic treatment.

2) Secondary objective is to determine frequency of conversion from antibiotic treatment to surgery in uncomplicated acute appendicitis.

Data analyzed on SPSS version 20. Proposed Data presented in forms of tables and graphs and percentage calculated.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

RESULTS

Under screening through strict inclusion and exclusion criteria, 96 patients were found eligible for recruitment in this cross sectional study. These 96 patients in this study group consisted of 61 men and 35 women with median age at diagnosis was 25 + 1 ranged from (16 – 60yrs). The demographics and clinicopathological characteristics of study population are in following table:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>61</td>
<td>35</td>
<td>96</td>
</tr>
<tr>
<td>Age range</td>
<td>16 - 60</td>
<td>20–55</td>
<td>-</td>
</tr>
<tr>
<td>Median age</td>
<td>26</td>
<td>24</td>
<td>-</td>
</tr>
<tr>
<td>Median, pain score on NRS (0-10)</td>
<td>4</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>No. of patients discharged satisfactory</td>
<td>57</td>
<td>29</td>
<td>-</td>
</tr>
<tr>
<td>No. of patients, worsened in symptoms during hospital stay.</td>
<td>04</td>
<td>06</td>
<td>-</td>
</tr>
<tr>
<td>Conversion to surgery / cross-over during hospital stay</td>
<td>04</td>
<td>06</td>
<td>-</td>
</tr>
<tr>
<td>cross-over during follow up</td>
<td>04</td>
<td>07</td>
<td>-</td>
</tr>
<tr>
<td>Range of hospital stay</td>
<td>1 - 15</td>
<td>1–20</td>
<td>-</td>
</tr>
<tr>
<td>Mean length of hospital stay</td>
<td>3 + 1</td>
<td>4 + 1</td>
<td>-</td>
</tr>
<tr>
<td>Adverse effects on antibiotics / Diarrhea</td>
<td>02</td>
<td>04</td>
<td>-</td>
</tr>
<tr>
<td>No. of days not worked by patients (Mean)</td>
<td>03</td>
<td>04</td>
<td>-</td>
</tr>
<tr>
<td>Recurrent appendicitis</td>
<td>06</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Total conversion from antibiotics to surgery</td>
<td>08</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Negative appendectomies</td>
<td>02</td>
<td>03</td>
<td>05</td>
</tr>
<tr>
<td>Wound infection</td>
<td>02</td>
<td>03</td>
<td>05</td>
</tr>
<tr>
<td>Mortality</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

Since then, the idea regarding the rational option of the treatment in acute appendicitis remains to be defined. However, most of the researches from basic science and epidemiological studies have provided evidence that perforated and non-perforated appendicitis are pathophysiological distinct entities\textsuperscript{12,13}. Further studies have envisaged that non-perforated appendicitis behaves similarly to non-perforated diverticulitis and thus may have no added risk of progressing to perforation\textsuperscript{14,15}. Recent studies have shown that acute appendicitis in children be treated with antibiotics\textsuperscript{16,17}. Conclusions from meta–analysis of randomized control trials support that the first strategy treatment with antibiotics is safe and effective in majority of patients\textsuperscript{18,19,20}. Hence in this pathophysiological perspective of acute appendicitis, the selection of reasonable (Surgical or non-surgical) treatment remains on lock horns with questions as to what and how the treatment be selected. Therefore, this study was designed with an objective to assess the outcomes of antibiotics as primary therapy for un–complicated acute appendicitis.

MATERIALS & METHODS

A total of 96 patients of both genders from 16 to 60 years in age having no H/O previous episode of appendicitis, surgery or co-morbidities presented with acute uncomplicated appendicitis from April 2014 to April 2016, were enrolled in this cross sectional study at surgical unit one of People’s University of Medical and Health Sciences (PUMHS) Nawabshah. Informed consent for participation in this study taken from every patient. Sample technique was consecutive. Uncomplicated acute appendicitis were diagnosed on the clinical history, physical examination, ultrasound reports and WBC reports. Un-complicated acute appendicitis means as an inflamed but grossly intact non-gangrenous , non-suppurative appendix with no associated complications\textsuperscript{1}, and this group were allocated to surgical or conservative treatment. After keeping NPO, Intravenous fluids + antibiotics (ciprofloxacin 500mg ½ x BD) plus metronidazole (500mg ½ x 8hmyl) and analgesics with diclofenac sodium (50-75mg ½ daily) were administered for two days to group A. Daily follow up of these patients were done with clinical examination, fever and CBC. Patient resistant and refractive to antibiotherapy with worsening symptoms confirmed on Ultrasound were subjected to appendectomy. Patients with clinical improvement confirmed on CBC and US were discharged on third day and received oral treatment with ciprofloxacin (500mg) twice a day and metronidazole (400mg) thrice a day for 07 days.

Outcomes:

1) Primary objective is to assess the cure rate of uncomplicated acute appendicitis with antibiotic treatment.

2) Secondary objective is to determine frequency of conversion from antibiotic treatment to surgery in uncomplicated acute appendicitis.

Data analyzed on SPSS version 20. Proposed Data presented in forms of tables and graphs and percentage calculated.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

RESULTS

Under screening through strict inclusion and exclusion criteria, 96 patients were found eligible for recruitment in this cross sectional study. These 96 patients in this study group consisted of 61 men and 35 women with median age at diagnosis was 25 + 1 ranged from (16 – 60yrs). The demographics and clinicopathological characteristics of study population are in following table:
hospital and operated for having complicated acute appendicitis as confirmed on re-examination and re-investigations. Hence, 21 (22%) patients subjected to surgery. Every resected appendix specimen was submitted for histopathological scrutiny, which revealed 16 (17%) as recurrent inflamed appendicitis and 05 as normal appendixes, hence accounting (5.2%) as negative appendectomies. None of the patient found with perforated appendix. The patients converted from antibiotic treatment to surgery had 5 (5.2%) wound infection.

There was no mortality in any patient in this study. In this study, 21 (22%) patients have not responded to antibiotic therapy.

## DISCUSSION

Since long time, before the advent of antibiotics, acute appendicitis considering a dreadful entity have traditionally been treated with surgery; and, then after discovery of anaesthesia in 1920 made it a widely practiced procedure\(^21\). Mr. Eriksson and Granstorm performed first ever prospective randomised study in acute appendicitis with antibiotics in 1995\(^22\), and then a large number of patients treated with antibiotics have reported a reasonable success rates\(^22,24,25\). In surgical practice, the acute appendicitis may be either complicated (20%) or un-complicated (80%) as two distinct entities\(^26\). So for as risk is concerned in surgery, the surgical practice in recent times have made a paradigm shift with increasing interest for antibiotics as first strategy treatment in un-complicated acute appendicitis with rescue surgery\(^22,27\). Insofar as, this study has investigated the effectiveness of antibiotic treatment in patients with acute appendicitis for recovery within 15 days and or any recurrence within one year.

While, the results of Styrud et al, Eriksson and Granstorm based only on male 128 Patients (aged 18-50) showed 88% recovered without surgery, with recurrence rate of 15 % within one year and is closely corresponding to our study on males as 87% of patients responded to antibiotics and 13% got recurrence\(^28,29\).

Cobben et al suggested slightly higher risk of recurrence in male than female in acute appendicitis\(^30\), but was not confirm in Kaminski\(^31\) and our study.

The study of Hansson etal\(^23\) referenced that antibiotic treatment was effective in 90.8% of cases with a 13.9% chance of recurrence within one year. While our study showed 79% without surgery & 21% with surgery.

<table>
<thead>
<tr>
<th>First author</th>
<th>Followup period</th>
<th>crossover during Index hospitalization*</th>
<th>Total Appendectomy rate after follow up</th>
<th>Perforation rates, n (%)</th>
<th>Length of stay, d</th>
<th>Away from work/school, d</th>
<th>Complications after surgery n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>frisson(^11) (n = 40)</td>
<td>17 mo (average)</td>
<td>0/20</td>
<td>7/20</td>
<td>35</td>
<td>1/20 (5)</td>
<td>Abx: 3.1</td>
<td>NR~</td>
</tr>
<tr>
<td>Studt(^2) (n = 252)</td>
<td>15/128</td>
<td>12</td>
<td>31/128</td>
<td>24</td>
<td>6/124 (5)</td>
<td>Abx: 3.0</td>
<td>Abx: 8</td>
</tr>
<tr>
<td>uirhan(^3) (n = 290)</td>
<td>19/107</td>
<td>18</td>
<td>26/107</td>
<td>24</td>
<td>34/183 (19)</td>
<td>Abx: 3.14</td>
<td>NR</td>
</tr>
<tr>
<td>Huisson(^4) (n = 369)</td>
<td>96/202</td>
<td>53</td>
<td>122/202</td>
<td>60</td>
<td>NR(^*)</td>
<td>Abx: 3.0</td>
<td>Abx: 7</td>
</tr>
<tr>
<td>Vons(^5) (n = 239)</td>
<td>1 y</td>
<td>NR</td>
<td>39/120</td>
<td>33</td>
<td>NR</td>
<td>Abx: 3.96</td>
<td>Abx: 9.8</td>
</tr>
<tr>
<td>Silminen(^6) (n = 530)</td>
<td>15/257</td>
<td>6</td>
<td>70/257</td>
<td>27</td>
<td>Surg: 2/273</td>
<td>Abx: 3.0</td>
<td>Abx: 7</td>
</tr>
<tr>
<td>Gulshan (this study)</td>
<td>1 y</td>
<td>10/96</td>
<td>10.41</td>
<td>21/96</td>
<td>21.87</td>
<td>(1)</td>
<td>Abx: 3.5</td>
</tr>
</tbody>
</table>

### OUTCOMES OF ANTIBiotic TREATMENT FOR UNCOMPlicated ACUTE APPENDICITIS

Under proper observation, antibiotic treatment can be safe and effective in un-complicated acute appendicitis with reduced recurrence.
REFERENCES


