Management Outcomes of Acute Appendicitis at Mettu Karl Hospital, Ethiopia

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Abstract

Background: Appendicitis is a condition characterized by inflammation of the vermiform appendix. It is classified as a surgical emergency and many cases require removal of the inflamed appendix either by laparotomy or laparoscopy.

Objectives: To determine the prevalence and management outcome of acute appendicitis in Mettu Karl Hospital.

Methods: Retrospective review of hospital records of all 245 cases with acute appendicitis surgically managed in Mettu Karl Hospital. From January 1, 2014 through December 30, 2016 Secondary data was collected using structured check list, checked for its completeness, entered, edited, cleaned and analyzed by SPSS version 16.1. Descriptive analysis was used to describe socio-demographic variables and logistic regression was carried out to see the effect of independent variables on outcome of acute appendicitis. Significant factors were reported at p<0.05. The result was presented using tables, graphs and diagrams.

Results: A 245 patients were operated for acute appendicitis. Of whom there were 150 (61.2%) males and 95 (38.8%) females giving male to female ratio of 1.57:1. Abdominal pain was main presenting compliant in 245 (100%) and right lower quadrant abdominal tenderness was the dominant physical finding in 201 (82%) of these patients. Appendectomy was done for 173 (70.6%) patients. The predominant postoperative complication was postoperative wound infection in 18/245 (7.4%). Death rate of patients due to appendicitis was 1/245 (0.4%). The average length of hospital stays was 6.5 days. Age of patients has statistically significant association with risk factors of (AOR=4.167, 95% CI: 5.212-3.332 P-value = <0.000), those patients whose ages <30 years were 4.167 times more likely to have affected when compared with patients older than 30 years of age.

Conclusion and Recommendation: Acute appendicitis mainly affects the young population group in the second decades of life and males are more vulnerable and its prevalence was 245/576 (42.5%). The main presenting compliant, physical finding, intraoperative finding, and postoperative complication were abdominal pain, right lower quadrant abdominal tenderness, inflamed appendix, and postoperative wound infection respectively.

Keywords: Acute appendicitis; Wound infection; Abdominal pain

Introduction

Appendicitis is a condition characterized by inflammation of the vermiform appendix it is classified as a surgical emergency and many cases require removal of the inflamed appendix either by laparotomy or laparoscopy, untreated mortality is high, mainly because of rupture leading to peritonitis and shock [1]. Fitz described acute and chronic appendicitis in 1986 [1,2], and it has been recognized as one as the most common causes as secure acute abdomens pain worldwide correctly diagnosed on acute form of appendicitis is known as rambling appendicitis [3]. With more than 250,000 appendectomies performed annually, appendicitis is the most common abdomens surgical emergency. Peak incidence on acute appendicitis is to the second and third decades of life it is relatively rare at the extremes of ages however, perforation is more common in infancy and in the elderly. During which periods mortality rates are highest, males and females are equally affected, except between puberty and age 25, when males predomination a 3:2 ratio. The incidence of appendicitis has remained stable in the United States over the last 30 year, which the incidence of appendicitis is much lower in under developed countries, especially parts of Africa, and lower socioeconomic groups. The mortality rate in the United States decreased eight-fold between 1941and 1970 but has remained at <1 per 100,000 since then [4-6]. Appendicitis is the most common surgical
cause of abdominal pain worldwide [7-9]. Difference in incidences, sex, age, and seasonal variations has been reported widely, with paucity of information from Nigeria. The incidence is higher among the Caucasians and also in peoples living in the developed world, although this appears to be declining [10,11].

Report of increasing avoidance in African countries has been reported by some authors in the last few decades [11]. Changing to western life style and including diets have been held responsible for this [12]. It is generally reported to be more common in males, and usually occurs in the age range of 10 to 30 years, [9,13]. Although magnate form port-Harcourt in Nigeria, founded a significantly higher incidence in females and higher incidences have been reported in the summer months by many authors [10,11].

In our country over a five years period, appendectomy comprised 17.32% on emergency abdominal operation at Gondar collage of medical hospital Ethiopia. The mortality rate was 4.5% and the annual incidence was uniform (nineteen to twenty-two cases per year) [13,14].

A Study at Yirgalem hospital (Ethiopia) showed that from Jan 1997 to December 1999 the disease accounted 27.9 % of the operations for acute abdominal emergencies and 1.1% of the total admissions [9].

In Mattu Kari referral hospital there is no study done for prevalence and magnitude of appendicitis, the aim of this study is to assess for prevalence and magnitude of acute appendicitis with age, sex, treatment out come and seasons of the year.

**Methods and Materials**

**Study area and period**

The study was conducted in Mettu Karl hospital from January 1, 2014 to December 30, 2016 Mettu Karl Hospital is one of the zonal hospitals in Oromia Regional National State. It is found in the center of capital city of Illu-Ababora Zone, Mettu Town. It is the only governmental hospital in the town located at 620 Km to the south west of Addis Ababa. It is established by Swedish Missionaries and Ras Teferi in 1932. Currently, it provides full health services for the population of Illu-Ababora zone and its surroundings estimated to be 1.5 million people. The hospital has 138 health professionals of different fields including specialists, general practitioners, health officers, nurses, laboratory technicians and 131 supporting staffs. There are a total of 160 beds in the surgical, medical, gynecology-obstetrics and pediatrics wards of the hospital. Of which 51 beds are found in the surgical ward. Currently, the surgical ward is run by two senior general surgeons, one integrated emergency surgery specialist and 13 clinical nurses.

**Study design**

A retrospective facility based cross sectional study design was conducted to review pattern and outcome of acute appendicitis in the past three years.

**Source population:** All records of patients who were operated for surgical for acute abdomen at Mettu Karl hospital from January 1, 2014 through December 30, 2016.

**Study population:** All records of patients who had appendectomy at Mettu Karl hospital with a diagnosis of acute abdomen secondary to acute appendicitis from January 1, 2014 through December 30, 2016.

**Inclusion criteria**

All records of patients with acute appendicitis.

**Exclusion criteria**

All records of patients who have undergone appendectomy of a normal appendix having an initial different diagnosis other than an acute appendicitis. All records of patients with acute appendicitis who were managed non-operatively.

**Sampling technique**

First, all operative records from major operation registry book in the operation room and all surgical admissions from admission/ discharge registry book in the surgical ward were reviewed to identify patients treated with acute appendicitis from January 1, 2014 through December 30, 2016.

Next, using card number of patients treated with acute appendicitis retrieved from the operation room and surgical ward books, patients’ card were collected from the card room.

Finally, based on the inclusion and exclusion criteria of the study, 245 cards were selected for analysis.

**Data collection instruments and procedure:** A pre-prepared checklist developed after review of relevant literatures. Data collection procedure started in the operation room and surgical ward of the hospital followed by collecting the relevant cards from the card room. Appropriate information were gathered and entered in to the pre-prepared checklist.

**Data quality control**

Before actual data collection, the checklist was tested for validity and reliability making a pilot study on similar records at Jimma University Specialized Hospital. Possible amendments were made to the tool based on the findings of the pilot study. Regular monitoring and appropriate data collection technique were followed during the process of data collection. Finally, crosschecking was made between data obtained from operation room books with that of patients’ cards.

**Data processing, analysis and interpretation**

Data was analyzed using SPSS version 16.0 windows soft ware computer program and descriptive analysis was used to describe socio-demographic variables and logistic regression analysis was made to obtain odds ratio and the confidence interval of statistical associations to determine the association between dependent and independent variables. Statistical significance was declared at P<0.05. The data was described and presented using text, tables and graphs.

**Operational definitions**

**Normal appendix:** The vermiform appendix without any sign of inflammation, gangrene, abscess or perforation.

**Negative appendectomy:** One, which is performed for a clinical diagnosis of acute appendicitis but where the appendix is found to be normal.

**Postoperative wound infection:** An infection in the tissues of the incision and operative area.

**Surgical acute abdomen:** A sudden, severe abdominal pain that requires prompt surgical exploration of the abdomen.

**Favorable outcome:** Patients with a clinical diagnosis of acute appendicitis improved and discharged from the hospital and hospital stay developed no postoperative complication.
Length of: Number of days elapsed while the patient is in the hospital.

Unfavorable outcome: Patients with a clinical diagnosis of acute appendicitis who improved but developed one or more postoperative complication(s), e.g. wound infection, intestinal obstruction, or patients with a clinical diagnosis of acute appendicitis who have died in the intra- or post-operative period.

Outcome: Condition of the patient at discharge (either improved and developed no postoperative complication or improved but developed one or more complication(s), or dead.

Ethical Consideration

The final thesis proposal will be submitted to Ethical Clearance Board of Jimma University for possible revision. Letter from the board will be submitted to Mettu Karl Hospital administrative office and permission to conduct the research activity will be guaranteed. Data collection will be started following official permission from Mettu Karl Hospital.

Dissemination of Results

Having obtained the approval from Jimma University the findings of this research will be disseminated to:

- Jimma University College of Public Health and Medical Sciences
- Jimma University College of Public Health and Medical Sciences Surgery Department
- Mettu Karl Hospital

Results

Demographic characteristics magnitude

Between the years January 1, 2014 through December 30, 2016, a total of 17,647 patients were admitted to Mattu Hospital, out of these 6857 cases were admitted to the surgical ward of the hospital in the past three years, 576 of them were operated up on for acute non traumatic abdominal emergencies two hundred and forty-five (245) patients have undergone operative management for a clinical diagnosis of acute appendicitis. Two hundred and forty-five of the cases were acute appendicitis accounting for 42.5% of abdominal emergency operations, 3.6% of all surgical admissions and 1.38% of total hospital admissions.

There were 150 (61.2%) males and 95 (38.8%) females giving male to female ratio of 1.57:1. The mean age of the study subjects were 23.4 ± 1.01 SD years, ranged from 5 to 50 years with inter quartile range of 21 years and the median age of 21 years. The age category included 0 to 10 years 45 (18.4%), 29 (11.8%) male and 16 (6.5%) female patients, 11 to 20 years 107 (43.7%), 62 (25.3%) male and 45 (18.4%) female patients, 21 to 30 years, 69 (28.1%), 43 (17.5%) male and 26 (10.6%) female patients, 31 to 40 years 16 (6.5%), 11 (4.4%) male and 5 (2.1%) female patients, 41 to 50 years 4 (1.6%) male patients and >50 years 4 (1.5%), 1 (0.4%) male and 3 (1.2%) female patients. The age and sex distribution of these patients is shown in (Table 1).

Pattern of clinical features

With regard to address of these patients, one hundred forty three (143) of the study subjects (58.4%) were Mattu town and 111 (45.3) of them presented before 24 h, while the remaining 102 (41.6.6%) were from rural areas 75 (30.6%) of them presented before 24 h (Figure 1).

Clinical symptoms: Abdominal pain was invariably the main presenting complaint of the patients 245 (100%). An initial periumbilical pain which latter shifted to the RLQ of the abdomen was observed in 239 (97.6%) patients. One hundred forty-eight (60.4%) patients presented with vomiting. Loss of appetite was noticed in 182 (74.3%) patients and nausea was also the other presenting complaints of the patients, 189 (77.1%).

Clinical signs: During physical examination, abdominal tenderness was one of the major findings in the study patients, 201 (82%) of them had tenderness over the RLQ (McBurney’s point) of the abdomen and 21 (8.6%) of the patients had generalized abdominal tenderness. Fifteen (6.1%) patients were presented with RLQ mass, and fever was also the other presenting sign 188 (76.7%). WBC Count: Total WBC count was determined for 245 (100%) patients out of whom a raised WBC count (>10,000 cells/mm³) was noted in 236 (96.3%) (Table 2).

Management profile

Intraoperative findings and surgical intervention: Different types of abdominal incisions were employed during operative management of the patients. Rocky Davis/RLQ transverse/Lanz incision was the commonest 188 (76.7%) incision followed by lower abdominal mid-line incision in 38 (15.5%), and gridiron incision in
The intraoperative findings of these patients included an inflamed appendix in 121 (49.39%) patients followed by gangrenous appendix 75 (30.6%), perforated appendix 26 (10.6%), appendiceal abscess 12 (4.9%), appendiceal mass 5 (2.04%), and the appendix was found normal in 6 (2.45%) patients (Figure 2 and Table 3).

Management outcome of acute appendicitis

Postoperative complication: Two hundred and ten (85.7%) of the patients had favorable outcome where they have improved and discharged from the hospital and developed no postoperative complication, but 35 (14.31%) of them had unfavorable outcome where they have improved but developed one or more postoperative complication(s) and one death. Postoperative wound infection was the predominant postoperative complication in 18 (7.4%), patients and paralytic illness was found in 6 (2.5%) patients. Peritonitis 1 (0.4%), and fecal fistula 1 (0.4%), were observed (Figure 3).

Length of hospital stay: The length of hospital stay of the patients ranged from 3 to 18 days, 184 (75.1%) discharged within three days while 13 (5.3%) stay more than seven days, the average length of hospital stays was 6.5 days (Figure 4).

Factors affecting management outcome of acute appendicitis

To identify the factors associated with management outcome of acute appendicitis by a binary logistic regression was performed on a dichotomous dependent variable. Therefore; variables with P-value of ≤ 0.05 like, age, sex, residency duration of illness and duration of hospital stay were selected as candidates and entered multiple logistic regression analysis at preliminary binary logistic regression analysis (Table 4).

- Age of patients has statistically significant association with risk factors of (AOR=4.167, 95% CI: 5.212-3.332 P-value = <0.000), those patients whose ages <30 years were 4.167 times more likely to have affected when compared with patients older than 30 years of age.
- Duration of presentation to hospital after illness >24 h and duration of hospital stay >3 days are determinant factor for management outcome that are found to have statistically significant association (COR=0.133 95% CI p<0.000 and AOR 9.81 at 95% CI=2.74-2.091 showing that >24 h 0.133 and >3 days 9.81 times more likely to develop unfavorable management outcome respectively.
- Study subjects who had RLAQ mass before operative management developed post-operative complications 0.92 higher when compared with patients without RLAQ mass. [=0.092 (0.03-2.79)], P<0.000.
- Gangrenous, Perforated and appendiceal abscess appendix independently affected the management outcome of appendicitis. Patients who had gangrenous appendix 1.354, perforated appendicitis 1.786 and appendiceal abscess 4.167 times higher risk to develop post-

Table 1: Age sex and address distribution of patients operated for a clinical diagnosis of acute appendicitis at MKRH from January 1, 2014 through December 30, 2016 (n=245).

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Address</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>0-10</td>
<td>28</td>
<td>11.8</td>
<td>16</td>
</tr>
<tr>
<td>20-Nov</td>
<td>62</td>
<td>25.3</td>
<td>45</td>
</tr>
<tr>
<td>21-30</td>
<td>43</td>
<td>17.6</td>
<td>26</td>
</tr>
<tr>
<td>31-40</td>
<td>11</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>41-50</td>
<td>4</td>
<td>1.6</td>
<td>0</td>
</tr>
<tr>
<td>&gt;50 yr</td>
<td>1</td>
<td>0.4</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>61.2</td>
<td>95</td>
</tr>
</tbody>
</table>

Table 2: Clinical findings of patients operated for a clinical diagnosis of acute appendicitis at MKRH from January 1, 2014 through December 30, 2016 (n=245).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>245</td>
<td>100</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>182</td>
<td>74</td>
</tr>
<tr>
<td>Vomiting</td>
<td>148</td>
<td>60</td>
</tr>
<tr>
<td>Nausea</td>
<td>189</td>
<td>77</td>
</tr>
<tr>
<td>Associated symptoms/others†</td>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>Sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td>187</td>
<td>76</td>
</tr>
<tr>
<td>Generalized abdominal tenderness</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>RLO tenderness</td>
<td>229</td>
<td>94</td>
</tr>
<tr>
<td>RLO mass</td>
<td>12</td>
<td>4.9</td>
</tr>
<tr>
<td>Raised WBC</td>
<td>236</td>
<td>96</td>
</tr>
</tbody>
</table>

Others† Include: Dysuria, hematuria, constipation, frequency of urination.
operative complications with $[\text{AOR}=1.354 \ (2.187-8.386)]$, $P<0.000$; $[\text{AOR}=1.786 \ (2.768-1.152)]$ $P<0.000$ and $[\text{AOR}=4.167 \ (5.212-3.332)]$ $P<0.000$ respectively.

**Discussion**

Acute appendicitis is a common condition of acute abdomen in the developed world and its prevalence is lower in Africa. However, the disease is becoming common problem which contributes major surgical acute abdominal emergencies in Africa as well [3,9,10]. In the current study area there were 576 major operations performed for cases of surgical acute abdomen in the past three years of the study period. Two hundred forty five (42.5%) operations were performed for patients with a clinical diagnosis of acute appendicitis. This magnitude was lower than the study conducted at ZMH and higher than Yirgalem Hospital, 46.7% and 27.9% respectively [9,14]. The analysis has shown that majority of patients with a clinical...
diagnosis of acute appendicitis were found to be in the second decades of life. This age pattern is in line with histological nature of the vermiform appendix in different studies. Histologically, the mucosa of the vermiform appendix has aggregations of lymphoid tissue, proliferation of which may block the lumen of the appendix. The peak incidence of appendicitis in childhood, adolescent and early adulthood coincides with the period of maximal lymphoid development the time in which an acute appendicitis supervene. This finding is in consistent with different literatures [1,3,12-15]. Although in a certain study an almost even sex distribution of acute appendicitis was reported [9], the male predominance observed in this series is in agreement with many studies [7,8,12]. In different studies it was concluded that the male predominance was a coincidental finding whereas another study pointed out as no apparent explanation could be given for this finding [8,13]. Therefore, it is highly recommended to have tie-breaking studies to reach at a scientific conclusion of why males are more affected than females. The profile of residency of the patients with acute appendicitis has shown a different trend as that of previous study at Kijabe hospital, Kenya, where majority (95%) of them were from rural districts. However, in the study at Zewditu Memorial Hospital, Addis Ababa, Ethiopia, more than half of the patients were from Addis Ababa [14,16].

The clinical symptoms of the patients showed a similar pattern as previous reports, as has been mentioned in many studies, abdominal pain was the most common symptom. Typical feature of a periumbilical pain shifting to the right lower quadrant of the abdomen was in agreement with the very patho-physiologic nature of the disease. In addition, studies conducted by Fashina et al. [3] showed similar results. Loss of appetite was the next most common clinical presentation of patients followed by vomiting and fever. This finding has also been reported previously [1,3,8,9,12,14]. The physical findings are comparably the same as previous works. Tenderness over the right lower quadrant of the abdomen was the dominant physical finding as that of the findings of Singhal et al. [12,17,18], and others. Determination of the total WBC counts together with a through history and proper physical examination helps to reach at a more accurate diagnosis of acute appendicitis. In this series about 96.3% patients had a raised WBC count (>10,000/mm³) which is higher when compared with the results of different studies where 50% and 69.5% of the patients had a raised WBC count. Similarly, Bekele A has reported a raised WBC count on over two thirds of their study subjects. In the current study, a WBC count was determined for all patients. Though the role of a raised WBC count in the diagnosis of acute appendicitis has remained controversial, it helps in suspecting appendicitis in about 30% of cases [1,3,18-20]. Being the treatment of choice, urgent removal of the appendix is achieved via an open method or through a laparoscopy. Rocky Davis/RLQ transverse/Lanz incision was the commonest open method employed for appendectomy in this series whereas, lower mid line and gridiron incisions were the commonest in other studies. In the current study Rocky Davis/RLQ transverse/ Lanz incision was preferred over the others probably because in this type of incision the exposure is better, extension, when needed, is easier and it is aesthetically more acceptable [1,2,3,13,20].

The commonest intraoperative finding of inflamed appendix (49.4%) is in agreement with findings of previous studies [14,21]. However, few numbers of previous studies reported higher rates of intra-operative findings of inflamed appendix [12,13,18]. The 10.6% rate of perforated appendix seen in this study correlates with the rates seen in studies done in the United States (19.2% in males and 17.8% in females) [14,15,22]. Higher rates of perforation (54.4%, 44.0%, 34.0%, 25.9%, 23.2%, 22.7%, and 21.0%) were observed in different studies [8,12,18,20,21,23]. The high rate of perforation in the current study, as compared to reports of lower rate, could be attributed to delayed presentation, which is a finding as the finding in previous studies [14,18,22,24,25]. Majority, possible explanation for a higher rate of perforated appendix is the age factor. Perforation rate is related being highest in the elderly and the very young which is thought to reflect both increased diagnostic difficulty and the less timely surgical intervention for persons in these extreme age groups [15,22,24]. Some of the serious complications of untreated appendicitis are the progression to gangrenous appendicitis and the formation of appendiceal abscess following specially a perforated appendix [2,4,5]. Twelve (4.9%) of the cases in this series had an intra-operative finding of appendiceal abscess, which is a higher rate (2.5%) as compared to the paper works at ZMM [9]. In addition, there were 30.6% cases with gangrenous appendicitis, which is higher with previous studies [14,13]. The explanation used for higher rate of perforation could also explain the relatively higher rates of appendiceal abscess and gangrenous appendicitis in this series. Accordingly, there is a direct correlation between these two variables and duration of illness prior to admission to hospital.

Accurate preoperative diagnosis is always not possible. Therefore, a certain rate of negative appendectomy is acceptable by many surgeons [1,3,18]. This very nature of the disease was observed with 1.22% negative appendectomy rate in this series. The rate was the lowest as compared to previous studies [23]. Either this could possibly be due to under diagnosis of patients for acute appendicitis, which raises a question on the diagnostic intelligence and experience of the clinicians, or it could be due to non-operative management of those patients who were once diagnosed to have acute appendicitis. The patterns of postoperative complications and the length of hospital stay were found to be in line with the findings of other investigators [1,8,12,24,26]. The overall postoperative complication rate (14.31%) was lower than49.4% rates in South West Nigeria [18]. Of overall postoperative complications, 7.4% postoperative wound infection rate is found to be lower in comparison to 10.9% and as 50.9% rates in previous studies [11,20-21]. This highest postoperative wound infection rate is probably because most of the patients presented...
lately after they have reached at a more complicated clinical stage of the disease. In the series, it was found that of those patients with postoperative wound infection, 10.6% of the patients were found to have perforated appendix intra-operatively. The other possible explanation for the highest wound infection rate in this series is the duration of illness prior to presentation to the hospital. The study has shown that of those patients who developed postoperative wound infection, 24.1% sought medical help 24 h later the onset of their illness (not statistically significant). The overall mean postoperative length of hospital stay (6.5 days) is comparatively the lower from that of previous studies [21,22,26]. It is observed that the mean postoperative length of hospital stay was highly influenced by the clinical stage of the disease (P=0.000). In this series, it was remarkably longest for those patients with perforated appendicitis (9.6 days) which is a similar finding as Addis et al. but the highest from reports of Al-Omran et al. (6.2 days) [10,13].

The other influencing factor of length of postoperative hospital stay was the degree of postoperative complication. It was found that patients with one or more postoperative complications had longer days of hospital stay as compared to those without postoperative complication (10.4 days with complication vs. 6.6 days without complication, P=0.000). As explained by Willmore et al. [16] particularly in the presence of postoperative wound infection, the length of hospital stay remarkably increased. In the current study, the mean postoperative length of hospital stay for those patients who developed postoperative wound infection was11days, same as in Ei Obeid, Western Sudan and Asir, Saudi Arabia [13,25]. There was mortality recorded to ten years old female child in this series who diagnosed lately with ruptured appendicitis complicated by anasthesia, the mortality rate (0.4%) differed from other studies which higher rates [8,9,12,13,18,20-22,27]. This is due probably to the better health care services given to the patients such as improved preoperative routines and postoperative care [9,28].

Conclusion

The incidence of acute appendicitis was higher in this series. Majority of patients with acute appendicitis were in the second and third decades of life. Males are more affected. Almost two-thirds of the patients presented lately before 24 h of onset of their illness. Abdominal pain is invariably the main presenting complaint.

Late presentation and being young age are associated with gangrenous appendicitis, appendiceal perforation, and appendiceal abscess formation.

The mortality rate was 0.4% clinical symptom (fever), clinical sign (RLQ mass), perforation of the appendix and length of hospital stay independently affected the management outcome of acute appendicitis in this study.

Recommendations

Based on the study findings the following recommendations were forwarded:

- When patients who are in their second and third decades of life present with abdominal pain, they need to be assessed thoroughly for acute appendicitis.
- The treating clinicians need to have high index of suspicion of acute appendicitis for male patients.
- The clinicians need to record all the intraoperative findings on medical charts of the patients.

Further studies should be conducted on the large scale of sample size in the future to assess the magnitude of acute appendicitis in the area. Patients with fever and RLQ mass should be assessed carefully preoperatively and post operatively, moreover RLQ mass better be evaluated and managed non-operatively.

Surgical ward and operation theater staffs should revise their infection prevention practice and adhere to universal infection prevention protocol.

Early referral of patients with sign and symptom of abdominal pain, anorexia and RLQ abdominal tenderness and linkages between peripheral health facilities and the hospital should be strengthened.

References

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