ORIGINAL ARTICLE

CAUSES OF DELAYED PRESENTATION OF ACUTE APPENDICITIS AND ITS IMPACT ON MORBIDITY AND MORTALITY

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Background: Acute appendicitis is one of the commonest abdominal emergencies and appendectomy is one of the commonest emergency procedures performed all over the world. The study was done with an objective to evaluate the different causative factors for delayed presentation of appendicitis. **Methods:** This cross-sectional study was carried out in the Surgical "C" unit, at Ayub Teaching Hospital, Abbottabad, Pakistan from 20th June 2013 to 19th June 2014. A total of 130 patients presented with appendicitis in OPDs or emergency department. Detailed history, general physical and systemic examination especially abdominal examination was done along with investigations. **Results:** It was found that 23.08% of complicated appendicitis presentation is due to missed diagnosis by physicians, 30.77% is due to missed diagnosis by non-doctors, 23.08% is due to conservative management at DHQ hospitals by surgeons, and 23.08% presented late because of self-medication at home. **Conclusion:** All patients with pain Right iliac fossa, there should be suspected of appendicitis. Proper workup should be done to exclude it. If kept on conservative management then regular monitoring of vitals with laboratory investigations should be done.

Keywords: Appendicitis, perforation, mass formation morbidity, delayed presentation

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INTRODUCTION

Acute appendicitis is one of the commonest abdominal emergencies and appendectomy is one of the commonest emergency procedures performed all over the world.[1,2] Appendicitis is the most common cause of acute abdomen in all age groups. Almost 10% of the general population develops acute appendicitis with a highest incidence in the second and third decades of life. Late diagnosis and surgical intervention is regarded as an important cause of morbidity in acute appendicitis. Delay in treatment results in complications like perforation, but there are controversies as to whether preadmission or post admission delay is more important. Death due to acute appendicitis is now rare (mortality rate, 0–2.4%). Different factors are responsible for perforation in acute appendicitis in different age groups and this can be explained by the difference in immune status and aetiologies of appendicitis. Appendicectomy is relatively safe with a mortality rate for non-perforated appendicitis of 0.8 per 1,000 and mortality after perforation of 5.1 per 1,000. Delaying the diagnosis and operative intervention can lead to increase morbidity and mortality.[3] The mortality rate is more than 20% in patients older than 70 years because of delayed diagnosis and hospitalization, and delayed treatment. The high incidence of co-morbidities and the wide range of differential diagnostic possibilities in this age group are also factors.[4] Acute appendicitis can proceed to gangrene, perforation, appendicular mass, abscess, localized or generalized peritonitis if not readily diagnosed or treated. Men having life time risk of acute appendicitis is about 8.6% and female having 6.7%.[5,6] As the late presentation of acute appendicitis can proceed to gangrene and perforation therefore it needs to be diagnosed and treated as early as possible. In children the perforation occur within 8 to 24 hours while in adolescents and young children it occur within 36 hours.[7] Causes of delay in diagnosis and treatment of acute appendicitis are many like delaying at home (home remedies), local doctors, homeopathic, quacks, *molvies*, medical practitioners, etc. complicated appendicitis can lead to high morbidity, mortality, prolonged hospital stay and financial burden.[8] The diagnosis of acute appendicitis is often complicated by non-specific symptoms. As the symptoms of appendicitis overlap considerably with other clinical conditions like gastro-enteritis, urinary tract infection, and pelvic inflammatory disease and there is no specific test to differentiate among all the mentioned diseases, it ultimately results in the delay of diagnosis and further treatment. The significance of a specific symptom, sign, or test result is determined by a test's sensitivity and specificity and also by disease prevalence in the population, i.e., positive and negative predictive values. Intermittent abdominal complaints and parental delay have also been described to cause diagnostic delay. Misdiagnosis of appendicitis is in the top five medical malpractice categories for lawsuits against emergency room doctors. Nevertheless, failure to diagnose appendicitis early is

still a leading cause of increased perforation and complications.

Our study aims at pointing out these causes of delay and educating people and relevant specialties so they can refer the patient at time and at proper place to decrease morbidity, mortality, and hospital stay, financial burden on patient and on government hospitals.

MATERIAL AND METHODS

This cross sectional study was carried out in Ayub Teaching Hospital, Abbottabad from 20th June 2013 to 19th June 2014. All those patients whose presentation was delayed were included in the study. Delayed presentation mean after two days of acute attack of appendicitis. Complicated appendicitis means, perforation, formation of appendicular mass, abscess, auto amputation or gangrene. Informed consent was taken and purpose of the study was explained to patients or their informants. After detailed history and examination, all patients underwent standard diagnostic investigations. The laboratory investigations include Blood CP, Urine examination, RFTS, S. Electrolytes, Chest X–rays, ultrasound abdomen and CT scan of abdomen. Data was entered on a pre-designed *pro forma*, Results of demographic characteristics, causes of delayed presentation, and hospital stay were analysed using SPSS-11.0

RESULTS

A total of 130 patients aged ranging from 6–60 years were admitted with a diagnosis of complicated appendicitis during one year. There were 80 (61.54%) male and 50 (38.46%) female patients. Age group of less than 20 years was 40 (30.77%). Between 20–40 years there were 70 (53.85%) and 20 (15.38%) were above 40 years. Hospital stay below 10 days was 60 (46.15%), between 11–20 days were 20 (15.88%), and above 20 days was 50 (38.46%.). There were 38 (29.23%) of the patients belong to District Abbottabad, 46 (35.38%) patients belong to nearby district and 46 (35.38%) from remote areas of Khyber Pakhtunkhwa.

There were 30 (23.08%) of the patients missed diagnosed initially by physicians and sent home as OPD case, 40 (30.77%) were managed conservatively by non-doctors as OPD case, 30 (23.08%) of the patients were managed conservatively by District Surgeons in DHQ and 30 (23.08%) were delayed at home and didn't take any consultation. (Table-3)

Table-1: Frequency of hospital stay

Days	Number	Per cent
Below 10	60	46.15
11–20	20	15.38
Above 20	50	38.46
Total	130	100

Table-2: Frequency of patients' area of residence

Area	Number	Per cent
District Abbottabad	38	29.23
Nearby District	46	35.38
Remote areas of KPK	46	35.38
Total	130	100

Table-3: Frequency of diagnosis and management

Diagnosed/managed	Number	Per cent
Missed Diagnosed by physician	30	23.08
Managed by Non-Doctors	40	30.77
Managed by District Surgeon	30	23.08
Delayed at home	30	23.08
Total	130	100

DISCUSSION

Few surgical conditions have generated as much discussion in the literature as appendicitis.[9] It is axiomatic that early diagnosis and treatment of appendicitis is associated with a good clinical outcome and a low complication rate.[10,11] Surgical treatment is the accepted standard but there is an increasing body of evidence for conservative treatment, both in simple and in complicated cases (including perforation).[12–16] Appendectomy can be done either by open or by laparoscopic method. Later method leads to early mobilization and less hospital stay.[17–19] The nature of the health care system in Pakistan is such that most of the acute appendicitis patients are first checked by the general practitioner, medical technician, quacks etc.

The clinical decision then is to choose between a diagnosis that lends itself to observation or treatment with antibiotics, or alternatively refer the patient for surgical assessment.

Unfortunately delay in referral while treating an alternative diagnosis increases the risk of perforation and subsequent morbidity.[9–11,20] A delayed diagnosis of appendicitis leads to increased rates of perforation and subsequent complications.[8,21,22] Causes of delay have attracted much attention in the literature.[7,8,23–24] 61.54% of the patients presented in our study with complications are male which is in accordance with other studies.[6,8] While in Salati study there are twice males affected.[9] Maximum hospital stay in our study is more than 20 days while the study conducted by Aly Saber in Egypt was 7 days.[26] In our study 23.08% of the patients were missed diagnosed by physicians and came with complications while the study done by Ch Chung in Hong Kong the delay made by physicians is 22.1%.[12] and 23% in study made in kashmir.[21]

The study made in Kashmir showed that 86% of the patients presented with complicated appendicitis belong from remote areas while in our study it is just 35.38% while the remaining patients belong to city or near to city.[9]

In our study the patients who presented with complicated appendicitis because of delayed at home and due to mismanagement by non-doctors are 23.08% and 30.77% while the study conducted by Salati the percentage is 12.5% and 53%.[9]

Considering the fact that there is a lack of proper roads and transportation facilities in most of the suburban and rural areas, it takes longer to reach the hospital. In the rural areas, people are preoccupied with their busy routine particularly during harvest seasons they ignore the early symptoms to avoid disturbance of their work by seeking expert medical care. However, one significant factor found to be the cause of delay in seeking medical care in both rural and urban population is seeking of medical care from illegally operating quacks that sell over the counter medicines.[20,21] Similar delay in diagnosis and treatment was attributed to factors controlled by the patient in another literature.[10] As far as the management is concerned there is another hurdle; mismanagement, in the initial stages of diagnosis, which also stays the major contributing factor for the delay of diagnosis and treatment. Children being very difficult to diagnose and are mismanaged the most.[8] Then comes the nature of the health care system in Pakistan which states that most of the acute appendicitis patients are first checked by the general practitioner, medical technician, quacks.[4,24]

The clinical decision then is to choose between a diagnosis that lends itself to observation or treatment with antibiotics, or alternatively refer the patient for surgical assessment. Patients when treated with antibiotics results in masking of the symptoms as they become pain free and no longer seek medical attention. Unfortunately delay in referral while treating an alternative diagnosis increases the risk of perforation and subsequent morbidity.[9–11,20] A delayed diagnosis of appendicitis leads to increased rates of perforation and subsequent complications, causes of delay have attracted much attention in the literature.[7,23–26]

CONCLUSION

Early diagnosis of appendicitis and their proper surgical management is sufficient to reduce the complications of appendicitis and their morbidity and mortality. These findings confirm that there is definite need to educate the people to seek early health care and at proper place to avoid complications and also to educate other specialties to refer such cases to concerned department.

AUTHOR'S CONTRIBUTION

SA, SA, and SG: Data Collection, AA: Compiling of data, data analysis, SA, SA and IUDK: Over all supervision of the study.

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