Original Article

Surgery

Evaluation of Risk Factors for Perforation in Acute Appendicitis

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ABSTRACT

Objective: To determine the risk factors contributing to the chance of perforation in acute appendicitis**.**

Study Design: Prospective study**.**

Place and Duration of Study: This Study was conducted at Allied Hospital Faisalabad from October 2011 to February 2013**.**

Materials and Methods: All of the 200 patients who were admitted with the clinical diagnosis of acute appendicitis were included in this study. They were managed according to the standard protocol. Appendecectomy was performed. The cases of perforated appendix were evaluated.

Results: It was found that 27 of these 200 patients had perforated appendix with the frequency of 13.5 %.

37.03 % patients were in the age group of 56-70 years with the males being 74%. The percentage of the patients who presented with the delay of 72 hours was 62%. **Conclusion :** The complication of appendicular perforation in cases of acute appendicitis depends upon delay in presentation to the hospital. Male gender and late age factors also contribute to the increased frequency.

Key Words: Acute appendicitis, Appendecectomy.

INTRODUCTION

The vermiform appendix is found only in humans, certain arthropods, apes and the wombat. Appendicitis is predominantly a clinical diagnosis though laboratory and radiological investigations have a role in difficult cases. [1] Over 100 years have passed since Mc Burney reported his study on acute appendicitis in eight patients with emphasis on early appendicectomy. [2]

Appendicitis is the inflammation of appendix. It is more common in Western nations. Lifetime risk for developing appendicitis in the U.S. is about 7%. [3]Acute appendicitis is rarely seen before the age of 2 years, reaches its peak incidence in 2nd and 3rd decades but may occur at any age. The incidence of the complicated acute appendicitis including perforated or gangrenous appendicitis remains considerably high despite the availability of modern imaging and the use of laparoscopic surgery. Complications and mortality rates are much higher in children and elderly.[4]

Various parameters are used to make the diagnosis of appendicitis. The patients who present with complaints of abdominal pain other related symptoms are evaluated according to the standard protocol. An early diagnosis leads to an early management. Delay in diagnosis leads to an increase in the number of the patients who face the problems of perforations and gangrene, which inevitably leads to complications[5,13,20]. Once perforations occurs the morbidity and length of hospital stay is increased. Perforation rates range from 4% to 45%[6].

This prospective study was carried out over a period of 13 months from November 2011 to December 2012 on the surgical floor of Allied Hospital Faisalabad on 200 patients above 10 years of age presenting with clinical diagnosis of acute appendicitis with the aim to find out overall frequency of appendicular perforation.

MATERIALS AND METHODS

It was a prospective study including 200 patients presenting at the surgical floor of Allied Hospital Faisalabad. Patients of both sexes above the age of 10 years were included in the study. Patients with appendicular mass, perforated appendix (peritonitis), renal failure, liver cirrhosis and with immunocompromised states were excluded. The diagnosis of acute appendicitis was confirmed by the history, thorough clinical examination and laboratory investigations. [7] The most important physical examination finding was the right lower quadrant tenderness to palpation. Appendecectomy was performed after the confirmation of diagnosis. All patients were properly managed preoperatively through antibiotics. General anesthesia was given to the patients. Aseptic measures were used to perform the surgical procedure of appendicectomy. Post operative management of the patients was done according to the standard protocol. [8]

The patients of perforated appendix were studied with respect to age factor, time lapse before the presentation to the hospital and the ratio of appendicular perforation in male and female. Data was entered and analyzed using computer program SPSS- 11.

RESULTS

During the time period from October 2011 to February 2013, the total number of patients who attended the

surgical unit1 of Allied Hospital Faisalabad with acute appendicitis was 200. Out of these 200 patients who were operated with the clinical diagnosis of non perforated appendix, 27 were found to have a perforated appendix. The frequency of the appendicular perforation was studied according to age group, gender and time elapsed before presentation.

Among 27 patients with incidental perforation, 17 patients presented after 72 hours of the onset of symptoms. 06 patients presented within 48 hours of onset of symptoms. Only 04 patients presented within 24 hours of onset of symptoms. Among these 27 patients 20 were male and 07 were female patients.

The age distribution ranges from 10-65 years with mean age of 37.5 years. They were distributed into various groups. Out of 27 patients, 4 were in the age group of 10 – 25 years, and 5 were in the age group of 26 – 40 years, 8 were in the age group of 41 – 55 years and 10 were in the age group of 56 – 70 years.

The results are shown in tables (Table 1 – 3).

Table No.1: Distribution of the frequency of appendicular perforation in age groups

Age group	No. of patients	Percentage
10 – 25	4	14.8
26 – 40	5	18.5
41 – 55	8	25.9
56 – 70	10	37.03

Table No.2: Distribution of the frequency of appendicular perforation in gender groups

Gender group	No. of patients	Percentage
Male	20	74.0
Female	7	25.5

Table No.3: Distribution of the frequency of appendicular perforation in time lapse

Time lapse before presentation	No. of patients	Percentage
Within 24 hours	4	14.8
Within 48 hours	6	22.2
Within 72 hours	17	62

DISCUSSION

In this prospective study, we included 200 patients who attended the surgical unit 1. Of the Allied Hospital Faisalabad with the clinical diagnosis of acute appendicitis during the time period of one year and seven months, from October 2011 to February 2013. It was found that out of these 200 patients, 27 patients were having perforated appendix with the frequency of 13.5 which is not dissimilar to the earlier reports. [9, 17]

The acute appendicitis is the most common cause leading to emergency abdominal surgery, accounting for 10 to 30% of acute abdominal conditions. [10, 18] And while the appendectomy for acute appendicitis is one of the most common intra- abdominal surgical procedures performed by the general surgeons, morbidity rates in the postoperative period remain between 9% and 18%.

The first successful appendicectomy was performed in 1735 by French surgeon Claudius Amyand on perforated appendix. Over 100 years have passed since Mac Burney reported his study on acute appendicitis in eight patients with emphasis on early appendicectoy[11].

Studies are reported in literatures which show that the age of presentation and male to female ratio is comparable to this study. [12] Males have been found to have a higher incidence of appendicular faecoliths and calculi which are in turn associated with an increased risk of perforation. This could be one potential explanation for the increased risk of perforation in males. [21] Changes in the colonic wall mechanical strength have been noted with advancing age. These changes have been postulated to be linked to the increased risk of diverticular perforations noted in advancing age. [22] While this has not been previously studied in appendicular tissue, we can only hypothesize that such changes may occur in the appendicular wall, as well, increasing the susceptibility to perforation with advancing age.

Delay in the presentation of the patients to the hospital may result in serious complications as shown in this study. Similar was the observation of the previous studies. [13, 19] Patients presenting after the second day of onset of their symptoms were found to be at a significantly increased risk with the risk increasing depending on whether they presented between 2 and 3 days of onset of symptoms or 4 and 9 days following the onset of symptoms. [23]

CONCLUSION

The frequency of perforation of appendix in cases of acute appendicitis depends upon age of the patient and delay in presentation. Early presentation in hospitals can be improved by the health education of the masses. Peoples should be made aware of the symptoms of acute appendicitis and its possible complications due to delayed presentation. The frequency of incidental preparations can be reduced in the hospitals by providing modern facilities for early diagnosis and management.

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