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The final outcome of the misdiagnosed acute appendicitis

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Summary

To ascertain the effects of delayed diagnosis and treatment in acute appendicitis, a retrospective study is done on 180 children who were treated for acute appendicitis. Age, suffering time, place of first admission, diagnosis and treatment before the final admission, operative findings, hospitalization period, complications, reoperations and mortality are used as parameters. In 116 children (64.4 %) complicated apendicitis was encountered. It was also estimated that 44 of the total patients (24.4 %) were sent home and 15 of them were hospitalized with misdiagnosis. 55 complications were observed and 18 patients were reoperated duo to these complications. We believe that, physician's role reducing the morbidity of appendicitis is not to try to minimize the number of negative laparotomies for appendicitis; but, instead, to facilitate the surgical evaluation of patients with possible appendicitis at a time early in the course of disease.

Key words: Acute appendicitis, peritonitis

Introduction

At the beginning of this century, the mortality rate due to appendicitis was 10-20 %. This rate has been decreased to 5 % during the sixties, 1 % during the seventies and below 0.08 % in recent years [16.21]. On the other hand, morbidity still keeps its importance because of complications due to wound infection and intraabdominal abscess [5]. In perforated occasions the complications were five times more than unperforated cases, giving and indication of the importance of early diagnosis and treatment [16]. Starting from this point of view, we wanted to scrutinize how these problems have been reflected in a pediatric surgical clinic, and to evaluate our results related with these problems.

Patients and Methods

From 1976 to 1989, 180 children were treated for acute appendicitis in the Department of Pediatric Surgery, Çukurova University Faculty of Medicine. Age, suffering time, place of first admission, diagnosis and treatment before the final admission, operative findings, hospitalization period, complications, reoperations and mortality have been used as parameters in this retrospective study. Operative findings have been divided in two groups as acute and complicated appendicitis. Patients who had generalized peritonitis, periappendicular abscess and plastrone appendicitis have been included in the complicated group.

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Results

There were 123 males and 57 females and their ages varied from eight days to 15 years. The time between the beginning of the symptoms and their admission to our clinic has changed from one day to 99 days. Table I, demonstrates that acute appendicitis was found in 64 of 180 patients (35.6 %) and complicated appendicitis in the others (64.4 %).

In reviewing the records, it is ascertained that only eight of the 64 children with acute appendicitis were referred by a physician while the rest were admitted to our center without any reference. On the other hand, it was estimated that 44 patients (24.4 %) of the total were sent home with antibiotic and/or analgesic treatment and 15 of them had been hosptalized with misdiagnosis in several medical institutions. Various complicatons of appendicitis were observed in 40 patients who were

Table I. Operative findings in 180 children

ACUTE APPENDICITIS	64 (35.6 %)
COMPLICATED APPENDICITIS	116 (64.4 %)
Generalized peritonitis	67 (37.3 %)
Localized peritonitis	17 (9.4 %)
Periappendicular abscess	14 (9.4 %)
Plastrone appendicitis	15 (8.3 %)

Table II. Complications encountered in 180 children

Wound infection	30 (16.6 %)
Intestinal obstruction	12 (6.6 %)
Intraabdominal abscess	3 (1.6 %)
Evisceration	3 (1.6 %)
Wound dehiscence	2 (1.1 %)
Sepsis	2 (1.1 %)
Stercoral fistula	1 (0.5 %)
Incisional hernia	1 (0.5 %)
Meningitis	1 (0.5 %)

Table III. Causes of reoperations

Intestinal obstruction	9 (5 %)
Intraabdominal abscess	3 (1.6 %)
Evisceration	3 (1.6 %)
Incisional hernia	3 (1.6 %)

misdiagnosed and maltreated. The hospitalization time ranged between 2 to 26 days, with an average 8.5 days per patient.

Table II, shows the complications encountered after the operations. Wound infections (30 cases) and intestinal obstructions due to adhesions (12 cases) were found to be the most common complications. On the other hand, 18 patients have been reoperated on due to adhesion, intraabdominal abscess, evisceration and incisional hernia (Tablo III). The postoperative period was uneventful in 175 patients. One patient was transferred to pediatrics because of meningitis, and another one was discharged by parental order before the treatment ended. Three patients died and the mortality rate was found to be 1.6 %.

Discussion

Although several hematologic and radiologic diagnostic methods can be used, the certain diagnosis of acute appendicitis must be made by physical examination [1,6,9,10,11,12,15,17,19,20]. After an accurate diagnosis is made or appendicitis is highly suspected, the treatment is appendectomy [3,8]. Gastroenteritis, urinary infections, pharyngitis, otitis media and abdominal pain with unknown etiology are the most confusing reasons in differential diagnosis [16].

In early childhood, the wall of the appendix vermiformis is thinner and the protective effect of greater omentum is less. The infection spreads quick because of the small volume of the abdominal cavity. These reasons increase the risk of perforation [4,8,18,21]. Marcuse and co-workers [16] demonstrated that a 36 hours delay in diagnosis increased the perforation rate to 65 %. In neonates, mortality rate, which is 80 %, rises to 100 % in the presence of perforation [14]. In medical literature the interval from the beginning of symptoms to hospitalization changed from one to eight days [16,18,21]. In this study, we found a longer duration from 1 to 99 days.

Perforation rates are differed in several reports [6,10,18]. Gilbert and co-workers [8] demonstrated that their perforation rate in those over five-year-old was 34.1 % and 72.2 % under five-year-old. In this study, 64.4 % of our patients were diagnosed as complicated appendicitis, while the diagnosis was acute appendicitis in 35.6 %. 67 patiens (37.3 %) were found to have generalized peritonitis. The perforation rate was 59.5 % in children over five-year-old and 88.5 % under five-year-old. These high rates, can briefly explains the high morbidity and mortality and we believe it correlates with the delayed diagnosis and the treatment.

In 19th century, the complication rate of appendicitis was about 46 %. This rate has been minimized in several series using wide spectrum antibiotics and following regular protocols [1,2,4,7,13,20,23]. Domestic reports show that the complication rates have not been decreased to the appropriate level yet. Wound infection rate was 13 % in Erdener's [6], 24.6 % in Dindar's [4], 33 % in Tanyel's [22], and 16.6 % in our study.

At the end of 20th century, in some parts of the world, surgeons are dealing with two extreme approaches in the treatment of appendicitis. Some surgeons do appendectomy in almost every child suffering from abdominal pain and the accurate diagnosis of acute appendicit have not been established in most of the patients. As a result of this, the time that is very important has been lost. As a result of this study, it can be concluded that loosing time may cause a high complication rate needing successive second or third operations-and also caused a higher mortality rate, in comparison with world standards. We agree with Harrison et al [10] that, losing time physician's role in reducing the morbidity of appendicitis is not to try to minimize the number of negative laparotomies for appendicitis; but, instead, to facilitate the surgical evaluation of patients with possible appendicitis at a time early in the course of disease.

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