Acute appendicitis in elderly patients: a challenge for surgeons

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ABSTRACT

The classic symptoms of acute appendicitis are seldom seen in the elderly patient. More subtle symptoms and the more virulent pathologic course allow the disease to progress rapidly and insidiously. This leads to delayed hospitalization, diagnosis and treatment.[1,2] The high incidence of concomitant diseases and the multiplicity of differential diagnostic possibilities in this age group are also factors. The aim of this study is to compare the results of appendicitis operated at Lumbini Medical College, Pravas, in patients younger than 60 and patient elder than 60 years of age. All patients aged 60 years and older who underwent appendectomy for appendicitis between January 2008, and December 2011, were studied and compared with the patients who were younger than 60 years of age. All the operations were performed by consultant surgeons at Lumbini Medical College, Pravas, Tansen. Preoperative USG was done in all the cases. Preoperative antibiotics were given in all the cases. All patients underwent appendectomy as an emergency basis. The results were compared with regard to age, sex, pre-operative evaluation, operative duration and findings, postoperative course, duration of hospital stay, and mortality rate. There were 50 patients in group1 and 150 patients in group2 who met the inclusion criteria. The mean age (64 years for group1 and 28 years for group2), sex, preoperative suggestion of appendicitis (group 1, 35 [70%] of 50 patients; group 2, 135 [90%] of 150 patients), and duration of the preoperative hospitalization over 24 hours (group 1, 1 patients [20%]; group 2, 30 patients [20%]) were similar in both groups. Laparoscopy was used in (group1, 5 patients [10%]; group 2, 6 patients [4%] and associated with no significant difference in the duration of hospitalization, frequency of appendiceal perforation or abscess, occurrence of complications, or mortality. The length of operating time was more in the first group. The mean hospital stay was 5.3 in group 1 and 2.2 in group 2 ($p<0.05$). Also duration of Hospital stay was 9.5 days for perforated appendicitis and 5.4 for non perforated appendicitis in both group ($p<0.05$). Advanced age adversely affects clinical diagnosis, the stage of the disease and the outcomes. Late presentation, delayed diagnosis, presence of perforation and co-morbidities are associated with poor outcome from surgery.

Keywords: Acute appendicitis, appendectomy, diagnosis.

INTRODUCTION

Acute appendicitis (AA) is the most common acute surgical abdominal condition.[1] The lifetime risk of AA is 7% in the general population, 90% of cases occurring in children and young adults (peak 10-30 years) and up to 10% being in the elderly over 60 years.[2,3] The diagnosis AA is difficult and remains one of the most challenging diagnostic issues in surgery. Despite developments in diagnostic imaging (ultrasonography, computed tomography) the diagnostic accuracy of AA remains poor.[4,5] The risk of perforation in the elderly population is high, reaching levels of up to 70% in some reports.[3,6,7]

Progress has been made in the treatment of AA. In 1944, the mortality of AA was 2.4%, today this figure is less than 1% in the general population.[3,8-10]. Despite such progress, morbidity and mortality in elderly remains significant at 28- 60% and 10% respectively.[6,8-12] The aim of this study was to evaluate the outcomes following appendectomy for AA in the elderly and to identify possible prognostic factors associated with this condition.

MATERIALS AND METHODS

It was a retrospective study carried out at LMC teaching hospital from April 2010 to November 2011 in patient aged more than 60 years and less than 60 years with the diagnosis of appendicitis. We collected data which included demographic data, co-morbidities, time from onset of symptoms to admission, symptoms, diagnosis at admission, diagnostic investigations, timing of surgery operative findings, hospital stay, morbidity and mortality.

The diagnosis was made by consultant surgeon at the emergency. Acute appendicitis confirmed by histopathology was taken in this study. Such evaluation definitely confirming the presence or absence of perforation. Different pathological diagnosis like phlegmonous appendicitis, gangrenous appendicitis,

Table-1: Post operative complications

Complications	Group 1		Group2		p-value
	Perforated	Non-perforated	Perforated	Non-perforated	
Wound infection	8	2	10	1	<0.05
Intraabdominal abscess	1	0	2	0	<0.05
Chest infection	2		2	1	-
mortality	2		0	0	<0.05
Urinary-tract infection	1	1	5	5	-
Fistula	1		1		-

catarrhal appendicitis was taken according to standard definitions. Statistical analysis was performed using the student t-test for continuous variables and chi-square and Fischer exact tests for categorical data. A value of $p<0.05$ was considered statistically significant.

RESULTS

During the study period 50 patients in the group 1 underwent appendectomy; out of which 20 were males (40%) and 30 were females (60%). In group 2, 50(33.33%) were males and 100 (66.66%) were females. The mean duration of symptoms in group 1 was 3.8 days and for group2 with acute appendicitis was 2.3 days, which was statistically significant ($p<0.05$). The primary diagnosis was established correctly in 40 patients (80%) in group 1 and 130(86.66%) patients in group 2 which was not statistically significant. The duration of the preoperative hospitalization over 24 hours (group 1, 10 patients [20%]; group 2, 20 patients [13.33%]) was more in group 1 but this finding was not statistically significant.

All the patient had pain as presenting symptom. There were 36 (68%) patients who presented with pain in right iliac fossa. Among rest of the patients 2 (4%) presented with epigastric pain, 6 (12%) presented with diffuse lower abdominal pain, 4 (8%) presented with symptoms of localized peritonitis, and 2 (4%) presented with symptoms of cholecystitis. In group2 125 (83.33%) patients presented with right iliac fossa pain, 10 (6.66%) patients presented with localized peritonitis, 8 patients presented with lower abdominal pain (5.33%), 3 (2%) patients presented with epigastric pain and 4 patients (2.6%) presented with symptoms of cholecystitis. Non were statistically significant ($p>0.05$).

Laparoscopy was used in (group1, 5 patients [10%]; group 2, 6 patients [4%] and associated with no significant difference in the duration of hospitalization, frequency of appendiceal perforation or abscess, occurrence of complications, or mortality. The length of operating time was more in the first group. The mean hospital stay was 5.2 in group 1 and 2.1 in group 2 ($p<0.05$). Also duration of Hospital stay was 9.6 days for perforated appendicitis and 5.6 for non perforated appendicitis in both groups ($p<0.05$).

The majority of complications were present in the patients with perforated AA (15 patients, 30%) and in those with co-morbidities (25patients, 40%) in group1. In group 2 majority of the complications were present in the patient with perforated AA (20 patient, 13.33%), Only 8 patients (5.33%) had co-morbidity in group2 related to cardiac disease but post operative period was uneventful. Those patients who presented with perforation or co-morbidity were found to have significantly increased risk of complications in group 1 ($p<0.05$). Complications are listed in the Table-1.

The risk of abdominal complications increases with the presence of perforation ($P<0.05$). There were 2 deaths (4%) both patients developed multiple organ failure in the post operative period who had presented with generalized peritonitis in group but there was no deaths in group2 patient.

DISCUSSION

The incidence of AA in the elderly population (>60 years) is between 5-10%[2,6] compared to our study which is slightly higher (25%). Despite the relatively simple nature of this diagnosis, it still remains a challenge for the elderly patient. This is due to specific physiological alterations, co morbidities and socio-behavioral factors which are associated with this group of patients.

The physiological changes seen in the elderly affect the disease and the response to intervention. The perception of pain and its localization is altered due to the modification of neural mechanisms and diminished immune function. The T-cell function is decreased, autoantibodies levels are raised, bone marrow capacity is reduced and the inflammatory response is dampened. Frequently, the bacteremic elderly patient does not develop fever and may have hypothermia instead.[13, 14] The vermiform appendix of the elderly patient develops vascular sclerosis, narrowing of the lumen by fibrosis, the muscular layer is infiltrated with fat and there is a structural weakness with tendency towards early perforation. Co-morbidities frequently imply that symptomatology for acute appendicitis may be confused with already existing symptoms making the clinical diagnosis more difficult. In addition, concurrent

medication may further complicate this issue and further compromise the elderly physiology increasing susceptiblity to other conditions. The elderly patient frequently refuses medical care and this can impede appropriate management.

Furthermore, the morbidity rate associated with acute abdominal pain increases with age, being 15% over the age of 50 years and more than 70% over the age of 80 years.[15]Less than half of the elderly patients with AA present with the classical signs and symptoms including nausea vomiting, loss of appetite, migrating pain and localized tenderness.[16] The pain usually lasts longer and is accompanied by abdominal distention, reduced bowel sounds and occasionally a palpable mass; as opposed to the classical migration of localized pain in the right iliac fossa from the onset.[16] For pain from the epigastrium to the right iliac fossa, elderly patients may more frequently have localized pain in the right iliac fossa from the onset.[16] For our patients there were 36 (72%) patient who presented with pain in Right iliac fossa. Among rest of the patients 2 (4%) presented as epigastric pain, 6 (12%) presented as diffuse lower abdominal pain, 4 (8%) presented with symptoms of localized peritonitis, and 2 (4%) presented with symptoms of cholecystitis.

The elderly have the tendency to present late [17-22], higher threshold for pain and co-medication which often conceal symptoms. The majority of our patients presented 48 hours after the onset of symptoms. Perforated appendicitis presented even later. The mean duration of symptoms in group 1 was 3.8 days and for group2 with acute appendicitis was 2.3 days, which was statistically significant ($p<0.05$) in our case as well. The primary diagnosis was established correctly in 40 patients (80%) in group 1 and 130(86.66%) patients in group 2 which was not statistically significant. Elderly people often present to hospitals in an advanced stage of the disease.[19-22] In young people, the perforation rate of AA is less than 20% while this can be 70%[6,7,17] or even as high as 90%[23-25] in elderly people which in our case 15(30%) is accordance to published literature.[12,23,27] The overall complication rate of 18(36%) in our series is similar to previous reports of 28-60%.[24,27-28] Co-morbidities were present in all the patients with complications which was statistically significant as in non-complicated cases.

The mortality rate was 4% in patients with perforated appendicitis who presented late and had co-morbidity as compared to published literature which has reported it as 10%.[5,11] The deaths were due to sepsis due to abdominal infections. All the deaths were in group 1, non in group2; also all deaths were in perforated cases which is statistically significant.

In conclusion, acute appendicitis still presents as real challenge for practicing surgeons. The co-morbidity and the delayed mode of presentation are the main difficulty in clinical judgement and diagnosis. High index of suspicion, proper use of investigation modalities and routine use of ultrasonography by radiologist and surgeon may lead to proper diagnosis and prompt treatment by operation. The morbidity rate is significantly high in terms of duration of symptoms, complications and post operative hospital stay in comparision to younger population. This can be reduced by high index of suspicion and evaluation of patient by onduty surgeon. With increasing life expectancy more such cases are likely to be encountered in the future. The incidence of perforation remains higher than in the young population. Late presentation, delayed diagnosis, presence of perforations and comorbidities are associated with poor outcome after surgery.

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