

Comparison of Clinical Manifestations and Outcome of Appendicular Mass Between Elderly and Non-Elderly Patients

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Abstract: Appendicitis is a most common surgical disease throughout the world. Appendicular mass may develop during the course of this disease. The purpose of this study was to assess and comparison of the clinical manifestations and outcome of appendicular mass in elderly and nonelderly patients. Via a retrospective study from April 1999 to April 2010, 1140 cases were diagnosed appendicitis of which 64 cases had appendicular mass who admitted at the Department of Surgery. The demographic data, clinical manifestations as well as outcome of the disease were recorded and were compared between elderly and non-elderly patients. Data analysis by SPSS with Chi-square (χ^2) and t-test. About 1140 cases with appendicitis (9% elderly patients, 91% nonelderly), 64 patients (39 males, 25 females) with appendicular mass (21 elderly = 7 male, 14 female with mean age 67.5 years, 43 non-elderly = 32 male, 11 female with mean age 31 years) were evaluated. The proportion of female to male in elderly patients was more than non-elderly ($p < 0.05$). The most common clinical findings in elderly and non-elderly patients were anorexia (57 vs. 88.4%), RLQ pain (61.9 vs. 81.3%), vomiting (38.1 vs. 74.4%) and fever (28.6 vs. 46.5%), respectively. Tenderness, rebound tenderness and mass lesion in elderly and nonelderly patients were seen in 81 vs. 88.4%, 62 vs. 67.4% and 76.1 vs. 58% cases, respectively. Symptoms in elderly patients were lower than that non-elderly but signs only detection of mass in elderly patients was higher ($p < 0.05$). Duration of hospitalization in patient with abdominal pain < 7 and > 7 days was 75% > 7 days and 63.6% > 7 days, respectively. Residence of patients in this study was: urban = 39% and rural = 61%. The 59 cases (17 (81%) elderly, 42 (98%) non-elderly) were responded to medical treatment. Anorexia, vomiting, tenderness, rebound tenderness and mass lesion are the most clinical and physical findings. Duration of hospitalization in patient with long time abdominal pain (> 7 days), significantly is more than the patients with abdominal pain < 7 days. First line in treatment of appendicular mass in most of patient (elderly and non-elderly) is medical treatment alone.

Key words: Acute appendicitis, appendicular mass, elderly, conservative therapy, hospitalization, rebound, patients, Iran

INTRODUCTION

Acute appendicitis is the most common surgery of the abdomen in the world. Early diagnosis and appropriate treatment may prevent for development of complications (Al-Omran *et al.*, 2003; Gallerani *et al.*, 2006; Marudanayagam *et al.*, 2006; Oliak *et al.*, 2001). The diagnosis of acute appendicitis is particularly difficult in the very young and in the elderly patients. These are the groups in which diagnosis is most often delayed. Delay in diagnosis may causes perforation resulting peritonitis or appendicular masses. There are two types for appendicular mass. The 1st is phlegmon with adhesion of appendix to the adjacent tissues forming an inflammatory

mass without the formation of collection and 2nd is abscess formation. In spite of treatment many complications like abdominal abscess, peritonitis, prolonged ileous, wound infection and incisional hernia prolongation of hospital staying may develop during the course of treatment (Friedell and Perez-Izquierdo, 2009). Taking observation and physical examination are the most common way for the diagnosis of the disease (Eriksson and Styru, 1998; Ruderman *et al.*, 1997; Foran *et al.*, 1978).

The elderly are more prone to complication of surgery especially emergency surgery rather than non-elderly due to lower respiratory capacity and their other co-morbidity. Therefore, avoiding of emergency surgery and doing

medical therapy will reduce morbidity and mortality in elderly. Since, early diagnosis with appropriate surgical intervention may decrease the incidence of this complication. The purpose of this study was to compare and assess the clinical manifestations and outcome of appendicular mass in elderly and nonelderly patients.

MATERIALS AND METHODS

This research designed as cross sectional and descriptive study. From April 1999 to April 2010, 1140 cases were diagnosed as acute appendicitis of which 64 cases had appendicular mass who admitted at the Department of Surgery. The center serves and admits urban and rural patient. The diagnosis of the disease was performed by physical examination and sonographic findings. Inclusion criteria were patients who had appendicular mass. The patients were hospitalized and received ceftriaxone plus metronidazole or cefazolin plus metronidazole plus gentamicin.

The demographic features, clinical manifestations, hospitalization time and outcome in elderly and nonelderly patients were recorded. Data were analyzed with SPSS Version 11. Student t-test and Chi-square (χ^2) test were used when appropriate.

RESULTS AND DISCUSSION

Total 1140 cases with appendicitis (9% elderly patients, 91% non-elderly), 64 patients (39 males, 25 females) with appendicular mass (21 elderly = 7 male, 14 female with mean age 67.5 years, 43 non-elderly = 32 male, 11 female with mean age 31 years) were evaluated. The proportion of female to male in elderly patients was more than non-elderly ($p < 0.05$). The demographic features are shown in Table 1 and 2. The most common symptoms in elderly and non-elderly patients were anorexia (57 vs. 88.4%), RLQ pain (61.9 vs. 81.3%), vomiting (38.1 vs. 74.4%) and fever (28.6 vs. 46.5%), respectively (Table 3). Tenderness, rebound tenderness and mass lesion in elderly and nonelderly patients were seen in 81 vs. 88.4%, 62 vs. 67.4% and 76.1 vs. 58% cases, respectively. Symptoms in elderly patients were lower than that non-elderly but signs only detection of mass in elderly patients was higher ($p < 0.05$) (Table 4).

Duration of hospitalization in patient with abdominal pain < 7 days and > 7 days was: 75% < 7 days and 63.6% < 7 days, respectively. Residence of patients in this study was: urban = 39% and rural = 61%. The 59 cases (17 (81%) elderly, 42 (98%) non-elderly) were responded to medical treatment. In this study, there was found that the male patients with appendicular mass were higher than the

Table 1: Frequency distribution of appendicular mass according to sex and age

Age	Acute appendicitis	Appendicular mass		Total
		Male	Female	
Non-elderly				
>60	1040	32	11	43
Elderly				
<60	103	7	14	21
Total	1143			64

Table 2: Frequency distribution of appendicular mass according to sex and age

Age	Male	Female	Total
Nonelderly	32 (74.4%)	11 (25.6%)	43 (100%)
Elderly	7 (33.3%)	14 (66.7%)	21 (100%)
Total	39 (60.9%)	25 (39.1%)	64 (100%)

Table 3: Frequency distribution of symptoms in appendicular mass according to sex and age

Age	Anorexia	Vomiting	RLQ pain	Fever
Non-elderly				
n = 43	38 (88.4%)	32 (74.4%)	35 (81.3%)	20 (46.5%)
Elderly				
n = 21	12 (57.0%)	8 (38.1%)	13 (61.9%)	6 (28.6%)
Total				
n = 64	50 (78.1%)	40 (62.5%)	48 (75.0%)	26 (40.6%)

Table 4: Frequency distribution of signs in appendicular mass according age

Age	Tenderness	Rebound tenderness	Mass
Non-elderly			
n = 43	38 (88.4%)	29 (67.6%)	25 (58.0%)
Elderly			
n = 21	17 (81.0%)	13 (62.0%)	16 (66.6%)
Total			
n = 64	55 (86.0%)	42 (65.5%)	41 (64.0%)

Table 5: Frequency distribution of response to medical therapy in appendicular mass according age

Age	Yes (+)	No (-)	Total
Non-elderly	42 (98.0%)	1 (2.0%)	43
Elderly	17 (80.0%)	4 (20.0%)	21
Total	59 (92.1%)	5 (7.9%)	64 (100%)

female like the finding of Eriksson and Styrd (1998) and Erdogan *et al.* (2005). The reason with the lower rate of appendicular mass in female may be related to early diagnosis of the disease in female because they are very sensitive to pain. The high rate of complication in male may be related to delay diagnosis due to consumption of opiate compound in some people that relief their pain and involvement to job and causing complication.

Similar other reports in this study from 1140 acute appendicitis, 9% cases were elderly and 59% elderly appendicitis was perforated and 21 elderly had appendicular mass. In other study by Aluminous incidence of elderly was 14%.

The mean age of the patients was similar to the report of Eriksson and Styrd (1998) and was higher the report of Gronoos which was 31 years for non-elderly and 67.5 years for elderly patient. Range of elderly age in the study was 60-81 years and was similar to the report of

researchers (Erdogan *et al.*, 2005; Okafor *et al.*, 2003; Kraemer *et al.*, 2000). The proportion of female to male in elderly patients was more than non-elderly ($p < 0.05$). The detection of higher mass lesion in elderly women in this study may be due to higher body weight and deposition of fat in their abdomen. This reason may delay the diagnosis of acute appendicitis.

Anorexia, RLQ pain and vomiting were the most common symptoms in the study and was similar to the report of Pious (Lai *et al.*, 2006). In the study, incidence of symptoms in elderly patients were lower than that non-elderly that may be related to aging, impairment of immunity of system, atypical features and many differential diagnosis ($p < 0.05$) (Table 3).

Although, tenderness and rebound tenderness were the most common signs in total cases (elderly and non-elderly) but was not significant between elderly and non-elderly patients. By physical exam, we found mass in 64% cases and were much lower than the report of Kim *et al.* (1998) which was 100%. The lower rate of mass in the study may be due to non recording of physical exam (mass) in medical files.

Detection of mass in elderly patients was higher than the nonelderly ($p < 0.05$) because the loss of muscle tissue with aging, increase the accuracy and probability of detection of mass in physical exam. Appendicular mass in rural patient, significantly was more than urban patient ($p < 0.05$) that may be due to:

- The distance from village to city, lack of access to vehicles, undesirable road conditions
- Low knowledge of rural population
- Insufficient knowledge of health practitioners in health care centers located in rural places (Khorasani and Pasha, 2009)

The median duration of hospitalization in the cases was 7 days like the report of Pious (Goh *et al.*, 2005). Duration of hospitalization in patient with long time abdominal pain (> 7 days), significantly was more than the patient with abdominal pain < 7 days ($p = 0.01$). Medical therapy with two or three antibiotics caused cure rate in 59 (92.1%) cases without any differences for duration of hospital stay in these two groups.

In this study, medical therapy was not successful in 7.9% (4 elderly, 1 non-elderly) cases and emergency surgery (appendectomy+drainage or alone drainage) was performed (Table 5). Pius performed delayed appendectomy plus medical treatment in 60% of their cases and in 6.7% cases appendectomy was performed emergently (Goh *et al.*, 2005). The lower rate of response

to medical therapy in elderly patient rather than to non-elderly may be due to aging, co-morbidity, impairment of immunity of system, etc.

CONCLUSION

Anorexia, vomiting, rebound, tenderness and mass lesion are the most clinical and physical finding. Duration of hospitalization in patient with long time abdominal pain (> 7 days), significantly was more than the patient with abdominal pain < 7 days. First line in treatment of appendicular mass in most of patient (elderly and non-elderly) is medical treatment alone.

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