

ACUTE ABDOMINAL SURGICAL EMERGENCY IN ELDERLY PATIENTS (A PROSPECTIVE STUDY)

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Background: Longer life expectancy has created an increasing demand for surgical care of the elderly. In addition, abdominal surgical emergencies are potentially serious and life threatening for this age group of patients.

Aim: The aim of this study is to know the type of common surgical abdominal emergencies, mode of treatment, complications and outcome in elderly patients.

Patients and methods: One hundred patients aged 60 years and above who had been admitted to the surgical department in Basrah General Hospital were prospectively evaluated according to the demographic features, causes of abdominal emergencies they presented with, post operative clinical course and outcome.

Results: Out of 100 patients included in the study 60% were males and 40% were females, with an average age of 67.39 years (range from 60-83 years). The causes of acute surgical abdominal emergencies were intestinal obstruction (55%), hollow viscus perforation (17%), acute cholecystitis (12%), mesenteric vascular occlusion (9%), and acute appendicitis (7%). Most of the cases of intestinal obstruction were due to adhesion, while perforated DU was the main cause of hollow viscus perforation. Twenty patients (20%) died in the early post operative period with mesenteric vascular occlusion being the leading cause of death (35%).

Conclusions: Acute intestinal obstruction and hollow viscus perforation appear to be the main causes of acute abdominal surgical emergencies. Obstructed hernia which constituted 14% of the causes is generally preventable. Acute mesenteric ischaemia and bowel obstruction secondary to colonic tumour had a worse prognosis in elderly patients.

INTRODUCTION

Management of surgical illness in geriatric patients is different from that in younger patients and typically more complex. Assessment of surgical problems and physiologic status of elderly must take into account the marked variability of the changes associated with advancing age, both among individuals and among different organ systems in an individual, changes in the incidence, prevalence, and natural history of certain disease processes, and the increased likelihood of multiple medical diagnoses and polypharmacy.^[1] These factors and others may alter the presentation of surgical illness. Symptoms may be diminished in intensity, nonspecific, indirect, or atypical and therefore may be inappropriately ignored or attributed simply to advanced age. Patients may postpone seeking medical attention, or physicians may fail to recognize the gravity of an acute surgical condition if pain, fever, and acute-phase response are blunted. Furthermore, it may be difficult to obtain the details of the history if the patient is cognitively impaired (demented or delirious) or suffers from hearing loss. Unfortunately, as a result of this complexity and the increased likelihood of emergency presentation, hospitalized elderly patients are at significantly higher risk for preventable adverse

events and their consequences.^[2-4] Both the potential benefits and the risks of surgical treatment are more difficult to assess in elderly persons. Assumptions about physiologic status and primary treatment goals that are reasonable in younger patients may not be appropriate in elderly patients. Often, the major concern of elderly patients is whether or not they will be able to enjoy an independent life after surgery, to at least the extent they did before. Consequently, such patients may find a radical procedure that offers potential cure less desirable than a more conservative procedure (or endoscopic, percutaneous, or non operative treatment) that relieves pain or other symptoms, largely restores functions, and allows a return to normal surroundings. On the other hand, an early aggressive approach may obviate later procedures and prevent associated morbidity. A thorough knowledge of treatment alternatives and their risks, a close familiarity with natural history of the disease in relation to life expectancy, and a clear understanding of the patient's goals are paramount in surgical decision making in older persons.^[5-7] The causes, frequency and consequences of non traumatic abdominal surgical emergencies differ greatly according to patient age. Emergency surgery may be life threatening in the older

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person with severe concomitant systemic disorder and this abdominal emergency merits more careful evaluation than in younger patients. Life expectancy has increased significantly and it may consequently be expected that demand for surgical care of the elderly is rising and will rise in the future.^[2,8] This study discusses the type of abdominal surgical emergencies, mode of treatment, and outcome in elderly patients in Basrah (Iraq).

PATIENTS AND METHODS

This is an observational prospective study of patients with acute surgical abdominal emergencies (traumatic cases excluded) aged sixty years and above admitted to Basrah General Hospital, department of surgery from January 2006 to November 2008. A total number of 100 elderly patients with acute surgical abdominal emergencies included in this study. They were divided into three age groups, first age group between 60-69 years, the second between 70-79 years and the third 80 years and above. Data were collected by a designed questionnaire for all patients. Demographic features, causes, post operative clinical course were analyzed as main criteria. Diagnosis of acute abdomen was done clinically depending on good history taking and thorough physical examination, aided by investigations like x-ray, ultrasound and CT scan examinations.

RESULTS

The mean age of the patients was 67.39 (range from 60-83) years, males were 60% and females were 40%. The first age group included 53(53%) patients, the second included 39(39%) patients and 8(8%) patients were in the third group. Significant gender difference was seen between the three age groups, males outnumbered females in first and second age groups while they were equal in octogenarians (Table-1).

Table 1. Demographic features of the patients.

Age groups (years)	Patients No.	Mean age (years)	Males No. (%)	Females No. (%)
60 - 69	53	62.15	33(62.2)	20(37.7)
70 - 79	39	71.76	23(58.9)	16(41.02)
80 +	8	80.75	4(50)	4(50)
Total	100	67.39	60(60)	40(40)

The main causes of abdominal surgical emergencies in this study were intestinal obstruction (55%), hollow viscus perforation (17%), acute cholecystitis (12%), mesenteric vascular occlusion (MVO) (9%) and acute appendicitis (7%) (Table-2).

Table 2. The causes of acute abdominal surgical emergencies.

Causes	60-69 yrs No. %	70-79 yrs No. %	80+yrs No. %	Total No.
Intestinal obstruction	31(56.3)	20(36.3)	4(7.3)	55
Perforated hollow viscus	8(47)	6(35.3)	3(16.6)	17
Acute cholecystitis	7(58.3)	5(41.7)	-	12
MVO	5(55.5)	4(44.4)	-	9
Acute appendicitis	2(28.6)	4(57.1)	1(14.2)	7
Total	53	39	8	100

Intestinal obstruction occurred in 55% of the total number of patients. Adhesion was found in 15(27.3%) patients, and mainly seen in age group 2; it affects males more than females. All patients gave history of previous abdominal surgeries and small bowel was involved in majority of cases. Obstructed abdominal wall was observed in 14(25.5%) patients, inguinal hernia seen in 7(50%) patients, para umbilical hernia found in 4(28.5%) patients, while each of epigastric, incisional and femoral hernias seen in 3 different patients. Small bowel obstruction was found in 2(14.2%) patients; one with incisional hernia and the other with inguinal hernia. All hernia patients were already aware of their external abdominal hernia. Ten (18.2%) patients had colonic tumour forming the third cause of bowel obstruction in elderly patients (60 years and above), with male: female ratio 6:4; seven (7%) patients were in first age group and the rest three (3%) patients were in second age group. The sigmoid colon was affected in 50% of patients, the transverse colon in 20% of

patients, and the caecum, ascending colon, and splenic flexure equally affected in 10% of patients. Sigmoid volvulus was seen in seven (12.7%) patients, affecting 5 males in age group 1 and two males in second age group. Pseudocolonic obstruction was found in six (10.9%) patients of bowel obstruction, affecting males and females equally and also seen mainly in age group 1. Two (3.6%) patients with bowel obstruction were caused by bands obstructing the small bowel and one patient had benign jejunal tumour which was removed successfully (Table-3).

Table 3. Distribution of intestinal obstruction in aged patients.

Causes	Age groups			
	60-69 No. %	70-79 No. %	80+ No. %	Total No. %
Adhesion	7(22.58)	7(35)	1(25)	15(27.3)
Obstructed hernia	6(19.35)	5(25)	3(75)	14(25.5)
Colonic tumour	7(22.58)	3(15)	-	10(18.2)
Sigmoid volvulus	5(16.12)	2(10)	-	7(12.7)
Pseudo obstruction	4(12.9)	2(10)	-	6(10.9)
Bands	1(3.22)	1(5)	-	2(3.6)
Small bowel tumor	1(3.22)	-	-	1(1.8)
Total	31(100)	20(100)	4(100)	55(100)

Hollow visceral perforation forming the second main cause of acute abdomen in elderly. Perforated duodenal ulcer(DU) was found in more than half of the cases as seen in 9(52.9%) patients, four(23.5%) patients had perforated appendix, two (11.8%) patients had perforated gastric ulcer(GU), while there were two patients with perforated viscus, one patient had perforated sigmoid colon and one patient had perforated terminal ileum (Table-4).

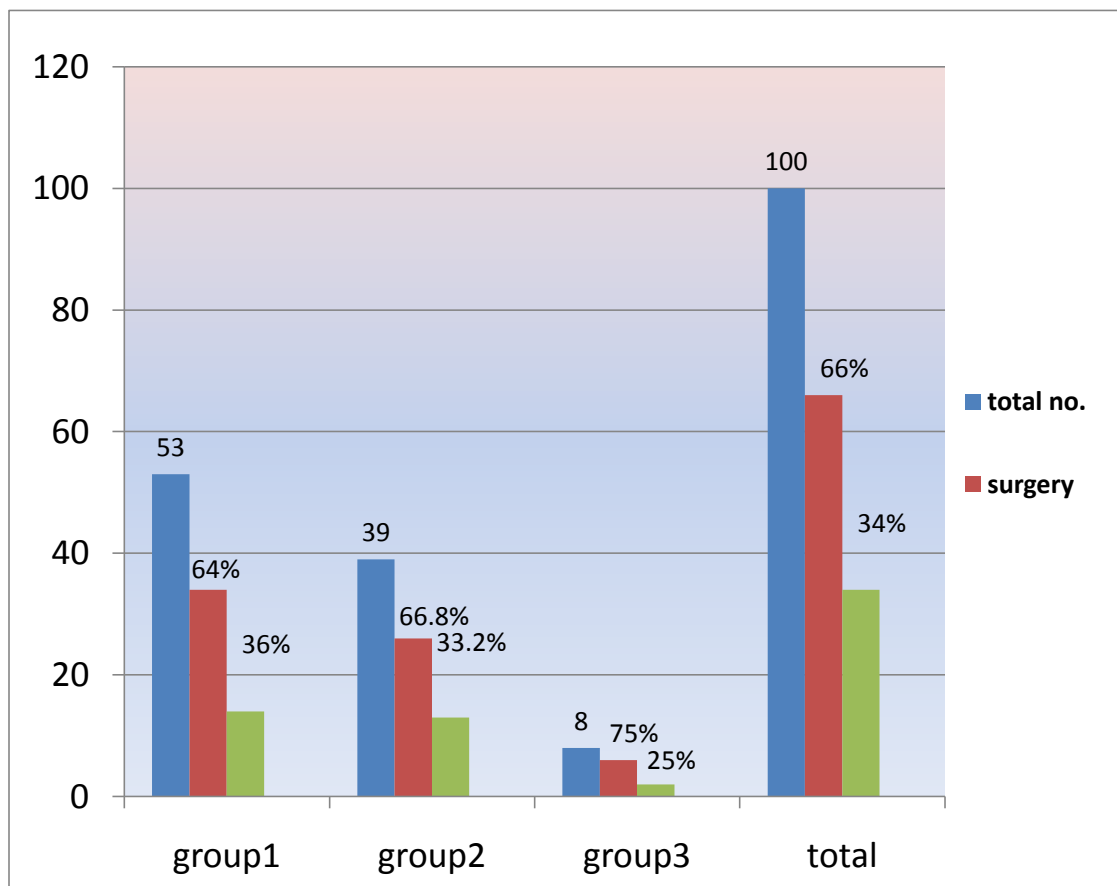
Table 4. Distribution of hollow visceral perforation in aged patients.

Hollow visceral perforation	Age groups (years)			
	60-69	70-79	80+	Total (%)
DU	4	3	2	9(52.9)
Appendix	3	1	-	4(23.5)
GU	-	2	-	2(11.8)
Ileum	1	-	-	1(5.9)
Sigmoid	-	-	1	1(5.9)
Total	8	6	3	17(100)

Acute cholecystitis was seen in 12(12%) patients, ten (83.3%) patients had calculous cholecystitis and 2(16.7%) patients had acalculous cholecystitis, male :female ratio was 2:10; all cases of calculous cholecystitis had ultrasonic confirmation of gallstones.

Mesenteric vascular occlusion was seen in 9(9%) patients in which intestinal gangrene occurred in the small bowel. A total of 72 emergency operations were performed on 66 patients, four patients needed a second surgery while one patient needed three explorations for post operative complications (Figure-1).

No. of patients



Group

Fig1. Mode of treatment.

The length of hospital stay ranged from 1-15 days, forty nine (49%) patients remained in hospital for 4-7 days, thirty nine (39%) patients remained for 1-3 days and those with complications remained up to 2 weeks. Fifty four (54%) patients had history of chronic medical diseases, thirty (55%) patients of them

had single concomitant disease like {HT,DM,IHD and bronchial asthma}, the other 24(45%) patients had more than one disease. Forty six patients had no previous chronic medical illness(Table-5).

Table 5. Patients with systemic diseases.

Type of systemic disease	No.	%
HT(Hypertension)	17	31.4
IHD(Ischemic heart disease)	6	11.11
DM(Diabetes Mellitus)	5	9.2
IHD+AF(Atrial Fibrillation+HT)	5	9.2
IHD+AF	4	7.4
HT+IHD	4	7.4
IHD+HT+BA	3	5.55
IHD+AF+DM	2	3.7
HT+DM	2	3.7
CRF(Chronic Renal Failure)+HT	1	1.8
HT+IHD+CVA(Cerebro Vascular Accident)+DM	1	1.8
DM+IHD	1	1.8
CVA+HT	1	1.8
BA (Bronchial Asthma)	1	1.8
CML(Chronic Myeloid Leukemia)	1	1.8
Total	54	100

Twenty six (26%) patients developed operative complication encountered and wound postoperative complications. Cardiac infection was the second main complication complications were the most serious post- (Table-6).

Table 6. Post operative complications.

Complications	Age groups			
	60-69 No.(%)	70-79 No.(%)	80+ No.(%)	Total No.(%)
Cardiac complications	5(9.43)	3(7.69)	2(25)	10(38.46)
Wound infection	1(1.8)	4(10.2)	2(25)	7(26.9)
Wound dehiscence	3(5.6)	-	-	3(11.5)
Chest infection	1(1.8)	1(2.5)	1(12.5)	3(11.5)
CVA	-	-	1(12.5)	1(3.8)
Pelvic abscess	1(1.8)	-	-	1(3.8)
Septicaemia	1(1.8)	-	-	1(3.8)
Total	12(23)	8(20.2)	6(75)	26(100)

Twenty (20%) patients died postoperatively and the causes are shown in Table-7.

Table 7. Causes of surgical emergencies and rate of mortality.

Abdominal emergency	Mortality No. (%)	Rate in fatal cases No. (%)
MVO (Mesentric vascular occlusion) (no=90)	7(77)	7(35)
Colonic tumour (n=10)	4(40)	4(20)
Obstructed hernia (n=14)	3(21)	3(15)
Adhesion (n=15)	2(13)	2(10)
Perforated viscous (n=17)	2(11.76)	2(10)
Sigmoid volvulus (n=7)	1(14)	1(5)
Pseudoobstruction (n=6)	1(16.6)	1(5)
Total (n=100)	20(20)	20(100)

DISCUSSION

This study showed that over a three year period a considerable number of elderly patients needed emergency abdominal surgery. The number of elderly people requiring surgical management is continuously rising, secondary to the significant increase in life expectancy in recent times.^[2] In general, 65 years of age accepted as a baseline for geriatric surgery.^[9] Surgery may be performed on the elderly in an unfavourable clinical situation as an emergency and the consequent increase in operative and post-operative morbidity considerably affect the patients clinical course and outcome.^[2] This study showed that male patients underwent emergency abdominal surgery more than female patients, which is also reported in other similar studies.^[2,3,10] Intestinal obstruction is the most common surgical emergency in this old age group. Previous studies have also reported similar findings.^[10] This study showed that adhesive intestinal obstruction were the most frequent etiology among cases of intestinal obstruction. It was recently reported that the frequency of intestinal obstruction is (15-20%) in elderly with surgical emergency,^[2] while in our study intestinal obstruction representing (55%) of cases; this may be attributed to increasing incidence of colonic tumour or postponing elective surgery of hernia,^[11] and adhesions from previous laparotomies due to

war injuries. In general bowel obstruction due to post-operative adhesions is the leading cause of intestinal obstruction,^[12] and similar result was found in our study. It was observed that large bowel obstruction accounted for one third of our cases. Obstructed hernia is another common cause of surgical emergencies in older people; Its rate rises with increasing age and more frequently encountered in octogenarians. Its frequency was reported as 25% in previous studies, with even higher rate of 36.4% among surgical emergency in elderly patients.^[2] All our patients were aware of the presence of an external hernia for a long time before the occurrence of obstruction which suggests that irreducible hernia is a preventable surgical emergency. Elective surgical management of abdominal hernias at an appropriate time can prevent an emergency in the majority of hernia cases. Irreversible bowel ischemia observed in 2 patients of the hernia cases in our study, similar results were reported by Gurleyik et al,^[2] who also reported that 25% of hernia presented with strangulation and 14% contained gangrenous bowel segment and mortality occurring mainly in elderly patients which is also found in our patients. Malignant intestinal obstruction, was observed as a third common cause of bowel obstruction in our patients, same findings were reported in previous studies.^[2,5,13] Obstructive

malignancy have been reported as an advanced age related pathology in many previous studies.^[5,13] This study showed that hollow viscus perforation takes second place in surgical emergencies of older patients, the leading cause was peptic ulcer perforation. Perforated appendix, gallbladder and diverticulum also appeared as age related cause of secondary peritonitis in our elderly patients. Our evaluation of the clinical course revealed that free perforations in the peritoneal cavity and abdominal sepsis have a worse outcome, and still carry a considerably high rate of mortality in advanced age. Older patients with secondary peritonitis extending over the entire abdomen and a greater degree of physiologic compromise are at higher risk for complications and mortality.^[2,14] This study showed that acute cholecystitis constituting 12% of acute abdominal surgical emergencies of older people. In other studies acute cholecystitis accounting for up to 36% with a range of 17-36% of cases.^[15-18] Gallstones have been previously detected in approximately half of our patients with calculous cholecystitis, which indicates the need to focus attention on elective surgery for symptomatic and asymptomatic cholelithiasis to prevent carcinoma and complications. The diagnosis and elective removal of symptomatic gallbladder containing gallstones may result in a clear reduction in the rate of acute infectious complications due to gallstones in older people. Removal of gallbladder at a proper time following diagnosis of symptomatic gallstones eliminates the needs for surgery in advanced age for complications of cholelithiasis.^[19] Mesenteric vascular occlusion is an expected surgical emergency in elderly, especially in those with cardiovascular disorders. This study showed that the incidence of MVO is 9% which is very close to other studies which reported that the frequency of acute mesenteric ischemia is below 10%.^[2] The clinical course and outcome is disastrous and worse than any other abdominal emergency. Our results suggested that surgical treatment is very limited and rarely successful once massive bowel gangrene has occurred due to mesenteric vascular occlusion. Mamode et al,^[20] had close findings, with

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mortality rate of 81%. The present study showed that acute appendicitis, when occurred in the elderly had a higher perforation rate, which was found in 66.6% of patients. This rate is more than that reported by Gurleyik et al.^[2] Abdominal sepsis secondary to appendical perforation can increase morbidity and mortality.^[21-24] No fatal outcome was observed due to perforated appendicitis in this study although in large series, mortality secondary due to perforated appendicitis in the elderly has reached up to 12%.^[21,23] Another point to consider is relaparotomies. Relaparotomies were performed for surgical treatment of post-operative complications in 5% of our patients, other studies found a 4.5-5.5% incidence of reoperations for complications after emergency surgery in the elderly.^[2,14]

In our study, wound dehiscence and pelvic collections were complications leading to relaparotomies. The most important consideration following emergency abdominal surgery is mortality. A considerable number of older patients have pre-existing concomitant diseases, which might increase operative risk. In large series of elderly having abdominal emergency, more than half of patients had serious co-morbidity prior to emergency operations,^[7,8] more or less the same result was observed in our patients. Mortality is higher in the elderly who underwent emergency operations and the overall mortality has been reported as between 5.3% and 25% in different series.^[4,7,13,25] Detailed analysis of abdominal emergency with higher risk of mortality showed that acute mesenteric ischemia, intestinal obstruction, obstructed hernia and visceral perforations were the leading causes of fatal outcome. Emergency surgery was relatively safe for the remaining patients with other causes of acute abdominal emergency.

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