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Clinical and Clinico-pathological Impacts of Upper Gastrointestinal Bleeding in Elderly Egyptian Patients

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Abstract:*Gastrointestinal (GI) bleeding in elderly is a common problem with numerous causes. The study included 120 patients who attended gastrointestinal endoscopic unit, SayedGalal Hospital, Al-Azhar University, Cairo, Egypt suffering from upper gastrointestinal bleeding. Patients were divided into 2 groups (n=60): Group I: below 55 and Group II: above 55 years. Sixty percent of elderly group presented with hematemesis and melena while 40% with melena. The present study revealed that esophagealvarices were responsible for 45% deaths of elderly patients with upper gastrointestinal bleeding. In an attempt to predict the factors which affect the prognosis or outcome of patients with acute variceal bleeding in elderly patients, it was found that patients aged 65 years or less had significant good prognosis and outcome than above 65 years. As regards the residence, history of bilharziasis and Hepatitis C virus (HCV) infection in elderly group, there was a significant relation between them and complications of upper gastrointestinal bleeding (rebleeding and death). Presentation as hematemesis and/or melena had insignificant effect on the prognosis and mortality. There was no significant difference between elderly group I and middle aged group II with respect to white blood cell (WBC) or red blood cell (RBC)`counts. Moreover, hemoglobin and platelets counts did not differ. Liver and kidney functions also did not show any significant difference between the two groups.*

Keywords: *GI bleeding,Predicting factors, Endoscopy, Laboratory analysis*

I. Introduction

Acute upper gastrointestinal bleeding is the most common emergency managed by gastroenterologists. It has an incidence ranging from approximately 50 to 150 per 100 000 of population each year, the incidence being highest in areas of lower socioeconomic status (Rockall et al., 1995). Most deaths occur in elderly patients who have a significant co-morbidity and the majority were inevitable despite improvement in medical and surgical expertise (Holman et al., 1990). In Egypt, it has been shown that bleeding oesophageal varices is the most common cause of upper gastrointestinal bleeding and that it represented 51.6%of cases followed by bleeding duodenal ulcer (15.5%) (Zakaria et al.,1987). It has been reported that oesophageal varices are the most serious complication of liver cirrhosis (Frank et al., 2000). Peptic ulcer bleeding continues to pose challenging problems for clinicians. Despite a general decrease in the incidence of ulcer disease, the incidence of bleeding is increasing. Since the mid twentieth century, peptic ulcer mortality declined in young and middle-aged subjects yet, mortality in elderly age remained unchanged or even increased (Gompertz et al., 1992). Acute gastrointestinal bleeding remains as the major cause of morbidity and mortality in elderly (Yacyshyn and Thomson, 2001) and it continues to be the frequent cause of hospital admission (Cello 2000, Belohlavek et al., 2001). Acute bleeding from upper gastrointestinal tract may be classified as primary occurring prior to admission to hospital and secondary which occurs after admission to hospital for other causes (Rollhauser and Fleischer, 1997). Mortality of 14% (11% in emergency and 3% in hemorrhage in inpatients) has been reported (Rockall et al., 1995). In emergency admission, 65% of deaths in patients aged less than 80 years were associated with malignancy or organ failure at presentation. Mortality rate for patients under 60 years in the absence of malignancy or organ failure at presentation was 0.8%. The rate of upper gastrointestinal hemorrhage in males was found to be twice in females (Longsteth, 1995). In another study (Rockall et al., 1995), 56% of cases were males. Regarding age distribution, the incidence rose sharply with increasing age being 5.7 times higher among those over 75 years old than those aged 15- 29 (Blatchford et al., 1997) and a population based survey showed that the incidence of hospitalized gastrointestinal bleeding among older patients was 6,8 / 1000persons / year (Kaplan et al., 2001). Cause of bleeding in the old were according to the frequency: Gastric

ulceration, esophageal ulcers and erosions followed by duodenal ulcerations, gastric ulcers, Mallory –Weiss syndrome and esophago-gastric varices (Nishida et al., 1992). Among patients with upper gastrointestinal bleeding, older age is associated with an increased rate of co-morbidity, greater medication use and atypical clinical presentations (Farrell and Friedman, 2001). The aging of population makes evaluation and management of upper gastrointestinal bleeding a special and increasingly common clinical challenge which includes hemodynamic resuscitation, anticoagulation, medical, surgical and endoscopic therapy. Gastric cancer has been reported as a major cause of upper gastrointestinal bleeding (Grabowski et al., 2006; Ishido et al., 2010; Nishide et al., 2012; Man et al., 2013). In Egypt, the most common cause of upper gastrointestinal bleeding is esophagealvarices. The incidence of bleeding as reviewed by many authors was estimated to be 77% (Khalil and Fadali, 1962), 75% (Madwar, 1979) and 35% (El-Zayadi et al., 1981).

Gastrointestinal bleeding is a known complication of renal failure, however, its pathogenesis remains uncertain (Shirazian and Radhakrishnan, 2010). Some have attributed gastrointestinal bleeding to the effects of uremia on the gastrointestinal mucosa, others have suggested that uremia may affect platelet adhesiveness, which may explain the prolonged gastrointestinal bleeding seen in patients with renal failure. In addition, the role of heparinization and the widespread use of antiplatelet agents in patients on dialysis have been implicated in the etiology of gastrointestinal bleeding. A 66-year-old woman treated with Dabigatran (150 mg twice daily for 2 months) for atrial fibrillation developed acute renal failure and upper gastrointestinal bleeding (Wychowski and Kouides, 2012). On admission, laboratory values included serum creatinine 3.6 mg/dL, hematocrit 21%, and international normalized ratio greater than 10. She was treated with packed red blood cells, prothrombin complex concentrate, and multiple sessions of dialysis. There were no further bleeding events or additional transfusions for the remainder of the hospitalization. In renal failure, there can be substantial bleeding, putting a person at risk of death or other serious problems such as anemia (loss of iron), hypovolemia (the heart's inability to pump enough blood), shock, dehydration, and chest pain (Hil, 2012). Moreover, patients with future bleedings included viral hepatitis or alcoholic etiology, advanced-stage cirrhosis, decreased liver function, impaired hemostasis and endoscopic presence of varices (Tacke et al., 2007). These parameters were also independent predictors of bleedings. The present study aims to investigate the outcome of upper gastrointestinal bleeding in elderly Egyptian patients with respect to clinical variables.

II. Materials and Methods

2.1 Subjects and Groups

The study included 120 patients who attended gastrointestinal endoscopic unit, SayedGalal Hospital, Al-Azhar University suffering from upper gastrointestinal bleeding. Patients were divided into 2 groups of 60 each:

Group I : Elderly (40 males, 20 females) aged > 55 years.

Group II : Middle age group (36 males, 24 females) aged < 55 years.

2.2 Clinico-pathological investigations

All individuals in this study were submitted to complete history taking, detailed history for haematemesis or melena, general examination, abdominal examination for the state of liver (hepatomegaly or shrunken), splenomegaly and/or ascites, abdominal ultrasonography for detection of liver cirrhosis, splenomegaly and / or ascites, upper endoscopy, complete blood count, liver function tests including serum albumin, bilirubin, prothrombin concentration, aspartate transaminase (AST) and alanine transaminase (ALT). Blood urea and serum creatinine tests were performed for kidney functions. All data were statistically analyzed for the values of significance.

III. Results and Discussion

Most cases with variceal bleeding (20 out of 33 i.e. 60.61%) were Child C according to Modified Child`s classification (Table 1).

Table 1. Modified Child`s classification in cases with variceal bleeding in Group I

Modified Child	Number	%
Child A	3	9.09
Child B	10	30.31
Child C	20	60.61
Total	33	100

There was significant relation between complications (rebleeding and death) and Child`s classification, residence, history of bilharziasis and HCV infection. Most of cases in Child `s C died, most of rural cases rebled or died, most of bilharzial cases rebled or died and most of HCV +ve cases died (Table 2). As regards the relation between modified Child`s classification and HCV infection in elderly patients presenting with

varicealbleeding, no significant relation was found (Table 3). For the residence, there was high significant difference between urban and rural patients with variceal bleeding in rural areas (75.75%) in contrast to 74% non variceal bleeding in urban patients (Table 4). Proceeding further, the outcome of upper gastrointestinal bleeding in both variceal and non variceal patients was investigated in elderly group of patients demonstrating a high significant increase in deaths among variceal cases (45.5%) in comparison to 7.4% in non variceal cases (Table 5). There was no significant difference between group I and group II as regards white blood cell, red blood cell` counts, hemoglobin and platelets (Table 6). Moreover, liver (Table 7) and kidney (Table 8) functions did not show any significant difference between both groups. In general, lower figures were reported for all hematological parameters in elderly than in middle aged group. As regards liver functions, ALT, serum bilirubin and prothrombin concentration were higher while AST and serum albumin were lower in group I. Concerning kidney functions, both serum creatinine and blood urea were higher in group I although the values were within the normal range. Gastrointestinal bleeding in elderly is a common problem having numerous causes. Its diagnosis and treatment requires careful and systematic approach by physicians with special experience. Complications of liver cirrhosis are frequent in elderly patients due to increased life expectancy and better management of cirrhotic patients (Reinus and Brandt, 1990). Most deaths occur in elderly patients who have significant co-morbidity and the majority is inevitable, despite improvement in medical and surgical expertise (Holman et al., 1990).

Table2. Risk factors affecting outcome of variceal bleeding

	Number	Rebleeding		Deaths		Free		X^2	P
		Number	%	Number	%	Number	%		
Child's									
A	3	0	0	0	O	3	100	6.68	<0.05
B	10	3	30	4	40	3	30		
C	20	9	45	11	55	0	0		
Residence									
Urban	8	2	25	1	12.5	5	62.5	14.31	<0.05
Rural	25	0	40	14	56	1	4		
Sex									
Male	21	9	40	10	50	2	10	2.28	>0.05
Female	12	3	30.7	5	38.5	4	30.8		
Haemoglobin									
<8	25	10	40	12	48	3	12	2.69	>0.05
>8	8	2	25	3	37.5	3	37.5		
Presentation									
Melena	7	4	57.1	3	42.9	0	0	2.68	>0.05
Haematemesis+Melena	26	8	30.8	12	46.2	6	23		
History of bilharziasis									
Absent	10	3	30	2	42.9	0	0	2.68	>0.05
Present	23	9	39.1	13	46.2	6	23		
Unit of blood transfusion									
1-2	27	10	37.1	11	40.7	6	22.2	2.08	>0.05
3-5	6	2	33.3	4	66.7	0	0		
Grades of varices									
<IV	19	9	47.4	7	36.8	3	15.8	4.23	>0.05
IV	14	3	21.4	8	57.2	3	21.4		
HCV									
Positive	24	10	41.7	13	54.2	1	4.1	11.66	<0.001
Negative	9	2	22.2	2	22.2	5	55.6	11.66	<0.001

P value>0.05 was considered insignificant, <0.05 significant &<0.001 highly significant.

The majority of patients in our elderly group were males (66,67%). This can be explained by the fact that in Egypt males are more exposed to bilharziasis and viral hepatitis than females. On the contrary, in England, bleeding in elderly was in 50% for both sexes which can be explained by chronic liver disease due to excess alcohol consumption in both sexes (Kelly et al., 2001). In the present investigation, 60% of elderly group presented with hematemesis and melena while 40% with melena which is contrary to earlier findings (Skok, 1998) where 50% suffered from melena. Our results can be explained from the fact that most of our cases bled from esophageal lesion while in the former, most of the cases bled from duodenal ulcer.

Table 3. Relation between modified Child`s classification and HCV in Group I with variceal bleeding

Modified Child	HCV positive		HCV negative		Total
	Number	%	Number	%	
Child A	1	4.16	2	22.2	3
Child B	6	25	4	44.4	10
Child C	17	70.8	3	33.3	20
Total	24	100	9	100	33
X^2 4.68			P>0.05		

P value>0.05 was considered insignificant.

Table 4. Residence of Group I with variceal bleeding in comparison with non variceal group

Residence	Variceal (33)		Non variceal (27)	
	Number	%	Number	%
Urban	8	24.24	20	74
Rural	25	75.75	7	26
Total	33	100	27	100
X^2 14.82		<0.001		

P value <0.001 was considered highly significant.

Table 5. Outcome of upper gastrointestinal bleeding in variceal and non variceal patients of Group I

	Variceal		Non variceal	
	Number	%	Number	%
Survival	18	54.5	25	92.6
Deaths	15	45.5	2	7.4
Total	33	100	27	100
X^2 3.82		P<0.001		

P value <0.001 was considered highly significant.

The present study showed that esophagealvarices were responsible for 55% of elderly patients with upper gastrointestinal bleeding. This result was higher than those reported earlier (Antler et al., 1981) who found that it represented 12% only. This variation in incidence of variceal bleeding between Egyptian and western countries may be attributed to the higher incidence of chronic liver diseases in Egypt with sequel of variceal bleeding. Several factors may contribute to this high incidence of liver diseases in Egypt including bilharzial infestation and viral hepatitis, especially virus C (15-20%) and hepatitis B (3,2%) (Zakaria et al., 1987).

Table 6. Comparison of haematological parameters between Groups I and II

Hematological parameters	Group I (60)	Group II (60)	t	P
WBC's (th./cmm)	2 - 18.7	4.1 - 10.8	1.71	>0.05
X±SD	6.98±3.01	7.24±2.89		
RBC's (m./cmm)	2.0 -8.0	2.8 - 5.3	0.56	>0.05
X±SD	3.26±1.89	3.97±1.67		
Haemoglobin (gm%)	6.0 -14	7.2 -14	1.81	>0,05
X±SD	8.74±1.78	9.75±2.03		
Platelets (th./cmm)	30 -400	72 - 378	1.77	>0,05
X±SD	173 ±75.3	198±79.27		

P>0.005 was considered non significant
WBC's = White Blood Cells RBC's = Red Blood Cells

Table 7. Comparison between Group I and II in liver functions

Hematological parameters	Group I (60)	Group II (60)	t	P
WBC's (th./cmm)	2 - 18.7	4.1 - 10.8	1.71	>0.05
X±SD	6.98±3.01	7.24±2.89		
RBC's (m./cmm)	2.0 -8.0	2.8 - 5.3	0.56	>0.05
X±SD	3.26±1.89	3.97±1.67		
Haemoglobin (gm%)	6.0 -14	7.2 -14	1.81	>0,05
X±SD	8.74±1.78	9.75±2.03		
Platelets (th./cmm)	30 -400	72 - 378	1.77	>0,05
X±SD	173 ±75.3	198±79.27		

P>0.005 was considered non significant
AST = Aspartate aminotransferase, ALT = Alanine aminotransferase

Table 8. Comparison between Group I and II in kidney functions

Kidney Function	Group I (60)	Group II (60)	t	P
Urea	19 -150	20 - 50	1.96	>0.05
X±SD	50.05±25	40.8±9.59		
Serum creatinine	0.5 -3	0.7 - 2.2	1.69	>0.05
X±SD	1.25 ±0.61	1.09±0.41		

P>0.005 was considered non significant

During the present investigations, most of theesophageal bleeders were Child`s C according to modified Child`s classification. The prevalence of HCV was higher in variceal bleeders Child`s C (70%) than those of Child`s A group (4.1%). 32.5% of schistosomal patients had seromarkers for HCV indicating the importance of hepatitis in the morbidity of schistosomiasis (Abdel-Wahab et al., 1993). The infection may also occur due to blood transfusion. In an attempt to predict the factors which affect the prognosis or outcome of patients with acute variceal bleeding in elderly patients, it was found that patients aged 65 years or less had significant good prognosis and outcome than above 65 years. The explanation could be that in the former group, the incidence of atherosclerosis, chest and cardiac diseases are less common than in the latter group (Antler et al., 1981). As regards the residence, history of bilharziasis and HCV infection in elderly group, there was a significant relation between them and complications of upper gastrointestinal bleeding (rebleeding and death). Presentation as hematemesis and/or melena had insignificant effect on the prognosis and mortality. In spite of the fact that no significant difference occurred in hematological parameters between elderly group I and middle aged group II, lower figures were reported in elderly than in middle aged group. This can be explained by the repeated attacks of bleeding due to advanced age. The liver functions too did not show any significant difference between both groups. Patients with good liver functions in elderly group evaluated by Child`s classification have good prognosis and less mortality (Bullimore et al., 1989). Moreover, patients with future bleedings included viral hepatitis or alcoholic etiology, advanced-stage cirrhosis, decreased liver function, impaired hemostasis and endoscopic presence of varices (Tacke et al., 2007).

IV. Conclusion

It maybe concluded that esophagealvarices were responsible for 45% deaths of elderly patients with upper gastrointestinal bleeding as compared to7.4% in non variceal cases. Thus, acute upper gastrointestinal bleeding remains a worldwide health problem with increasing morbidity and mortality and the present work provides useful information on the clinical manifestations of upper gastrointestinal bleeding in elderly Egyptian patients which maybe useful in future for clinicians.

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