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CLINICAL CHARACTERISTICS AND OUTCOME OF PATIENTS WITH UPPER GASTROINTESTINAL BLEEDING AT THE EMERGENCY DEPARTMENT OF A TERTIARY HOSPITAL IN NIGERIA

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ABSTRA CT

Background: **Upper gastrointestinal bleeding is a potentially life threatening condition with multiple causes. There is scarcity of health data depicting the clinical characteristics of the condition in African countries. This study was designed to describe the demographic, clinical characteristics and outcome of the patients who presented to our Emergency Department.**

Methods: **The records of cohort of all patients admitted with upper gastrointestinal tract bleeding from 1 January 2011 to 31 December 2012 were retrospectively reviewed from admission to discharge or death.**

Results: **There were 169 patients with median age of 44.0 years (range 13-89); 25 (15.0%) of them were known peptic ulcer disease patients. Most (69.2%) of the patients were males. The most common presenting symptom was haematemesis (34.9%) followed by melaena (16.6%). There was a history of NSAIDs use in 16.8% and alcohol ingestion in 12%. Upper Gastrointestinal Endoscopy was performed in 6.8% cases. Twenty-three (13.6%) patients died. There was association between mortality and diastolic blood pressure; more deaths (1/7; 14.3%) occurred in those with diastolic blood pressure > 90mmHg compared with ≤90mmHg (5/70; 7.1%) (P = 0.002). There were more deaths among patients who did not receive blood transfusion (4/40; 10.0%) compared with those who had blood transfusion (2/37; 5.4%) (P=0.008).**

Conclusions: **The common presentations were haematemesis and melaena, mainly in middle aged men with mortality in one out of seven patients. The high mortality may be due to co-morbidities and poor support services.**

Keywords: Upper gastrointestinal bleeding, Emergency department, Characteristics, Outcome.

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a potentially fatal, time-critical presenting complaint in the emergency department (ED).[1,2] The burden it presents can be compounded in resource poor settings, where patients often pay out-of-pocket for care, thereby hampering appropriate early intervention to determine the location and severity of bleeding. The incidence is approximately 1% of all ED admissions.[3] The increasing use of low dose aspirin and non-steroidal anti-inflammatory drugs (NSAIDs) may affect the incidence, age of presentation, site of bleeding and outcome of UGIB. NSAIDs cause gastrointestinal mucosa damage, ulceration and ulcer complication by the inhibition of endogenous prostaglandin synthesis via cyclo-oxygenase-1 enzyme.[4,5] Despite improvement in diagnosis and management such as the introduction of therapeutic endoscopies and interventional radiology, mortality remains high 5-10%.[6,7] There is a dearth of health data depicting the clinical characteristics of the condition in African countries. To the best of our knowledge, few studies have looked into ED presentations of UGIB in Nigeria hence we set out to describe the demographic, clinical characteristics and outcome of these cases.

METHODS

After obtaining institutional ethical approval, we retrospectively reviewed records of cohort of patients who presented to the ED of the University College Hospital, Ibadan, with UGIB between 1 January 2011 and 31 December 2012 from point of admission to discharge or death. This study was carried out at a university teaching hospital emergency department, which receives over 10,000 unrestricted emergencies annually with an admission rate of 47%. All medical, surgical, obstetric, gynaecological emergencies above 12 years as well as paediatric trauma cases were attended to at our centre, which serves as a referral

centre to other hospitals in the locality. UGIB refers to vomiting blood (haematemesis) or coffee-ground substance (melaenemesis) and/or black tarry stools (melaena). At presentation, initial evaluation was conducted to assess severity of bleeding, co-morbidities and risk factors. The patient's cardiovascular vital signs were recorded to assess haemodynamic stability and necessary resuscitation commenced. The data obtained from the departmental e-register included age, presenting symptoms, history of acid peptic disease, NSAID use, alcohol ingestion, time and duration of ED admission, discharge and admission to wards for further review or death. Information such as history of previous UGIB, co-morbidities, diagnostic endoscopy, duration of bleeding before presentation, haematocrit value at presentation, packed cell volume measurements are recorded in patient's case notes.

Data were analysed using Statistical Package for Social Sciences (*SPSS version* 17.0; Chicago, IL, USA). Simple descriptive statistics were used. Mean and standard deviation was generated for continuous variables, while chi-square test was used to explore the relationship between mortality and the demographic/clinical characteristics. P values <0.05 were considered statistically significant.

RESULTS

A total of 20, 939 patients of which 8281 were medical cases were seen over the study period. Among the medical cases, there were 169 patients with UGIB; this constituted 0.8 % of the total admission and 2.0% of the medical cases. Only 77 patients' files out of the 169 was found, so data on many variables were unavailable. The median age of patients with UGIB was 44 years (range 13 – 89) and 27.2% were ≥60 years. Most (69.2%) of the patients were male; with a male to female ratio of 2.3:1 (Table 1). The most common presenting symptom was haematemesis (34.9%) followed by melaena (16.6%). A high proportion (42%) presented at the ED during the afternoon shift, another 1/3 occurred during the 12-hour night shift. There was a positive history of NSAIDs ingestion within 24-48 h in 16.8% and alcohol ingestion in 12.0% (Table 2). The median hospitalisation period was 20 hours (range 1 – 93 hours). Upper gastrointestinal endoscopy (UGIE) was done only in 6.8% cases.

Twenty-three (13.6%) patients died; 44% within 5 hours of admission and a high proportion (47.8%) occurred during the night shift. Thirty-seven (21.9%) patients had blood transfusion, 15% had ≥2 units of whole blood. There was association between mortality and diastolic blood pressure (Table 3); more deaths (1/7; 14.3%) occurred in those with diastolic blood pressure >90mmHg compared to ≤90mmHg (5/70; 7.1%) (P = 0.002). There was significant association between mortality and blood transfusion; there were more deaths among patients who did not receive blood transfusion (4/40; 10.0%) compared with those who had blood transfusion (2/37; 5.4%) (P= 0.008).

Table 1: Demographic characteristics of patients with UGIB n=169

Age	n (%)
<20	7 (4.1)
20-29	27 (16.0)
30-39	44 (26.0)
40-49	23 (13.6)
50-59	22 (13.0)
≥60	46 (27.2)
Sex	
Male	117 (69.2)
Female	52 (30.8)

Table 2: Clinical characteristics and outcome of patients with UGIB n=169

Clinical characteristics	n (%)
Presenting complaints	
Haematemesis	59 (34.9)
Melaena	28 (16.6)
Coffee-ground vomitus (CGV)	26 (15.4)
Haematemesis + Alteration of consciousness	27 (16.0)
Haematochezia	21 (12.4)
Haematemesis and melaena	5 (2.9)
Haematemesis and haematochezia	3 (1.8)
Co-morbidities	
Chronic liver disease	20 (11.8)
Chronic kidney disease	3 (1.8)
Hypertension	11 (6.5)
Diabetes mellitus	7 (4.1)
Malignancies	6 (3.6)
Anaemia	7 (4.1)
Hypertensive + Diabetic	2 (1.2)
Previous history of PUD	25 (14.8)
Drug ingestion within 24-48 hours of presentation	
NSAIDs	28 (16.6)
Alcohol	20 (11.8)
Shift of admission	
Morning	42 (24.9)
Afternoon	71 (42.0)
Night	56 (33.1)
Outcome	
Admission	127 (75.2)
Discharge	19 (11.2)
Death	23 (13.6)

Table 3: Relationship between UGIB patients' characteristics and mortality

Variable	Total n	Died n(%)	Survived n(%)	P value
Mean age (SD) n=169	44.9 (17.6)	41.7 (17.2)	45.5 (17.7)	0.336
Sex n=169				
Male	117	18 (15.4)	99 (84.6)	0.313
Female	52	5 (9.6)	47 (90.4)	
Shift of admission n=169				
Morning	42	6 (14.3)	36 (85.7)	0.728
Afternoon	71	8 (11.3)	63 (88.7)	
Night	56	9 (16.1)	47 (83.9)	
Shift of outcome n=169				
Morning	38	5 (13.2)	33 (86.8)	0.784
Afternoon	45	5 (11.2)	40 (88.9)	
Night	86	13 (15.5)	73 (84.5)	
Co-morbidity n= 77				
Present	31	3 (9.7)	28 (90.3)	0.922
Absent	46	3 (6.5)	43 (93.5)	
History of PUD n=68				
Yes	19	0	19 (100)	0.366
No	49	5 (10.2)	44 (89.8)	
NSAIDs use n=77				
Yes	28	3 (10.7)	25 (89.3)	0.756
No	49	3 (6.1)	46 (93.9)	
Alcohol use n=77				
Yes	20	1 (5.0)	19 (95.0)	0.999
No	57	5 (8.8)	52 (91.2)	
Diastolic pressure n=77				
≤90	70	5 (7.1)	64 (92.9)	0.002
>90	7	1 (14.3)	6 (85.7)	
Had blood transfusion n=77				
Yes	37	2 (5.4)	35 (94.6)	0.008
No	40	4 (10)	36 (90.0)	

DISCUSSION

Upper gastrointestinal bleeding is traditionally defined as bleeding from the gastrointestinal tract that is proximal to the ligament of Treitz. It presents as haematemesis, melaena or less predictively as melaenemesis (coffee ground vomiting), and has had a stable mortality of 10% worldwide, in spite of several novel approaches to its treatment including the use of endoclot powder spray, tranexamic acid, interventional endoscopic procedures, among others.[8,9] Of the major causes such as oesophagitis, varices, PUD, erosive gastritis, variceal bleeding is known to carry a higher fatality than peptic ulcer disease. Over the twenty four month study period, we recorded one hundred and sixty nine cases of UGIB, suggesting an average annual presentation of 84.5 cases. These (169 patients) represent less than 1% of total emergency admission and about 2% of medical cases seen over the period. In a population-based study in the USA, it was estimated that 100 per 100,000 adults are hospitalised yearly, with incidence among men double that of women, and increasing incidence with age.[10,11] It is evident that male predominance, in a ratio of 2.3:1 is in consonance with previous studies.[3,7,10] However, about a quarter of our patients were above the age of 60 years, while the younger age groups constitute the majority, with the age group 30 - 39 alone accounting for 26%. The social and economic implications of this are grave, as they constitute the workforce in any viable economy. Atoba and Olubuyide in 1993 attributed the aetiology of acute UGIB at our centre to acute alcohol imbibition followed by NSAIDs[12] while in Ilorin, Nigeria, abuse of NSAIDs was the major implicated aetiological agent,[13] though the sample sizes were relatively smaller than ours. Our

finding showed that use of NSAIDs (16.8%) was the commonest risk factor followed by alcohol. This would suggest the need for more advocacy against the reckless use of NSAIDs, though the use of NSAIDs increase with aging due to some arthrodegenerative changes, cardiovascular, haematologic and oncologic use associated with normal aging process, and susceptibility of the aging gastric mucosa to injury, the so-called "aging gastropathy". The use of NSAIDs is a well-established risk factor for UGIB due to cyclo-oxygenase enzyme inhibition of endogenous prostaglandin synthesis making GI mucosa vulnerable to damage and ulceration, any amount can cause bleeding but risk increases with increasing dose. [5,14,15]

About half of our studied patients presented with haematemesis and coffee-ground vomiting (CGV) and less than one-fifth presented with melaena. Unlike the study reported by Olokoba *et al*[13] in Ilorin, Nigeria, haematemesis was the commonest presenting symptom in our cohort of patients. Co-morbid medical conditions such as malignancy, organ failure, respiratory disease, ischaemic heart disease and other major systemic diseases were known to increase mortality in a British study.[11] The major co-morbidities in our study were chronic liver disease (CLD), hypertension, malignancies and diabetes mellitus (DM). The exact contributions of these co-morbidities in our patients could not be ascertained, our study being a retrospective study.

The ED mortality of 13.6% recorded in our study is high and greater than the predicted average of 10%, but slightly lower than the overall mortality of 14% in the British study earlier referred to[11] which was published in 1995 and recorded a mortality of 0.6% among cases without co-morbidities. The contributory factors could be co-morbidities and the lack of endoscopic therapy as UGIE was carried out in only 6.8%. Endoscopic therapy is now a well-established and effective treatment modality for UGIB.[16] Higher diastolic pressures (>90mmHg) which would suggest an underlying hypertension (a co-morbid condition) was another factor associated with higher mortality. A previous multicenter study by de Groot and his colleagues showed that UGIB patients admitted during the weekend were at higher risk of an adverse outcome compared to those admitted during weekdays.[17] While we did not consider weekday versus weekend admissions, our study showed that most of the patients were admitted during the afternoon shift. The patients were at higher risk of mortality during the night shift than the daytime, and blood transfusion was associated with a positive outcome. The higher mortality recorded during the night shifts may not be unconnected with the practice of fewer staff of all cadres on duty during night shifts in our hospitals and the tendency for reduced alertness of staff during this period. As this could occur in other service areas of the hospital, it would be auspicious to study other areas of service such as medical records, surgeries and other procedures comparing day and night shifts outcome, though a Danish study did not find a significant difference in observed errors during day and evening shifts.[18]

Typical of retrospective studies, there was failure to document information such as duration of bleeding before presentation, haematocrit values, indices for blood transfusion, timing and results of diagnostic UGIE resulting in incomplete data in many patients. The case notes of many patients who presented with UGIB from the e-register could not be found. With only 45.6% of case notes retrieved in this study, we were unable to explore the impact of more variables on the outcome. We wish to recommend that efforts should not be spared in improving documentation and keeping patients' records.

In conclusion, the mortality rate in our ED patients is higher than the predicted average, and factors associated with increased mortality were co-morbidities, higher diastolic blood pressures and night shift duties, while blood transfusion reduced mortality. In view of the fact that our study was retrospective, it could not be ascertained which category of medical staff, whether specialist (gastroenterologist) or non-specialist managed the cases and the possible differences in outcomes. It is suggested that effective blood transfusion and endoscopic services be put in place in the ED in order to reduce mortalities associated with UGIB. Societal education against inordinate use of NSAIDs and alcohol needs to be stepped up.

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