

# Acute upper gastrointestinal bleeding in southern Saudi Arabia

**ABSTRACT**—**Objectives:** to study the incidence of hospitalisation, causes, and outcomes of acute upper gastrointestinal bleeding (AUGIB) in southern Saudi Arabia.

**Design and methods:** prospective study of patients admitted with AUGIB to a large district hospital in Abha City, southern Saudi Arabia, between 1991 and 1993. All patients had upper endoscopy within 24 hours of admission.

**Results:** AUGIB was the indication for upper endoscopy in 240 (8.9%) of all upper gastrointestinal endoscopies (2,702). The patients' mean age was 44.3 years (SD 18.1; range 20–85 years). The annual hospital admission rate for AUGIB was calculated as 31 per 100,000 population over the age of 20. The commonest causes were oesophageal varices (30%), gastritis and erosions (25%) and duodenal ulcers (22%); gastric ulcers and malignancy were relatively uncommon. Liver cirrhosis due to hepatitis B and C viruses was the main cause of bleeding oesophageal varices. Patients with variceal bleeding were younger and had a higher mortality rate than non-variceal bleeders.

**Conclusions:** bleeding oesophageal varices are the commonest cause of AUGIB in Saudi Arabia owing to the endemicity of viral hepatitis B and C. The mortality from both variceal and non-variceal bleeding was lower than in western countries probably because the patients are younger and because of the relative rarity of malignancy and of the consumption of non-steroidal anti-inflammatory drugs.

Acute upper gastrointestinal bleeding (AUGIB) is a serious event that carries considerable mortality and morbidity; it remains a common cause for admission to hospitals worldwide [1,2]. The epidemiology of AUGIB, based mainly on hospital studies, varies among different populations but has been estimated as between 48 and 150 hospital admissions per 100,000 population in Europe and the USA [3–6]. The advent of fiberoptic endoscopy has facilitated the identification of the source of bleeding in most cases of AUGIB, and has allowed therapeutic endoscopic measures to be carried out [7,8].

Southern Saudi Arabia has a high prevalence of

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endemic diseases including bilharzia and both hepatitis B and C viral infections. The prevalence of hepatitis B infection in Saudi Arabia is 7.3–19.9% [9,10]; hepatitis C antibodies were found in 1.4% of healthy blood donors and in 26% of those with hepatocellular carcinoma [11]. Intestinal schistosomiasis affects 2.3–13% of the population [12].

We report here an analysis of the causes and outcomes of AUGIB from southern Saudi Arabia.

## Patients and methods

All patients admitted to the gastrointestinal unit at the 700-bed Asir Central Hospital (ACH), Abha City, with haematemesis and/or melaena over a three-year period starting in May 1991 were prospectively studied. Those who refused endoscopy or in whom AUGIB was not confirmed were excluded. The hospital serves a population of 900,000, 50% of whom are less than 20 years old. It is the only hospital in the region equipped with a modern endoscopy unit.

All patients with haematemesis and/or melaena were admitted to the bleeding unit. After initial resuscitation, upper gastrointestinal endoscopy (UGI) was performed within 24 hours using an Olympus GF PQ20 scope. The site of the lesion was identified if there was an actively bleeding source, and the presence of clots or other stigmata of bleeding, as defined previously was noted [13]. The data were analysed using an SPSS computer package. Simple descriptive statistics, 95% confidence intervals and t-tests were used to test differences between means. A *p* value less than 0.05 was taken to indicate statistical significance.

## Results

Over the three-year study period, 2,702 UGI endoscopies were performed at ACH, of which 240 (8.9%) were for AUGIB. In general, 90–138 patients with AUGIB were admitted annually to our hospital. The mean age of the patients over the three years was 44.3 (SD 18.1; range 20–85 years); there were 165 men (68.8%) and 75 women (31.2%). Since the 'at risk' population aged 20 years old or more was 450,000, the annual incidence of hospitalisation was 31 per 100,000. From Table 1, which summarises the causes of AUGIB among the 240 patients studied, it is clear that bleeding from oesophageal varices is the commonest cause of AUGIB in southern Saudi Arabia, followed by gastritis and erosions and duodenal ulcers.

Infections with hepatitis B and C viruses and bilharzia are the leading causes of chronic liver disease



**Table 1.** Causes of upper gastrointestinal bleeding in 240 patients in southern Saudi Arabia

Cause	No.	%
Oesophageal varices	72	30
Gastritis and erosions	60	25
Duodenal ulcers	54	22.5
Duodenitis	19	8
Gastric ulcers	10	4.2
Oesophagitis	8	3.3
Carcinoma of stomach/oesophagus	3	1.2
Others:		
Dieulafoy disease	1	0.4
Angiodysplasia	1	0.4
Normal findings	12	5

**Table 2** Causes of portal hypertension in 72 patients with bleeding oesophageal varices

Cause	No.	%
HBV infection	30	41.7
HCV infection	16	22.2
Mixed HBV/HCV infection	10	13.9
Bilharzia	15	20.8
Alcohol	1	1.4

HBV = hepatitis B virus HCV = hepatitis C virus

**Table 3.** Comparison of patients with variceal and non-variceal bleeding

	Variceal bleeding		Non-variceal bleeding	
	No.	%	No.	%
Total no.	72/240*	30	153/240*	64
Males	66	92	84	55
Male:female ratio <sup>1</sup>	11:1		1.2:1	
Mean age (years) <sup>2</sup> (SD)	43 (12)		50 (22)	
In hospital mortality <sup>3</sup>	10	13.9 (95% CI: 7–21)	4	2.6 <sup>3</sup> (95% CI: 0.5–5)

\* 15 of the 240 patients had normal findings on endoscopy

<sup>1</sup>  $p < 0.0001$

<sup>2</sup>  $p < 0.05$

<sup>3</sup>  $p < 0.01$

CI = confidence interval SD = standard deviation

and portal hypertension in this area (Table 2). Among the patients, 37 (51.4%) were in Child-Pugh class A, 19 (26.4%) in class B and 16 (22.2%) in class C. The male to female ratio is significantly higher in those who bled from varices than in the other patients with AUGIB (Table 3); so is their mean age and mortality rate.

## Discussion

Annual admission rates for AUGIB vary between 48 and 150 per 100,000 population [1,3,4,14]. Only the recently published data from the USA [5] and the UK [6] give true population-based estimates of the hospitalisation rates for this serious condition.

Published data from the Middle East do not give population-based rates [15,16]. We found the incidence of hospitalisation for AUGIB in southern Saudi Arabia to be lower than that reported in western countries. This is probably due to the high prevalence of non-steroidal anti-inflammatory drug-induced gastric lesions and malignancy among the more elderly population of western countries than in our younger population. In the central, eastern and western parts of Saudi Arabia the commonest causes of AUGIB are duodenal ulcer disease (19–39.8%), oesophageal varices (19–33%) and gastric erosions (25%) [17–19]. However, in our southern region patients, the commonest cause is bleeding from oesophageal varices, followed by gastritis and erosions and duodenal ulcers; this is similar to the Sudan, but in contrast to the pattern reported from western countries [5,6,20,21] (Table 4). It is interesting to note that the frequency of bleeding from oesophageal varices in Jordan [16] and Turkey [22] is similar to that in western countries since chronic liver disease is less common in these countries than in Saudi Arabia.

The high frequency of bleeding oesophageal varices as a cause of AUGIB in Saudi Arabia [23] is explained by the high prevalence of chronic liver disease due to

hepatitis B and C and schistosomiasis, especially in the southern region of the Kingdom [9,10,12,24–26]. In those western countries where alcohol consumption is high, bleeding varices are common (31%) [27,28]; in Saudi Arabia and other Muslim countries alcoholic liver disease is virtually unknown because Islamic teaching forbids alcohol. The in-hospital mortality is lower in non-variceal bleeding because of an excess of deaths due to hepatic encephalopathy in the variceal group (six patients). The analysis of mortality among our patients was limited to the in-hospital period and thus cannot be compared with the UK study [6]. Also, our patients are younger than those in European studies.

In summary, bleeding oesophageal varices are the commonest cause of AUGIB in Saudi Arabia due to the high prevalence of chronic liver disease caused by hepatitis B and C viruses and schistosomiasis, and they occur in younger patients than in Europe. Efforts should be intensified to control these endemic diseases by effective vaccination, blood screening and public health education. The Saudi Ministry of Health



**Table 4.** Geographical variations in the major causes of acute upper gastrointestinal bleeding (%)

Cause	Central Saudi Arabia [11, 19]	Southern Saudi Arabia*	Sudan [13]	Jordan [12]	UK [6]	USA [5]
Oesophageal varices	19.3–39	30	41.8	5.6	4	6.2
Duodenal ulcer disease	19.4–39.8	22	30.5	40.4	24.6	35.7
Gastritis and erosions	28.5	25	3.1	15.4	11	8.9
Gastric ulcer	8.7	4	3.1	7.5	16.2	24.0
Gastric and oesophageal malignancy	0.7	1.2	—	1.9	4	1.6

\* the present study

added hepatitis B as the seventh immunogen to the expanded immunisation programme in 1989. In 1991, the school entry hepatitis B immunisation programme was started. In addition, blood donors are routinely screened for hepatitis B surface antigen and hepatitis C antibodies (1–1.4% of blood donors are positive for the latter). Regional and district hospitals should be well prepared to deal effectively with this serious condition. The improved socio-economic status and the ongoing health education programmes of the Saudi people will eventually lead to the control of these endemic diseases.

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