Upper gastrointestinal bleeding in cirrhosis: clinical and endoscopic correlations

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SUMMARY The clinical data of 180 episodes of upper gastrointestinal bleeding in 168 patients with cirrhosis of the liver are examined. The source of bleeding had been determined by early endoscopy in all cases. In men under the age of 50 years, and without symptoms of liver failure, bleeding was due to ruptured gastro-oesophageal varices in 84 % of cases. Severe liver failure was associated with acute lesions of gastric mucosa in many cases. No presumptive diagnosis of the source of haemorrhage could be based on the examination of other clinical data (presence of ascites, mode of presentation and pattern of bleeding, history of ulcer disease, alcoholism, and previous medication).

It is universally accepted that early endoscopy is the most efficient method of diagnosis in upper gastrointestinal haemorrhage (Palmer, 1969; Dupuy *et al.*, 1971; Sugawa *et al.*, 1973; Bordas *et al.*, 1973; Hoare, 1975). Endoscopy has shown that the rupture of gastro-oesophageal varices accounts for rather less than half the number of episodes of haemorrhage in cirrhotics. Other sources of bleeding are gastroduodenal ulcers or acute mucosal lesions, and many patients bleed from several lesions simultaneously (Palmer, 1969; Khodadoost and Glass, 1972; Waldram *et al.*, 1974; Rueff, 1974; Hoare, 1975).

In patients with haemorrhage, radiology cannot normally detect acute ulcers or erosions, and the detected lesion may not be the source of bleeding.

These considerations would seem to warrant permanent endoscopy facilities, at least in special units where bleeding patients are often received, and in the emergency wards of general hospitals. In most cases, patients with gastrointestinal bleeding are first seen in centres where endoscopic examinations are not performed, so that this procedure is delayed and management has to be based on clinical observation.

In this paper a review is made of the clinical data of 168 patients with cirrhosis of the liver and gastrointestinal bleeding, submitted to early diagnosis by endoscopy. The value of those data as an indication of the source of bleeding is examined.

Methods

The study is based on 193 episodes of upper gastrointestinal bleeding in 168 patients with cirrhosis. All of them had been admitted to an intensive care unit for hepatic diseases with haematemesis and/or maelena. The endoscopic examination was performed with an Olympus GIF Type D during active bleeding or within 48 hours from the end of bleeding, demonstrated by gastric aspiration. The diagnosis of portal hypertension was based on the presence of gastro-oesophageal varices. The diagnosis of cirrhosis was based on clinical and biochemical data. In 143 patients a histological examination of the liver was made (needle or wedge biopsy, post-mortem puncture, or necropsy).

A lesion was presumed to be the source of haemorrhage when it was actively bleeding during endoscopy or when there were signs of recent haemostasia, such as a clot attached to the lesion (Bordas *et al.*, 1973). The patients were divided into four groups according to the source of bleeding: (a) gastro-oesophageal varices (GOV), (b) acute mucosal lesions either in the stomach or in the duodenum (AML), including complete and incomplete erosions, acute ulcers, and petechiae, (c) chronic gastric or duodenal ulcers (GDU), and (d) multiple lesions bleeding simultaneously. Thirteen patients were excluded from the study: in 11 of these cases the source of haemorrhage could not be identified; one had gastric cancer and one Mallory Weiss syndrome.

Each case was investigated for a history of peptic ulcer disease, or for one of alcoholism (over 80 g

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ethanol/day for two years or more), and/or previous medication with drugs potentially harmful to the gastric mucosa (aspirin, corticosteroids, phenylbutazone).

The severity of liver disease was graded 1 or 2 depending on whether there had been symptoms of liver failure (jaundice, ascites, encephalopathy, or weight loss) before the haemorrhage (Maillard and Rueff, 1970; Terés *et al.*, 1974). Patients with none of these symptoms or with only one were graded 1, and those with two or more were graded 2.

Haemorrhage was defined as 'massive' when more than 300 ml/h of blood was required for six hours or more to maintain a normal blood pressure, and as 'relapsing' when there were repeated episodes of bleeding after admission. The term 'persistent' haemorrhage was applied when bleeding lasted for more than 60 hours or when more than 3000 ml blood were transfused, independently of the duration (Terés *et al.*, 1974).

Results

The frequency of lesions responsible for the haemorrhage in the 193 episodes examined is reported in Table 1.

SEX AND AGE

Gastro-oesophageal varices were more often the cause of bleeding in patients under the age of 50 years (68.7%) than in older patients (43.9%) ($P < 0.01$), and more often in men (58.8%) than in women (35.8%) ($P < 0.01$) (Table 2). In men under

50, GOV were the cause of haemorrhage in 79% of cases.

HISTORY OF PEPTIC ULCER

The antecedent of peptic ulcer or a history suggesting this disease was found in 29 of the 180 episodes investigated, but, of these 29, bleeding from GDU was found in only 34.5% (Table 3). This percentage was significantly higher than in patients with no history of peptic ulcer, although this information was of no clinical value. Moreover, 16 of the 26 patients (61%) in whom bleeding was due to an ulcer were unaware of this condition and had no symptoms.

HISTORY OF ALCOHOL OR OF PREVIOUS MEDICATION

One hundred and one of the patients were chronic alcoholics, but the distribution of bleeding lesions was uniform among alcoholics and non-drinkers (Table 3). In 43 cases there was a history of drug ingestion, but no relationship could be found between this and the cause of the bleeding (Table 3).

SEVERITY OF LIVER DISEASE

The distribution of the lesions responsible for the haemorrhage varied slightly according to the severity of the liver disease (Table 3). Ruptured varices were the most frequent cause of bleeding, but AML were more frequent in grade 2 patients than in those of grade 1; 55.5% of the patients of the latter group bled from varices, and this incidence rose to 84.3% (24 cases out of 32) among men under the age of 50 years.

PATTERNS OF BLEEDING AFTER ADMISSION

Haematemesis was the first manifestation of haemorrhage in 138 cases, and melaena in 42. The mode of presentation of the haemorrhage, haematemesis or melaena, gave no indication of the source of bleeding. GOV were responsible for the bleeding in 63% of the cases of 'massive' haemorrhage, in half of the cases of 'persistent' and 'relapsing' haemorrhage, and in 37.8% of those in whom bleeding stopped spontaneously. The low incidence

Lesion	Number	%
Gastro-oesophageal varices	91	47.1
Acute mucosal lesion	43	22.3
Chronic gastroduodenal ulcer	26	13.5
Multiple sites of bleeding	20	10.4
Miscellaneous	2	1.0
Unknown	11	5.7
Total	193	100.0

Table 1 Source of bleeding in 193 episodes of upper gastrointestinal haemorrhage in patients with cirrhosis

	Sex				Age (yr)			
	Male (no.)	(%)	Female (no.)	(%)	Under 50 (no.)	(%)	Over 50 (no.)	(%)
Gastro-oesophageal varices	61	59.8*	19	35.8*	33	68.7*	47	43.9*
Acute mucosal lesion	22	21.6	13	24.6	10	20.9	25	23.3
Chronic gastroduodenal ulcer	12	11.8	12	22.6	3	6.3†	21	19.6†
Multiple sites of bleeding	7	6.8	9	17.0†	2	4.1	14	13.2
Total	102	100	53	100	48	100	107	100

Table 2 Bleeding lesion in relation to sex and age in 155 patients with cirrhosis

* $P < 0.01$.

† $P < 0.05$.

	History of peptic ulcer				Alcoholism				Previous medication				Liver failure				Ascites			
	Yes		No		Yes		No		Yes		No		1		2		Yes		No	
	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)	(no.) (%)
Gastro-oesophageal varices	9	31	82	54.3	49	48.6	42	51.3	19	44.2	72	52.5	66	55.5	25	41	24	42.1	68	55
Acute mucosal lesion	7	24.1	36	23.8	22	21.8	21	26.5	11	25.6	32	23.4	23	19.3	20	32.7	14	24.6	29	23.7
Chronic gastroduodenal ulcer	10	34.5	16	10.6	17	16.8	9	11.4	6	13.9	20	14.6	15	12.6	11	18	10	17.5	16	13.2
Multiple sites of bleeding	3	10.2	17	11.3	13	12.8	7	8.8	7	16.3	13	9.5	15	12.6	5	8.3	9	15.8	10	8.1
Total	29	100	151	100	101	100	79	100	43	100	137	100	119	100	61	100	57	100	123	100

Table 3 Clinical data in relation to source of haemorrhage

of peptic ulcer as a source of massive (3.8%) and persistent (6%) haemorrhage is noteworthy.

Discussion

Upper gastrointestinal bleeding in patients with portal hypertension has been classically related to ruptured oesophageal varices (Hislop *et al.*, 1966), and portacaval shunt operations have been performed for many years, even though diagnosis of the bleeding site was only presumptive. The present study confirms what other authors have reported: that bleeding in patients with cirrhosis may be due to several causes other than varices (Palmer, 1969; Khodadoost and Glass, 1972; Bordas, *et al.*, 1973; Rueff, 1974; Waldram *et al.*, 1974; Hoare, 1975).

For the rational management of bleeding in these patients, including their medical and/or surgical treatment, the source of the haemorrhage must be identified. Early endoscopy has remarkably improved the rate of accurate diagnosis in gastrointestinal haemorrhage and has replaced other diagnostic measures, including radiography. Many bleeding lesions, particularly erosions and acute ulcers, are underdiagnosed on barium meal examination (Crook *et al.*, 1972), and, conversely, radiology may show more than one possible source of bleeding. Endoscopy should be carried out as soon as possible; if it is delayed, acute gastric lesions may heal and disappear.

The purpose of this study was to investigate whether some clinical data might be of diagnostic help when early endoscopy is not available. For most of the data the results were negative. Even the history of peptic ulcer was of no help, since only one-third of the patients with such a history bled from the ulcer, whereas two-thirds of the patients with a bleeding ulcer had no previous history.

Alcohol has been considered a cause of haemorrhagic gastritis, and several series of patients have been reported in whom bleeding acute erosions of the gastric mucosa developed after a massive intake of alcohol (Khodadoost and Glass, 1972; Sugawa *et al.*,

1973; Dagradi *et al.*, 1973). Aspirin and other drugs, phenylbutazone, and corticosteroids have also been considered to be a cause of upper gastrointestinal haemorrhage from AML (Valman *et al.*, 1968; Crook *et al.*, 1972; Sugawa *et al.*, 1973). In this series, none of these antecedents provided any useful information; the incidence of gastric lesions bore no relationship to a history of previous medication. These facts may suggest that in patients with portal hypertension, substances which irritate the gastric mucosa can induce bleeding from any pre-existing lesion, including varices.

From the observation of gastro-oesophageal reflux in patients with cirrhosis and voluminous ascites, it was supposed that the increased abdominal pressure caused by the fluid must favour the rupture of varices (Simpson and Conn, 1968). In the present series, however, there is no relationship between variceal haemorrhage and ascites.

The pattern of haemorrhage differed slightly between one group of bleeding lesions and another. 'Massive' haemorrhage was usually due to rupture varices, whereas ulcers did not normally bleed massively or persistently.

A comparison of the sex and age of patients with the source of bleeding gives an interesting result: 84% of upper gastrointestinal bleeding in men under the age of 50 years and without liver failure is due to gastro-oesophageal varices. This finding, not previously reported, may be of some diagnostic help and may also answer the question as to how many bleeding patients with portal hypertension were submitted unnecessarily to portacaval shunts before endoscopy became a normal clinical practice. Probably very few, because shunt procedures were usually carried out on young, well-compensated patients, who had probably had ruptured varices as is shown in our study.

This paper confirms that clinical data are not reliable in localizing the source of bleeding in upper gastrointestinal haemorrhage. Consequently, the need for a permanent endoscopy service becomes clear, particularly in general hospitals where many

bleeding patients are admitted. When early endoscopy cannot be performed, very few clinical data are of any help. Cirrhotic patients under the age of 50, without liver failure and who bleed massively, have a more than 80% chance of having ruptured varices, and Sengstaken-Blakemore intubation or intravenous vasopressin should be tried. When symptoms of advanced liver disease are present and bleeding is not massive, AML may be suspected. A gastric cooling should then be performed as the first therapeutic measure.

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