HAEMATEMESIS AND MELAENA

WITH SPECIAL REFERENCE TO BLEEDING PEPTIC ULCERS

BY

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This paper reports results of treatment by prompt feeding and liberal blood transfusions in 171 consecutive admissions for recent frank haematemesis and/or melaena, between June, 1940, and December, 1942. They were treated in the dietetic wards of a modern municipal hospital serving a large industrial and poor residential district of Greater London. A careful study has been made of the cause of bleeding and of the type of case which proves fatal.

Diagnosis

Selected cases were gastroscopied soon after the haemorrhage, usually within a week or less. No serious complication occurred, although it is generally believed that gastroscopy is dangerous when performed shortly after bleeding. A barium meal was given as soon as the patient could start getting up, usually in the third or fourth week. If cirrhosis hepatis was suspected a hippuric acid excretion test of liver function was performed. A detailed history and an examination were recorded in every case. The final diagnoses are listed in Table I.

TABLE I.—Final Diagnoses

	Admissions			Deaths
	No.	Male	Female	
Chronic lesser curvature ulcer found by x-ray, operation, or necropsy ..	30	26	4	7
Acute gastric ulcer found by early gastroscopy but not visible when radiographed later ..	21	15	6	0
Acute gastric ulcer found at necropsy ..	1	0	1	1
Pyloric ulcer ..	2	2	0	0
Chronic gastric and duodenal ulcers ..	5	4	1	0
Duodenal ulcer ..	47	36	11	3
Duodenal ulcer with gastro-enterostomy ..	6	6	0	0
Jejunal ulcer (gastro-enterostomy) ..	2	2	0	0
Localized jejunitis ..	1	1	0	0
Probable peptic ulcer with thoracic stomach ..	2	0	2	0
Peptic ulcer of Meckel's diverticulum ..	1	1	0	0
Haemorrhage complicating perforated gastric or duodenal ulcer ..	7	6	1	3
Acute gastritis ..	2	2	0	0
Carcinoma ventriculi ..	4	2	2	0
Leiomyoma ventriculi ..	1	1	0	0
Portal thrombosis—gastrostaxis ..	1	1	0	1
Cirrhosis hepatis ..	4	1	3	2
Uncertain (6 patients not investigated) ..	34	21	13	0
Totals ..	171	127	44	17

Gastroscopy was performed in 38 out of 51 cases which clinical and radiological investigations failed to diagnose. In 21 of these cases an acute gastric ulcer was found, and in 2 an acute gastritis. The remaining 15 remained undiagnosed. That is to say, in nearly two-thirds of the cases in which other methods failed gastroscopy provided a diagnosis. It is thus obvious that gastroscopy is of great assistance in achieving accurate diagnosis. The chronic gastric ulcers which were shown by radiographs had a much higher mortality than the acute ulcers which were only shown by gastroscopy. These acute ulcers usually healed within three weeks, and are being reported in another communication.

At this hospital all peptic ulcers are admitted to the dietetic wards, including those that are perforated. Seven cases were observed with both haemorrhage and perforation. This combined complication presented a difficult problem in treatment, with a high mortality. Three of the seven patients died.

Age Incidence

Gastro-duodenal haemorrhage is more often fatal in the elderly patient, and the age incidence, which is given in Table II, must be taken into account in comparing these results with other series.

TABLE II.—Age Incidence of Cases of Haemorrhage from Proved or Probable Peptic Ulcer

Age	Male		Female	
	No.	Deaths	No.	Deaths
10-19 ..	1	0	0	0
20-29 ..	4	1	1	0
30-39 ..	17	0	3	0
40-49 ..	32	1	8	0
50-59 ..	34	2	13	1
60-69 ..	27	5	10	3
70-79 ..	5	1	3	0
80+ ..	2	0	1	0
Totals ..	122	10	39	4

The proportion of patients over 60 is considerably higher than in previous series of haemorrhage from peptic ulcer—e.g.:

	Hospital	Period	Total No.	No. over 60
Bulmer (1927) ..	Birmingham General Hospital	1902-26	467	9 (2%)
Hellier (1934) ..	General Infirmary at Leeds	1926-32	212	15 (7%)
Cullinan and Price (1932)	St. Bartholomew's	1926-30	105	11 (10%)
Burger and Hartfall (1934)	Guy's	1921-30	137	13 (10%)
Scott (1940) ..	Western Infirmary, Glasgow	1936-40	110	18 (16%)
Present series ..		1940-2	161	48 (30%)

There are three possible factors which may account for the higher age incidence in the present series. First, many of the younger patients may be in the Services and so be referred to Army hospitals; but this would not account for the apparent absolute increase in older admissions. Secondly, wartime conditions may have caused an increase in peptic ulceration among the elderly, and this theory is supported by an analysis of the admission book at St. Bartholomew's Hospital (18% over 60 in 1940-2, against 10% in 1926-30). Thirdly, general practitioners tend to send the older and more decrepit patients to municipal hospitals, where admission is certain; and my own experience has shown that in these hospitals one is confronted with problems in treatment in the very elderly which are seldom to be found in the teaching hospitals.

Treatment

Treatment was along the general principles described by Witts (1937). A drip blood transfusion at 40 drops a minute was begun if it was thought that further bleeding might endanger life. If the patient showed evidence of anaemia the transfusion was usually given faster and oxygen was administered at 6 litres a minute with a B.L.B. mask. In general most patients were transfused if the pulse stayed above 120 a minute, if the blood pressure fell below 90 mm. Hg, or if the haemoglobin reached 40%; but it was not found possible to follow any fixed set of figures rigidly, and each case was judged according to its own particular circumstances. The transfusions were liberal, and usually two bottles (1,080 c.cm.) were given, being repeated if necessary. With persistent bleeding, four or six bottles were sometimes required. In 12 patients the blood volume (5,000 c.cm.) was replaced at least once. Using the M.R.C. gas-mantle set, it was seldom necessary to cut down on a vein. This was a great advantage because repeated transfusions could be given into the same vein, and the simplicity of the method was a boon to the nursing staff. The patients received two-hourly purée feeds. One-third normal saline was given to allay thirst. The feeds were usually well taken, but occasionally milk feeds would be given if desired.

Purée Diet

- 6 a.m. Cup of milky tea
- 8 a.m. Porridge and bemax; thin bread-and-butter and jelly marmalade; cup of milky tea
- 10 a.m. Cup of milk and biscuit
- 12 noon: Minced meat, chicken, or steamed fish; mashed potato; purée carrot or cauliflower
- 2 p.m. Egg custard or cereal pudding or apple purée; orange juice
- 4 p.m. Cup of milky tea; three slices of thin bread-and-butter; bramble jelly; sponge cake
- 6 p.m. Vegetable soup or minced chicken sandwich
- ? p.m. Milk pudding or cup of milk
- 10 p.m. Cup of milk and biscuit
- Milk feeds during the night if awake
- One-third normal saline as desired between feeds on first day

Morphine was given on admission and whenever further bleeding occurred, fersolate 3 gr. t.d.s. when melaena had ceased, and ascorbic acid 200 mg. t.d.s. for five days and then 50 mg. daily. Antacids were not given as a routine, but calcium and magnesium tribasic phosphate was allowed for pain. The patients were reassured about the invariable constipation, and an enema was given after four days if necessary. Laparotomy for arrest of haemorrhage was undertaken on only three occasions, but partial gastrectomy or gastro-enterostomy was performed during convalescence if indicated by economic circumstances or by the type of lesion.

Results

In these 171 cases there were 17 deaths (10%). This series includes gastric tumours, portal varices, and portal thrombosis. In 161 cases of bleeding from proved or probable peptic ulcer there were 14 deaths (9%). Miller and Nicholson (1941) have analysed 1,396 cases, treated by prompt feeding, with a mortality of 3.1%. In view of such previously good results this series is most disappointing, and indeed contrasts depressingly with my experience at another hospital (Jones, 1939a). Obviously, with the type of case admitted to this hospital, gastro-duodenal haemorrhage still carries a severe mortality, which demands a careful analysis to discern the type of case that continues to be lost and to assess the value of surgical treatment. The crux of the problem is shown in the following table. Out of 14 patients who died nine had severe complications, nine were over 60 years of age, and nine had simple ulcers more than 3 cm. in diameter.

TABLE III.—Details of 14 Fatal Cases

Age	Sex	Clinical Complications	Type and Size of Ulcer
51	F	Admitted moribund	Acute G.U.; 1 cm.
62	F	"	Chronic D.U.; 2 cm.
67	M	Perforation "	Two chronic D.U.s; 2 × 1 cm., 1 × 0.5 cm.
56	M	"	Chronic G.U.; 7.5 cm.
67	F	"	" 5 × 3 cm.
67	M	Lobar pneumonia	Chronic D.U.; 2.3 × 4.5 cm.
62	F	Bronchopneumonia	Chronic G.U.; 6 cm.
60	M	Perforated appendix with general peritonitis 12 days previously	" " ? size
42	M	Ascites hypoproteinaemia (laparotomy)	" " 10 cm.
53	M	(Laparotomy)	Chronic G.U.; 3 × 5 cm.
65	M	"	Acute G.U.; 1 × 0.5 cm.
25	M	"	Chronic D.U.; 5 × 3.5 cm.
72	M	"	Chronic G.U.; 3 × 2 cm.
63	F	"	" 5 × 3 cm.
		"	" 2 × 1.5 cm.

Two patients were admitted moribund, and neither would have survived laparotomy. It is doubtful whether the acute ulcer in one of these patients would have been found if operation had been possible. Six patients had such grave complications or such severe associated diseases that surgical arrest of the haemorrhage was hardly feasible. General peritonitis from a perforated appendix, perforation of a peptic ulcer, lobar pneumonia or bronchopneumonia are themselves serious enough in elderly patients, and much increase the hazards of a gastric haemorrhage. Laparotomy during active haemorrhage was performed in three cases, but the patients died. In the remaining three cases the treatment remains debatable, but it is doubtful if surgery would have saved any of them except perhaps one—that of a young man of 25. At this age death from gastro-duodenal haemorrhage is so rare that surgery was hardly contemplated, and probably his heavy alcoholism tipped the scales against him.

The literature on bleeding peptic ulcers gives such a diversity of results for medical and surgical treatment that it is difficult to formulate treatment from them. The confusion is probably due to important variables in the different series, especially the proportion of elderly patients, their nutritional state, the incidence of associated disease, and the proportion of acute to chronic ulcers. It seems reasonable to analyse the type of case coming under one's care and to draw up rules for their treatment—rules which do not necessarily apply where a different class of patient is being treated. The problem is whether to continue to give prompt feeding and liberal transfusions, and when operation should be advised.

Prompt Feeding and Liberal Transfusion

There is no doubt that the mortality from bleeding has been reduced. It is still uncertain whether recurrences of bleeding

occur more often with a liberal diet or large transfusions than they did with the older regime of starvation and only small transfusions. To study these points the series has been compared with that recorded by Cullinan and Price (1932) from St. Bartholomew's Hospital (1926-30). This report included only admissions for haematemesis that could reasonably be attributed to peptic ulcer, but cases in surgical wards were not included. For comparison with this series the following have been excluded: patients with melaena only, with surgical complications—e.g., perforations—with gastric tumours, cirrhosis hepatis, and portal thrombosis. Cullinan and Price's cases were treated on a very restricted fluid intake and occasional small transfusions (300 to 500 c.cm.). In many of the fatal cases on this regime there was extreme dehydration (Jones, 1939b).

Age	Cullinan and Price, 1932		Present Series, 1942	
	No.	Deaths	No.	Deaths
10-19	1	0	0	0
20-29	12	0	4	1
30-39	15	3	13	0
40-49	29	6	28	0
50-59	37	6	40	2
60-69	11	4	31	6
70-79	0	0	7	1
80+	0	0	3	0
Totals	105	19	126	10

The total mortality has been more than halved, although the scales are heavily weighted against the present series by the higher age incidence. It will be seen that below the age of 60 the mortality has fallen from 15 in 94 cases to 3 in 85 cases. Above 60 the mortality has improved from 4 deaths in 11 cases to 7 deaths in 41 admissions.

Death usually occurs after recurrent bleeding and seldom with the first haemorrhage. The reduction in mortality may have been effected either by decrease in the incidence of recurrent bleeding or by making the patient better able to withstand further haemorrhage. It is necessary to know the effect of early feeding and liberal transfusion in the incidence of recurrent brisk bleeding. Again this series has been compared with Cullinan and Price's figures.

Recurrent Haemorrhages

	Cullinan and Price, 1932		Present Series, 1942	
	No.	Deaths	No.	Deaths
All admissions for haematemesis from probable peptic ulcer, excluding surgical admissions	109	19	126	10
Those which recurred	39	16	35	6
Those which recurred more than once	21	12	23	6

With early feeding and big transfusions the incidence of recurrent haemorrhage has appreciably diminished, and neither feeding nor transfusion can therefore be accused of promoting further bleeding. The reduction in mortality has been effected partly because recurrent haemorrhages are less frequent and partly because when they do occur the patients are better fitted to withstand them. There seems every reason to continue to give prompt feeding and liberal transfusions.

Surgical Treatment

Cases in which surgical treatment is likely to be considered fall naturally into two groups: first, when the cause of bleeding is certain; secondly, when it is obscure.

Known Causes

1. *Acute Gastric Ulcer.*—Although the haemorrhage from acute gastric ulcers can be exceedingly severe and protracted, the only case lost was admitted moribund, and died within a few hours. Fifty-one cases of probable acute ulceration with only one death argues against operation.

2. *Post-operative Cases.*—In patients with a previous gastro-enterostomy the haemorrhage tends to be slow and persistent rather than brisk, and probably in severe cases it may arise from a localized jejunitis. Such appalling difficulties may be found at laparotomy that conservative treatment is justified.

3. *Haemorrhage with Perforated Peptic Ulcer*.—Haemorrhage with perforation accounted for 3 deaths among 7 cases which presented extreme problems in treatment. In one fatal case there were two kissing duodenal ulcers—one bled and the other perforated. If this combination is suspected at operation it would be advisable to perform a short circuit and pyloric occlusion, or a partial gastrectomy if the conditions are propitious.

4. *Duodenal Ulcer*.—There were 3 deaths among 47 admissions with duodenal ulcers. Only one could be considered as a death during treatment for haemorrhage. Again, with the great technical difficulties of operating on a penetrating duodenal ulcer a medical bias is justifiable, except when haemorrhage is extremely brisk or repeated and if the patient is over 50.

5. *Chronic Gastric Ulcers*.—The important mortality has been among the patients with chronic lesser curvature ulcers, with 7 deaths among 30 cases (23%). Considering the age, associated complications, and chronicity of the ulcers it is doubtful if any surgeon could have achieved a substantially lower mortality if all 30 cases had had early radical operation. Bohrer (1941) gives a mortality of 26% for bleeding gastric ulcers treated surgically. Nevertheless, it is in this group that timely surgery might save a few cases which would prove fatal in spite of continued transfusion. The clinical observations of grave significance are:

Thickened tortuous radial artery

Age over 50 years—5 deaths out of 18 (28%)

Severe pain preceding haemorrhage—5 deaths out of 12 (40%)

Pain persisting after haemorrhage—2 deaths out of 4 (50%)

Recurrent bleeding: once—6 deaths out of 12 (50%);
twice—5 deaths out of 8 (60%)

By selecting cases which came partly or wholly within this group a reduction in mortality from bleeding chronic gastric ulcers might be effected by early operation, and this aspect is being further studied.

Diagnosis Uncertain

Sometimes one is confronted with an exsanguinated patient without a definite diagnosis, but the case will become operable only if it can be included in the indications given above. The length of history, the site of the pain, the food relationship, and the severity of the haemorrhage are all unreliable in deciding the position and nature of the ulcer. The necessity for continued massive transfusion is not in itself sufficient reason for operation. Four patients with acute gastric ulcers had repeated severe bleeding, and needed 11,340, 6,480, 5,940, 3,780 c.cm. of blood respectively, but with routine medical treatment the haemorrhage eventually stopped. A history of severe pain, especially for more than three weeks, is very suggestive of a chronic ulcer. The histories of the proved acute and chronic ulcers in this series have been analysed thus:

Recent Pain or Discomfort	Acute Gastric Ulcer	Chronic Gastric Ulcer
No pain or discomfort	8	1
Discomfort	7	2
Pain	7	15
Severe pain	0	12
Totals	22	30

It is legitimate in doubtful cases to try to clinch the diagnosis by screening with a thin barium emulsion or by gastroscopy. Therefore if the patient can be proved to have chronic gastric ulceration, or in exceptional circumstances chronic duodenal ulceration, and is over 50—and especially if there is thickening of the radial artery, history of severe pain, or pain persisting after admission or recurrence of haemorrhage—then operation may be advised. Nevertheless, to improve on medical treatment it is essential to have an exceptionally experienced surgeon, and a skilled anaesthetist available at short notice. If this is not forthcoming no physician need reproach himself for continuing with medical treatment.

Organization

To obtain the best possible results after haemorrhage from peptic ulcer, good organization is essential. The first requirement is an adequate blood bank. There is much to be said for nursing all cases in special dietetic wards, where the nursing staff can become very expert in all phases of treatment. The medical staff should be agreed on the routine management, and a treatment schedule in the wards is of value.

A follow-up of all proved chronic gastric ulcer patients is invaluable, for intractability can be discovered early and

partial gastrectomy advised. In due course this must reflect itself favourably in the mortality rate for gastro-duodenal haemorrhage.

Summary

An analysis is presented of 171 cases of haematemesis and/or melaena personally treated by prompt feeding and liberal transfusions. There were 17 deaths (10%).

Peptic ulceration was the probable cause in 161 cases, among which there were 14 deaths (9%).

Early gastroscopy gave the diagnosis in nearly two-thirds of the x-ray-negative cases. Acute gastric ulcer is a relatively common cause of bleeding, but acute gastritis is rare.

Of the peptic ulcer subjects 30% were over 60 years of age—a much higher proportion than in previously published series.

Old age, severe complications or associated disease, and large ulcers were important factors in causing death.

Prompt feeding and liberal transfusions have decreased the incidence of recurrent bleeding.

The indications for surgery are discussed.

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PRIMARY BRONCHIAL CARCINOMA AT THE AGE OF 4 YEARS 4 MONTHS

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Primary carcinoma of the bronchus is a condition that has attracted much attention in latter years, particularly on account of the increasing number of cases seen. Many authors have collected series of cases in attempts to discover whether this increase is absolute or only apparent. Those who hold that the rising number of cases observed is apparent invoke refinements of diagnosis—e.g., radiography, bronchoscopy, and biopsy—to support their contention; others maintain that the increase is absolute. Recently Menne and Anderson (1941) have published observations upon two series of necropsies in America, which they cite as evidence for the increasing frequency of bronchial carcinoma. In all probability there is both a real and an apparent increase in the incidence of the condition.

The growth commonly occurs in the age period generally favoured by carcinomata but with maximal incidence between 50 and 59 years, whereas the frequency of other cancers is maximal at an older age (Simons, 1937). In the age group 20–29 cases are seen from time to time; in the decade 10–19 Simons found only 6 cases in his collected figures (total 2,796). The period 0–9 years in his table shows only one case, and this in a boy aged 5 years (Hirsch and Ryerson, 1928). Beardsley (1933) reported a case of carcinoma of the lung in a female aged 10 months; and McAldowie described the clinical and necropsy findings in a boy aged 5½ months with multiple nodular growths in both lungs, but no histological examination was performed. To these 3 cases we would add the one reported below (see Table), which was histologically an anaplastic carcinoma of the bronchus in a girl aged 4½ years.

Beardsley quotes Nuscheler (1875) as referring to a case of carcinoma of the lung in a girl aged 7 years; and McAldowie quotes Ebermann, who found one case in his series of 76, in