Management of Upper Gastro-intestinal Bleeding in a District General Hospital

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Upper gastro-intestinal bleeding is a common and serious problem which accounts for approximately 8 per cent of medical admissions to hospitals in the UK[1]. Detailed results of treatment have been reported from several academic units in Britain[2,3,4]. However, most patients with upper gastro-intestinal bleeding are managed in District General Hospitals and we have therefore examined our experience to see if it reflects the spectrum of pathology and the results of treatment found in teaching hospitals.

Materials and methods

This District General Hospital has 650 beds and serves a population of 320,000 people. We examined emergency ward admission records and Hospital Activity Analysis data for the years 1980 and 1981 to identify patients who fulfilled Morgan's criteria for the diagnosis of upper gastro-intestinal bleeding: the patient's history of vomiting blood or clots, or 'coffee grounds' or passage of tarry black stool or blood confirmed by medical or nursing staff[5]. We excluded patients not admitted on the day of referral, to eliminate those referred for elective investigation of anaemia or occult gastro-intestinal bleeding. Two patients' records could not be traced.

From clinical records we obtained information on drug or alcohol ingestion, incidental medical problems, previous upper gastro-intestinal bleeds and the blood pressure and haemoglobin level on admission. The initial clinical diagnosis was recorded, as were endoscopic, radiological, operative and autopsy diagnoses; when these conflicted precedence was given to information obtained at autopsy, operation, endoscopy or barium meal in that order. Re-bleeding in hospital, operations performed for bleeding within seven days of admission, operative complications and deaths were noted.

Results

Altogether, 330 patients were admitted of whom 194 were men (59 per cent) and 136 were women (41 per cent). Their age distribution is shown in Table 1. The commonest diagnosis was duodenal ulcer (29 per cent) followed by gastric ulcer (19 per cent) and gastric erosions (14 per cent); other diagnoses were much less common (Table 2) and 16 per cent of patients left hospital or died without a diagnosis being made.

Table 1.

Age of patients (% of total)	
Years	%
<40	14
40–59	27
60–79	44
>80	15

Table 2.

	Final diagnoses			
	Patients	%	Deaths	% of patients who died
Duodenal ulcer	96	29	7	7
Gastric ulcer	63	19	10	16
Gastric or duodenal erosions	46	14	1	2
Gastric carcinoma	11	3	7	64
Oesophageal varices	9	3	5	56
Mallory-Weiss tear	17	5	0	0
Oesophagitis	23	7	0	0
Stomal ulcer	5	2	1	20
Other diagnoses	7	2	2	30
No diagnosis made	53	16	17	32
TOTAL	330	100	50	

Co-incidental medical problems were recorded if they might have complicated medical, surgical or anaesthetic management of bleeding and were present in 36 per cent of patients. Most of these patients had cardiac or respiratory disease; liver or renal disease was occasionally identified. Aspirin, non-steroidal anti-inflammatory drugs or corticosteroids were being used at the time of bleeding by 44 per cent of patients, while in 13 per cent the admitting doctor indicated that recent alcohol ingestion might have precipitated bleeding.

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Previous upper gastro-intestinal bleeds had occurred in 86 patients who had bled either once (64 patients), twice (12), 3 times (3), 4 times (6) or 5 times (1). The death rate in these patients was 14 per cent, very similar to the 16 per cent death rate in patients who had not bled previously.

Admission haemoglobin values were obtained for 326 patients: 132 were below 10 g/dL (41 per cent) and 35 of these were below 7 g/dL (11 per cent). Systolic blood pressure was below 100 mm Hg, when first recorded in 37 patients (11 per cent). Blood was transfused in 189 patients (57 per cent) who received a mean of 5.7 units. Endoscopy was performed within 48 hours in 20 per cent and later during the same admission in a further 46 per cent, while a barium meal was performed in 11 per cent. No angiograms were performed to identify sources of bleeding.

Histamine receptor antagonists were given to 51 per cent of patients, alkali to 6 per cent and 19 per cent received both. Neither form of treatment was used in 24 per cent. Operations were performed for bleeding within 7 days of admission in 32 patients (10 per cent) (Table 3).

Table 3.

Indication	Results of surgery: Operation performed	Number	Deaths
Duodenal ulcer	Vagotomy & pyloroplasty with under-running of ulcer	9	2
	Pyloroplasty with under-running of ulcer	1	0
	Partial gastrectomy	4	2
Gastric ulcer	Partial gastrectomy	8	4
	Vagotomy & excision of ulcer	1	1
	Vagotomy & pyloroplasty	1	0
	Under-running of ulcer	2	0
Gastric erosions	Vagotomy & pyloroplasty	1	0
Gastric carcinoma	Partial gastrectomy	1	1
Oesophageal varices	Laparotomy only	2	2
Stomal ulcer	Vagotomy & under-running of ulcer	1	0
Aorto-duodenal fistula	Direct suture of fistula	1	1
TOTAL		32	13

Three patients underwent reoperation: for re-bleeding from a duodenal ulcer, for a subphrenic abscess after gastrectomy with splenectomy for gastric ulcer and for embolectomy following aorto-duodenal fistula repair: all three died.

In all, 50 patients died (15 per cent). The causes of death are shown in Table 4. Thirteen deaths followed surgery (operative mortality 41 per cent) and a further 14 were ascribed to continued bleeding in patients who did not have an operation. Deaths were significantly more common in patients aged 60 or over, in women, in

Table 4.

	Causes of death: Total of 50 patients: Number	(%) of patients
No operation		
Bleeding	14	(28)
Pneumonia	7	(14)
Liver failure	6	(12)
Stroke	3	(6)
Carcinomatosis	2	(4)
Cardiac failure	1	(2)
Limb gangrene	1	(2)
Unknown	3	(6)
Total	37	(74)
Following operation		
Suture line leak	4	(8)
Pneumonia	2	(4)
Cardiac failure	2	(4)
Bleeding varices	2	(4)
Pulmonary embolus	1	(2)
Acute renal failure	1	(2)
Hypovolaemic cardiac arrest	1	(2)
Total	13	(26)

Table 5.

	Factors associated with death: Patients dying/Total	% dying	P (chi²)
Age <60	5/136	4	
Age 60 +	45/194	23	<.001
Men	21/194	11	
Women	29/136	21	<.01
No medical problems	19/210	9	
Medical problems	30/120	25	<.01
Hb 10 +	18/194	9	
Hb <10	30/132	23	<.01
Endoscoped	18/217	8	
Not endoscoped	31/113	27	<.01
No re-bleed	44/303	15	
Re-bleed	8/27	30	<.05

patients with incidental medical problems, those with Hb below 10 g/dL, in those who had not undergone endoscopy and in patients who re-bled (Table 5). However, in each of these categories the group with a higher mortality rate also had a higher average age, except for patients undergoing endoscopy whose average age was very similar to those not endoscoped (60.1 *vs* 61.2 years).

Discussion

The total of 330 patients admitted during two years confirms that upper gastro-intestinal bleeding is a common cause of emergency admission to a District General Hospital, even assuming that some patients went undetected because the study was retrospective. Using admission ward records to cross-check the Hospital Activity Analysis data identified roughly a quarter of the patients

traced, so the potential inaccuracy of using HAA data alone must have been reduced substantially.

Our patients had a mean age of 60.4 years, confirming that this is largely a disease of the elderly. Allan[3] has pointed out that the average age of patients with upper gastro-intestinal bleeding in the UK has risen steadily, which probably explains why mortality rates have remained static over several decades.

Unchecked bleeding was the commonest cause of death in our non-operated patients, and was the indication for surgery in all those who died after an operation. These two groups accounted for 54 per cent of all deaths, so a safe and effective way of stopping bleeding in the elderly should make a major difference to overall mortality. It is therefore disappointing that reliable endoscopic and pharmacological methods of controlling bleeding have not yet been found[6]. However, histamine receptor antagonists were given to 70 per cent of our patients and this seems to be a common practice[4] despite the lack of evidence that they improve survival from upper gastro-intestinal bleeding.

Most of the factors we found to be associated with an increased death rate were predictable ones: age 60 or more, associated medical problems, haemoglobin below 10 g/dL and re-bleeding in hospital. Women died more often than men, probably because they were on average 9.4 years older (66.0 *vs* 56.6). However, we cannot explain the higher survival rate of patients who underwent gastroscopy. It is unlikely that more precise diagnosis led to their having better treatment: first, more than two thirds of endoscopic examinations were performed over 48 hours after admission, so it would be surprising if the findings led to life-saving changes in management. Second, referral for endoscopy was strongly influenced by the policy of the consultant physician under whom patients were admitted, so it is possible that enthusiastic use of endoscopy was accompanied by more aggressive and successful treatment. Third, routine early endoscopy has not been shown to influence patient survival[7] although it seems logical that oesophageal varices, in particular, should be treated endoscopically once identified, thus avoiding dangerous surgery in patients with portal hypertension. Our two patients operated on for bleeding varices both died because bleeding was not controlled.

Most patients with upper gastro-intestinal bleeding are treated in District General Hospitals, so it may be misleading to deduce national mortality rates from teaching hospital data. We have therefore compared three series describing teaching hospitals' experiences with our own, to see if there were differences in the overall death rate, the operation rate and the operative death rate. We also compared the proportion of elderly patients in each series and the causes of bleeding, as these have a major impact on the likely death rate (Tables 6 and 7).

Allan[3], Berry[4] and Cotton[2] and their co-workers specify the diagnoses for most or all of their patients, and the proportions of patients with the three commonest causes of bleeding (duodenal ulcer, gastric ulcer and erosions) are similar in all four series. The proportions bleeding from varices, which are uncommon but have a high mortality rate, are almost identical. The patients may therefore be sufficiently similar to allow valid comparison. Our results show three clear differences from each of the teaching hospital series: our overall patient mortality was higher, the operation rate was lower, and the post-operative death rate was higher. If the patients in each series were indeed comparable, our treatment was less effective, both for patients who had operations and those who did not, and we have tried to work out why this was so.

It is disturbing that the commonest cause of death in patients who were not operated on was unchecked bleeding: these patients may have bled to death because surgery was used so seldom. Surprisingly, most had not been referred for a surgical opinion. A reluctance to operate may also have led to dangerously delayed operations and contributed to the 41 per cent operative mortality. The high proportion of our patients aged 60 or more does not excuse these poor surgical results: we had fewer elderly patients than in the Oxford study, in which Berry reported a lower death rate and fewer post-operative deaths despite a higher rate of recourse to surgery.

Our results are so much worse than those achieved by others who treat apparently similar patients that a change in management seems necessary. Potentially avoidable

Table 6. Causes of bleeding in this series and series from UK teaching hospitals (%).

	This series	Allan[3]	Berry[4]	Cotton[2]
Duodenal ulcer	29	30	23	24
Gastric ulcer	19	19	23	29
Erosions	14	17	14	11
Gastric carcinoma	3		2	2
Varices	3	2	2	3
Mallory-Weiss	5		3	1
Oesophagitis	7		10	7
Stomal ulcer	2		1	3
Other diagnoses	2		2	3
No diagnosis	16	9	17	15

Table 7. Death rate, operation rate and operative death rate in this series and in series from UK teaching hospitals.

	No of patients	% aged 60 or over	Deaths (%)	Operations (%)	Operative deaths (%)
This series	330	59	50 (15)	32 (10)	13 (41)
Allan[3]	296*	48	25+ (9)	96+ (32)	9+ (9)
Berry[4]	125	69	6+ (5)	24+ (19)	3** (13)
Cotton[2]	206*	45	8+ (4)	54+ (26)	6+ (11)

*patients specified as not having bled from the upper gastro-intestinal tract have been removed

+ lower operation rates and higher death rates when compared to this series (chi^2, $p<0.1$)

**lower death rate when compared to this series (Fisher's exact test, $P = 0.04$)

deaths appear to have occurred in two situations: first, the post-operative death rate of 41 per cent was excessive and second, continued bleeding caused 14 of 37 deaths in patients who did not have operations. This suggests that surgical treatment, in the broadest sense, needs improvement but also that more operations to stop bleeding should be performed. This might be achieved if patients with haematemesis and melaena were routinely admitted to a surgical ward.

Admitting bleeding patients directly to a surgical ward might avoid dangerously delayed operations, and allow many procedures to be performed on elective surgical lists, when consultant surgical and anaesthetic cover is readily available[8]. It should virtually eliminate continued bleeding as a cause of death. On the other hand, over a third of our patients had incidental medical illnesses, usually cardiac or respiratory, which would be less effectively managed in a surgical unit. Furthermore, most patients do not actually need operations and would occupy beds otherwise available for elective surgical procedures. Perhaps this is why only 4 per cent of UK hospitals sampled by Thomas[9] admitted patients with haematemesis and melaena to surgical wards, although Hegarty and colleagues[8] found that this policy worked well in a District General Hospital.

Alternatively, Cotton and Russell[10] have suggested that bleeding patients be nursed in an intensive care unit for 72 hours after admission. This should ensure early detection of continued bleeding or re-bleeding, as well as skilled management of associated illnesses during the period of maximum risk, but it would be an expensive way to manage patients who usually turn out not to have needed intensive care after all.

A third approach has been used by Hunt *et al.*[11,12] who have reported a steady improvement in the survival of patients with bleeding peptic ulcer since the establishment of a haematemesis and melaena unit, which is run jointly by a gastro-enterologist and a surgeon. This approach would reduce the use of expensive intensive care facilities. It should also allow early endoscopic identification and discharge of low-risk patients (erosions, oesophagitis or normal endoscopy) as well as careful monitoring of patients with oesophageal varices, or peptic ulcers with signs of recent bleeding. We feel that our results might have been better if management had involved closer co-operation between medical and surgical teams. A haematemesis and melaena unit, drawing staff from both sources, should lead to better selection of patients for surgery, more appropriate timing of operations, and improved perioperative care as well as earlier discharge of low-risk patients. Because upper gastrointestinal bleeding is a common, dangerous problem in a District General Hospital it may be worth re-allocating staff and resources which are already used to care for these patients to a special unit.

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