Upper Gastrointestinal Haemorrhage

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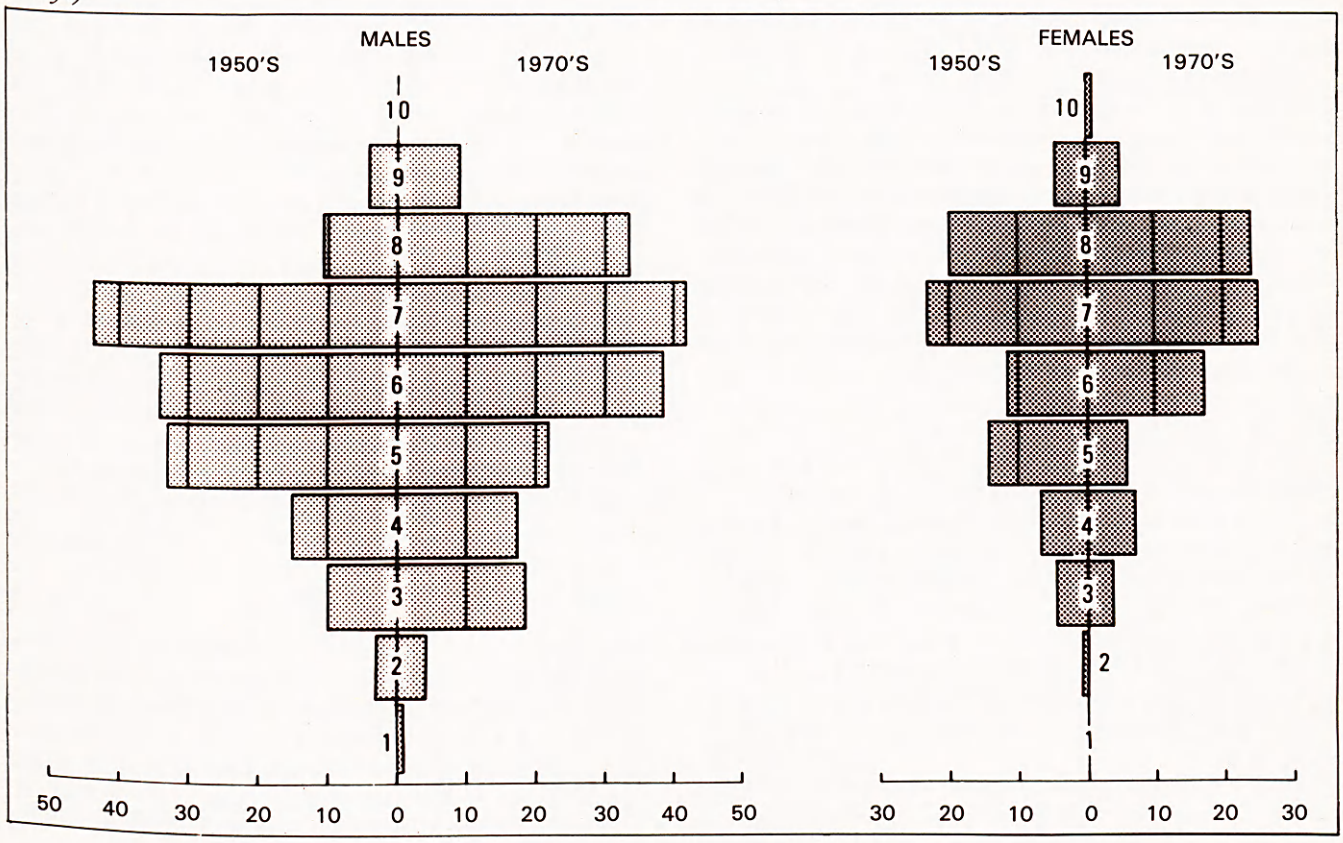
No direct comparisons have been made of the incidence and management of upper gastrointestinal haemorrhage in the same population before and during the endoscopy era. We have compared Cates' series of 271 patients with upper gastrointestinal bleeding admitted as emergencies during 1953-56 to the Bristol Royal Infirmary[1] with a similar unselected series of 267 cases admitted during 1974-76. This study was limited to patients without malignant disease or varices. The area served by the hospital has not changed significantly in this period, nor has the percentage of hospital medical admissions due to upper gastrointestinal haemorrhage (3.3 per cent in the 1950s, 3.5 per cent in the 1970s).

Methods and Results

The age and sex distributions of the patients in the two series are shown in Fig. 1.

In 1953-56 endoscopy was not available, diagnosis being made on the basis of clinical, radiological and surgical findings. On this basis, ulcers were diagnosed only on positive radiological or surgical evidence. If the clinical picture was suggestive of peptic ulcer disease, without other evidence, the patient was labelled 'peptic ulcer' or 'acute ulcer or erosion'. The difference between these two categories and those patients in whom no lesion was identified was not well defined, so that for our

Fig. 1. *Age distribution for males and females in each series. (The number of patients is shown horizontally and the decades vertically.)*



analysis they are all combined under the heading 'radiology negative'. The timing of radiology in relation to the haemorrhage is not known for this series.

In the present series, diagnosis was made primarily by endoscopy. To provide a comparison between the two series the 'radiology negative' group in Cates' series is compared with our cases diagnosed as oesophagitis, gastritis, Mallory-Weiss tear, duodenitis and 'no lesion seen'. The diagnoses made are shown in Table 1, and the importance of the time interval between haemorrhage and endoscopy in Table 2. In both series, the initial management was conservative, with bed rest and blood transfusion as indicated on clinical grounds. In those patients in whom bleeding did not cease with conservative management, emergency surgery was performed. Certain other patients in whom bleeding ceased spontaneously were referred for elective surgery during the same hospital admission; details of each are shown in Tables 3 and 4. The diagnoses made in fatal cases are shown in Table 5 and the causes of death in Table 6.

Table 1. Diagnoses made in each series.

	Gastric ulcer	Duodenal ulcer	Radiology negative	Total
1950s				
Patients	63	102	106	271
Admissions	66	112	109	287
1970s				
Patients	58	95	114	267
Admissions	58	95	119	272

Table 2. Time interval from bleed to endoscopy.

Time interval	Number of Endoscopies	Positive diagnoses	% positive diagnoses
Less than 24 hours	180	159	88
1-3 days	36	26	72
Over 3 days	56	31	55

Table 3. Surgical procedures following haemorrhage.

Surgical Procedures	1950s Emergency surgery	1950s Elective surgery	1970s Emergency surgery	1970s Elective surgery
Partial gastrectomy	34		12	1
Truncal vagotomy and pyloroplasty	—	3 (details of surgical procedure unknown)	21	11
Highly selective vagotomy	—		4	5
Other	1		6	3
Total	35	3	43	20

Table 4. Surgical referrals. (Figures in brackets are percentages of the total number of lesions seen in each category.)

	Gastric ulcers	Duodenal ulcers	Radiology negative	Total
1950s				
Emergency surgery	10	19	6	35
Elective surgery	2	1	–	3
Total	12 (19%)	20 (20%)	6 (6%)	38
1970s				
Emergency surgery	10	28	5	43
Elective surgery	3	13	4	20
Total	13 (22%)	41 (43%)	9 (8%)	63

Table 5. Diagnoses made in fatal cases.

	1950s	1970s
Gastric ulcer	3	2
Duodenal ulcer	11	6
Radiology negative	1	4
Total	15	12

Table 6. Causes of death. (Figures in brackets are post-operative deaths.)

Causes of death	1950s	1970s
Uncontrollable haemorrhage	4 (2)	2
Pneumonia	1	7 (5)
Peritonitis	4 (1)	—
Fulminant hepatitis	—	1
Stroke	2 (1)	1 (1)
Ischaemic heart disease	2	1 (1)
Pulmonary embolus	1	—
Renal failure	1	—

Discussion

The overall picture of a disease or group of diseases may change over the years in two separate ways. First, the pattern of the disease itself may change, in terms of its age and sex distribution, incidence in the population, etc. In addition, there may be changes in the physician's approach to diagnosis and treatment.

Pattern of Disease

During the last 25 years, the population served by the Bristol Royal Infirmary has undergone no major changes apart from the nationwide increase in the number of older people, so changes observed between our two series probably reflect changes in the pattern of gastrointestinal haemorrhage in the community. Fig. 1 shows that the incidence increases with age to reach a peak in the age

group 60-70 for both periods. Overall, 44 per cent were over 60 in the 1950s and 51 per cent in the 1970s, which follows the pattern of change in the population as a whole. Between 1951 and 1971 (Census years) the percentage of the population over 60 rose from 16 to 20 per cent. However there is a more marked increase in numbers of over 70s in the current series; 16 per cent of the total in the 1950s were over 70, compared with 26 per cent now ($P<0.005$): the difference is more marked for men (10 per cent up to 23 per cent) than for women (29 per cent up to 33 per cent), although the overall ratio of males to females has not changed (1.8:1 in the 1950s, 2.1:1 now), and the median age only rose from 55 to 58 for males and from 62 to 64 for females. Although population figures are not available for those over 70, the proportion of the population who were 75 or older rose from 3.8 per cent to 5.4 per cent, which again suggests that the increase in the incidence of bleeding ulcers in this age group merely reflects the greater number of old people in the community. This increase in the number of older patients is consistent with the findings in two surveys in Aberdeen[2,3]; in 1941-48, the percentage of patients over 60 was 29 per cent, rising to 49 per cent in 1967-68, and a similar general trend has been seen throughout this century[4].

Any close comparison of the relative incidence of different lesions in the two series is handicapped by the lack of an exact diagnosis in many of the early cases and a lack of firm evidence in those cases that any lesion found was actually the source of haemorrhage (except in the small number of cases submitted to emergency surgery). The best we can do is to assume that all ulcers seen endoscopically could have been diagnosed radiologically, and that very superficial lesions, which would not be visible radiologically, have been labelled as erosions. Furthermore, we must assume that all ulcers visible radiologically were the source of haemorrhage. With these reservations, it is possible to compare the incidence of ulcers in the two series. Gastric ulcers comprised 23 per cent of Cates' patients and 22 per cent of ours, whereas duodenal ulcers comprised 38 per cent of Cates' patients and 36 per cent of ours (*see* Table 1). These figures are remarkably similar, and suggest that the incidence of the two kinds of ulcer as a source of gastrointestinal haemorrhage in the Bristol area has not changed. The same pattern is apparent in the two Aberdeen series[2,3] (Table 7); the incidence of each type of ulcer does not change over a twenty-year period in the same population, although the incidence is very different from that in Bristol.

Table 7. Incidence of ulcers in different series (%).

		Gastric ulcers	Duodenal ulcers
Aberdeen	1940s	10	53
	1960s	11	58
Bristol	1950s	23	38
	1970s	22	36

Diagnosis and Management

Since the 1950s, there have been several major changes in the diagnosis and management of upper gastrointestinal haemorrhage. The most important has been the introduction of endoscopy, but other factors include the development of intensive care units for the close monitoring of very sick patients, and the increased use of elective surgery.

The endoscope is widely regarded as the ultimate diagnostic instrument for upper alimentary haemorrhage, but timing of the examination is crucial. If the examination is carried out within 24 hours of the bleed, results are good in most reported series (88 per cent positive diagnosis in ours and in others 92 per cent[5], 96 per cent[6] and 86 per cent[7]), but if the delay is three days or longer, a positive diagnosis is only made in 55 per cent (*see* Table 2). After this time interval, the endoscopist is more likely to be faced with the problem of deciding whether any lesion seen is actually the one that bled (always an unanswerable question for the radiologist, unless angiography is carried out). In comparison, in Cates' series, a positive diagnosis was made by radiology in 62 per cent, and in the early series from Aberdeen, in 65 per cent[2]. No figures are available for the number of false positives and negatives in these series. However, two recent comparisons between radiology and endoscopy showed a positive diagnosis radiologically in 59 per cent[6] and 51 per cent[7], with 8 per cent false positives in both. In our series, there was serious doubt about the causal relationship between the lesions seen and the haemorrhage in only 6 per cent of patients endoscoped within 24 hours of haemorrhage, whereas when the delay was three days or longer, doubt existed in nearly half the cases in which a diagnosis was made. Thus, most of the diagnostic advantages of endoscopy over radiology are lost if the delay reaches three days. The timing of radiology is not quite so critical, as the lesions that heal very rapidly are the superficial ones that cannot be diagnosed radiologically at any time. It is extremely valuable to be able to say with confidence that a particular lesion is the one that bled, especially in view of the occurrence of multiple lesions in about 10 per cent of our cases diagnosed by endoscopy. Endoscopy is also of particular value in the positive diagnosis of superficial lesions. These are significantly more common in patients with other serious underlying diseases, and made up 60 per cent of the lesions seen in such patients in our series, compared with 31 per cent in those without other major pathology. Prior to the days of endoscopy, these cases could only be included in the 'radiology negative' category.

The use of blood transfusions has not changed significantly, being employed in 60 per cent of Cates' patients and 65 per cent of ours. Likewise, there has been little change in the numbers referred for emergency surgery (13 per cent in the 1950s, 16 per cent now). However, the surgical procedures employed have changed markedly; 34 of 35 emergency operations in the 1950s were partial gastrectomies, whereas by the 1970s only 12 out of 43 were, more conservative procedures being preferred (*see* Table 3).

The other major change in surgical management has been the increased use of elective surgery, from 1 per cent

in Cates' series to 7 per cent in ours (*see* Table 4). The total proportion of duodenal ulcers referred for surgery has risen from 20 per cent to 43 per cent ($\chi^2 = 11.7$, $P < 0.001$), most of the increase being in males over 60. This has undoubtedly contributed to the reduction in the number of patients being admitted for a second haemorrhage from a duodenal ulcer during the study period from 10 to zero ($\chi^2 = 7.9$, $P < 0.01$). A similar trend has been noticeable in other series, 29 per cent of the duodenal ulcers over the period 1953-67 being referred for surgery[8], and 52 per cent during 1970-73[4]. The percentage of gastric ulcers referred has not changed so markedly, being 19 per cent for Cates and 22 per cent in our series.

Our overall mortality was 4.5 per cent compared with 5.5 per cent in the 1950s. It has fallen from 9 per cent to 6.5 per cent for the over 60s, and from 3.4 per cent to 2.2 per cent for the under 60s. However, these differences are not statistically significant. Table 5 shows the diagnoses made in fatal cases, and the only noteworthy difference is the reduction of the mortality with duodenal ulceration from 11 per cent to 6 per cent, but even this is not statistically significant ($\chi^2 = 0.74$, $P < 0.10$). Table 6 shows the cause of death in each fatal case, and considerable differences are apparent. In old, debilitated patients, the commonest cause of death is now pneumonia, 6 of the 7 patients dying from pneumonia being over 60. No recent deaths were attributable to peritonitis, as no such patients are now refused surgery on the grounds of their poor general condition; nevertheless, 5 of the 7 deaths from pneumonia and 2 of the other deaths occurred after surgery. If the haemorrhage could have been treated endoscopically in these cases, the patients might have survived. The possibility of such treatment provides hope for reducing the mortality in the future[9-11].

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