EARLY INVESTIGATIONS OF HAEMATEMESIS*

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Most series of haematemesis or melaena present data about the clinical problems in relation to the final diagnosis. When a patient is admitted there is the problem of management which depends to a considerable extent on the diagnosis. This paper demonstrates that it is possible to achieve an accurate diagnosis in 80% during the first 24 hours.

"This, which we have seen as the result of ulceration, also occurs without any such disease; and I have seen it fatal where no organic disease could be discovered, and even the source of the haemorrhage could not be detected."

This reference to haematemesis appeared in a treatise, published in 1830, by Abercrombie, first Physician to the King in Scotland. Well over a century later, and despite advancing knowledge in the fields of diagnosis and pathology, there is still considerable difficulty experienced during the acute stages of haemorrhage in identifying the cause of bleeding. In the extensive writings on the causes and proper management of haematemesis the initial diagnostic problems only too often become submerged in comfortable tables of final diagnosis.

Peptic ulcer is undoubtedly the most important cause of the admission of patients for haematemesis and melaena. In Avery Jones' series (1956) of 1,910 admissions for this emergency, 1,764 were due to proved or probable peptic ulcer. Fraenkel and Truelove (1956) reviewed 845 patients admitted to hospital with haematemesis. Seven out of every 10 showed convincing evidence of a chronic peptic ulcer; acute ulcers accounted for haematemesis in a further one in every six patients. The other single causes, in both series, which contributed appreciable numbers were oesophageal varices and carcinoma of the stomach. Though in most patients with chronic ulcers radiological or operative confirmation is obtained, this is rarely so in the case of bleeding acute ulcers. Thus Needham and McConachie (1950) could give only an approximate estimate of the proportion of their patients with haematemesis who had bled from acute peptic ulcer. Avery Jones (1956) and Tanner (1954) achieved greater diagnostic accuracy by early gastroscopy combined with

surgery and radiology, judging between 6.5% and 29.3% of patients to have bled from acute ulcers. In most series the diagnosis rests upon negative radiological findings, and Avery Jones (1956) commented that a greater proportion of this radiologically negative group would probably be found to have an acute gastric lesion if gastroscopy were done soon after admission.

Acute peptic ulceration is a common lesion which normally responds well to medical treatment, but a firm distinction between acute and chronic ulcer is impossible on clinical grounds alone. Yet with mounting recognition of the rôle of surgery in the treatment of bleeding chronic peptic ulcer and of the good prognosis of the bleeding acute lesion with medical management, the inadequacy of present diagnostic methods assumes increasing importance. Optimal conditions for successful surgery demand an early decision in suitable patients, and the early diagnosis of the cause of haematemesis is an important factor in the successful management of the individual patient.

Three procedures are available to the clinician which, if applied in the acute stages of illness, can yield diagnostic information. These are gastric aspiration, gastroscopy, and early examination by barium meal. This communication attempts to assess the value of these three investigations as a combined procedure for the early diagnosis of the cause of bleeding.

GASTRIC ASPIRATION

Kaufmann (1910) and Hurst (1924) recommended gastric lavage in the acute stages of haematemesis, to empty the distended stomach and thereby to secure its contraction and arrest haemorrhage. Wangenstein (1940), Kinsella (1950), and Lewis (1950) also reported favourably on the value of gastric aspiration in haematemesis. Chandler and

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Watkinson (1953, 1958, 1959) considered that early gastric aspiration yielded valuable information; the observation at the bed side of blood staining in the aspirated specimens was useful because further haemorrhage could be detected before other clinical criteria had indicated its presence, and the association of clear gastric specimens with evidence of continued blood loss indicated that the site of haemorrhage was beyond the pylorus. By studying the acidity of aspirated specimens they showed that high nocturnal acidity is usual in bleeding chronic ulcer, that nocturnal neutralization is commoner in bleeding than in uncomplicated gastric ulcer, and that achlorhydria is observed at the time of haemorrhage in acute peptic ulceration. On this basis the site and type of ulcer responsible for gastrointestinal bleeding was accurately predicted in a significant proportion of the patients investigated.

GASTROSCOPY

Gastroscopic examination is a feasible undertaking in most patients admitted to hospital because of unexplained bleeding from the upper gastrointestinal tract. It should be done as soon as possible after admission, particularly if it is to aid in the detection of acute peptic ulcers and gastric erosions which heal rapidly without trace. If the lesion responsible for bleeding lies in the stomach it can usually be demonstrated, and whenever possible the flexible Hermon Taylor gastroscope, which gives a better view of the stomach and particularly of the posterior wall, should be used. In women over 50 the Wolf-Schindler gastroscope is the safer instrument. Heart failure, thoracic and cervical spinal deformity, and serious lung disease contraindicate the examination, which is performed at the Central Middlesex Hospital after premedication with "nembutal" and "omnupon" and scopolamine. It is sometimes difficult to predict these requirements accurately, and excellent premedication can often be obtained by reducing or omitting the dose of barbiturate and giving pethidine, 50-100 mg. intravenously, at the time of gastroscopy, should anxiety, restlessness, or a prominent gag reflex indicate its use.

Occasionally, by insufflation of air into the gullet during withdrawal of the gastroscope, oesophageal varices may be seen and at times a hiatus hernia can be diagnosed. However, if a lesion is suspected in the lower oesophagus, oesophagoscopy is a more certain method of obtaining information.

EARLY BARIUM MEAL EXAMINATION

Early barium meal examination has been adopted in some centres as a means of obtaining diagnostic information, and the technique elaborated by

Hampton (1937) and followed by Schatzki (1946) is considered safe by many observers. The procedure has been criticised on the grounds that any manipulation of the patient carries the risk of initiating further haemorrhage. Cantwell (1959) has shown that useful information can be obtained by modified examination of the patient in his bed using a portable x-ray apparatus and avoiding manipulation.

At the Central Middlesex Hospital early radiological investigation of haematemesis is done on the ward with a portable x-ray machine. No screen control is used and no palpation of the abdomen is necessary. Four ounces of barium suspension are drunk as rapidly as possible by the patient who is then turned into the right lateral position with the film cassette and grid beneath him. An exposure is made in this position, followed in quick succession by right anterior oblique, right posterior oblique, and antero-posterior projections. The technique of early radiological investigation of bleeding from the upper gastrointestinal tract has been described by Street, Nunn, Cameron, and Chandler (1960).

COMBINED INVESTIGATION

It has been our experience that correct early diagnosis of the cause of haematemesis and melaena is best achieved by a combination of gastric aspiration, gastroscopy, and barium meal examination in the ward. The following procedure has been adopted (Table I):

TABLE I
PROCEDURE FOR
EARLY INVESTIGATION OF HAEMATEMESIS

Day	Time	Method	Technique
First	Admission	Hourly gastric aspiration	pH analysis
Second	9.00 a.m.	Gastroscopy	Hermon Taylor gastroscope, local anaesthesia
Second	2.00 p.m.	Ward barium meal	4 oz. barium. Films, right lateral, right anterior oblique, right posterior oblique, supine

As soon as the patient has been made comfortable after admission to the ward, a Ryle's tube is passed via the nose and secured to the cheek with adhesive strapping. About 5 ml. of gastric contents is aspirated hourly by syringe suction and the samples kept in numbered and stoppered bottles. The pH of the specimens is estimated electrometrically at the end of the intubation period which finishes at 9 a.m. on the day after admission, when the last specimen is obtained. The stomach is then emptied through the indwelling tube and gastroscopy performed. Later that morning or in the early afternoon of the same day, barium meal examination is made on the ward using the portable x-ray apparatus and the technique described above.

The usual requirements of resuscitation are met by generous blood transfusion, and the accepted régime of early feeding and rehydration is followed without serious encroachment by these diagnostic procedures. It is necessary to withhold food and fluids only for two hours preceding radiological examination. Intravenous therapy, where indicated, continues undisturbed. In about two-thirds of admissions for haematemesis all three investigations have been completed and no ill effects have been observed.

ANALYSIS OF CLINICAL CASES

One hundred and two patients, admitted urgently with haematemesis or melaena or both to the Gastroenterological Unit at the Central Middlesex Hospital, were studied by the combined procedure of gastric aspiration followed by gastroscopy and barium meal examination in the ward. They represented consecutive and unselected admissions for gastroduodenal bleeding over the period October, 1958, to May, 1959. The final diagnosis in each case was made at necropsy, at operation, or at a second barium meal examination done in the X-ray Department. The assumed cause of bleeding, and the criteria employed in final diagnosis (which must necessarily be made independently of the early diagnostic procedures), are summarized in Table II.

Of the 102 patients studied, 18 were finally assigned to the group of chronic gastric ulcer, 38 had bled from chronic duodenal ulcers, and 41 from acute lesions. There were two admissions for haemorrhage from carcinoma of the stomach in this series and three patients had bled from oesophageal varices consequent on portal hypertension. Verification of the cause of bleeding was obtained at operation in 15 cases, at necropsy in three, and in the remainder at a second barium

TABLE II
PATIENTS INVESTIGATED

Diagnosis	Number of Cases	Diagnostic Criteria		
		Operation	Final Barium Meal	Necropsy
Chronic gastric ulcer	18	5	13	—
Chronic duodenal ulcer	38	6	32	—
Acute lesion group	41	3	36	2
Carcinoma of stomach	2	1	—	1
Portal hypertension	3	—	3	—
Total	102	15	84	3

meal examination done in the X-ray Department after haemorrhage had stopped.

RESULTS OF EARLY INVESTIGATION

Of the 97 patients in the series who had bled from peptic ulcer, either acute or chronic, 58 were studied by all three procedures during the initial stage of their illness; in 25 only two tests were possible and in 14 only one investigation was performed. In roughly two-thirds of admissions for haematemesis, therefore, all three were possible and no ill effects were observed nor was the mortality adversely affected.

Table III summarizes the results obtained by the early application of the three diagnostic procedures during the acute stage of bleeding in the 97 patients of the peptic ulcer group.

Secretory studies—estimations of intragastric pH during or immediately after bleeding—were carried out in 76 patients. Secretion patterns which accurately predicted final diagnosis were obtained

TABLE III
ACCURACY OF PREDICTION OF FINAL DIAGNOSIS BY THREE METHODS OF INVESTIGATION IN PEPTIC ULCER GROUP

Final Diagnosis	No. of Cases	No. Studied	Diagnostic	Not Diagnostic	Lesion Seen	Lesion Not Seen	% Accuracy
<i>Secretion Patterns</i>							
Chronic gastric ulcer	18	14	7	7	—	—	50
Chronic duodenal ulcer	38	32	21	11	—	—	66
Acute lesion group	41	30	18	12	—	—	60
Total	97	76	46	30	—	—	60
<i>Gastroscopy</i>							
Chronic gastric ulcer	18	12	—	—	9	3	75
Chronic duodenal ulcer	38	25	—	—	0*	18	—
Acute lesion group	41	33	—	—	18**	15	55
Total	97	70	—	—	27	—	—
<i>Early Barium Meal</i>							
Chronic gastric ulcer	18	15	—	—	9	6 (0 incorrect)	60
Chronic duodenal ulcer	38	37	—	—	27	10 (0 incorrect)	73
Acute lesion group	41	40	—	—	—	35 (5 incorrect)	87
Total	97	92	—	—	36	—	77

* Seven patients showed mammillation: ** 13 patients had acute ulcers, five patients showed acute superficial gastritis

in 50% of patients bleeding from chronic gastric ulcer (based on nocturnal neutralization), in 66% of chronic duodenal ulcer subjects (based on high night acidity), and in 60% of acute ulcer patients (based on achlorhydria).

Gastroscopic examination was performed in 70 patients, and, as might be anticipated, proved most useful in the recognition of chronic gastric ulcer, the lesion responsible for bleeding being seen in three-quarters of cases. In bleeding duodenal ulcer, gastroscopy plays an important negative rôle in diagnosis, serving mainly to exclude a gastric lesion, though in seven patients the presence of a chronic duodenal lesion was suspected from the abnormally rugose appearance of the mucosa. Mucosal abnormalities were evident at gastroscopy in 18 of 33 patients (55%) assumed to have bled from acute lesions, 13 patients showing discrete acute ulcers and five a diffuse acute superficial gastritis.

Radiological examination in the ward was done in 92 patients. A confident diagnosis of chronic gastric ulcer was made in nine of 15 (60%) patients bleeding from this cause. More valuable was the ability of this bedside investigation to diagnose chronic duodenal ulcer in 27 of 37 patients (73%), and 35 of 40 patients (87%) were correctly labelled as bleeding from acute lesions on the basis of normal radiological findings.

The histogram (Fig. 1) shows the pre-eminence

FIG. 1.—Histogram of accuracy of prediction of final diagnosis by secretory patterns, gastroscopic findings, and early radiological examination.

of early x-ray examination in forecasting the correct diagnosis amongst acute ulcer patients and those with chronic duodenal lesions. Gastroscopy proved to be the most valuable diagnostic aid in the recognition of chronic gastric ulcer.

It should be noted, however, that this method of presenting data undervalues the rôle of gastroscopy, an examination which cannot provide direct evidence of chronic duodenal ulcer. However, the finding

TABLE IV
CORRELATION OF SECRETORY, GASTROSCOPIC, AND EARLY RADIOLOGICAL DIAGNOSES WITH FINAL DIAGNOSIS OF CAUSE OF BLEEDING

		Gastroscopic Findings			
		Acute Ulcer	Nothing Abnormal Discovered	Gastric Ulcer	Not Done
Secretary Diagnosis of Acute Ulcer in 27 Patients					
Radiological Diagnosis	Nothing abnormal discovered	8	7	1	2
	Gastric ulcer	—	2	1	1
	Duodenal ulcer	—	2	—	2
	Other	—	1	—	—
		Radiological Findings			
		Gastric Ulcer	Duodenal Ulcer	Nothing Abnormal Discovered	Not Done
Gastroscopic Diagnosis of Gastric Ulcer in nine Patients					
Secretary Diagnosis	Gastric ulcer	2	—	1	—
	Duodenal ulcer	1*	—	—	—
	Acute ulcer	1	—	1	—
	Not done	1	—	1	1
		Gastroscopic Findings			Not Done
		Nothing Abnormal or Mammillation	Gastric Ulcer		
Radiological Diagnosis of Duodenal Ulcer in 27 Patients					
Secretary Diagnosis	Duodenal ulcer	11	1*	4	
	Gastric ulcer	1	—	—	
	Acute ulcer	2	—	2	
	Not diagnostic	3	—	—	
	Not done	1	—	2	

* Combined ulcers

of mammillation suggests this cause, and the presence of atrophic gastritis is of great help in excluding it. At the clinical level, negative information from gastroscopy has great value in the diagnosis of the cause of bleeding.

Of greater importance than the comparative merits of these three diagnostic procedures in haematemesis is the degree to which the information derived from them can be correlated. The greater the area of agreement between tests, the more confident can the clinician be in making a diagnosis of the site and type of lesion responsible for bleeding.

Table IV shows the mutual relationship of information obtained from the tests.

When the secretory diagnosis was acute ulcer, supporting evidence was obtained from radiology and gastroscopy in 15 of 22 patients in whom all three tests were made. The number of patients in the gastroscopic gastric ulcer group is too few for useful comment, but the third table shows that, given a radiological diagnosis of duodenal ulcer, unanimity was achieved in 11 out of 18 instances where all three investigations were done.

Agreement in two or more tests was much greater, as is shown in Table V.

TABLE V
EXTENT OF AGREEMENT IN TWO OR MORE TESTS IN 83 PATIENTS (PEPTIC ULCER GROUP)

Final Diagnosis	No. of Patients	Gastroscopy-positive Cases	• Including Gastroscopy-negative Cases
Acute ulcer	35	Agree in 3: 8/27 Agree in 2: 26/35	13/27 35/35
Duodenal ulcer	33	Agree in 3: 3/23 Agree in 2: 18/23	11/23 25/33
Gastric ulcers	15	Agree in 3: 2/8 Agree in 2: 7/15	

If allowance be made for negative findings at gastroscopy as being of value in the diagnosis of the cause of bleeding, it will be seen that agreement in two or more tests was complete in all patients bleeding from acute ulcers. In chronic duodenal ulcer agreement in two or more tests was reached in 25 of 33 patients. With patients bleeding from chronic gastric ulcer, gastroscopy must give positive information to be of value, and in this group agreement between two or more tests was obtained in only seven of 15 cases. But in a further three of these 15 patients gastroscopy had shown a chronic ulcer in the stomach, and in another patient an unequivocal ulcer niche was demonstrated by early x-ray examination.

In 20 patients the results of early investigation were either contradictory or insufficiently precise to enable a confident assumption of the cause of bleeding to be made. In the remaining 77 patients

(80%) of the ulcer group, correct early diagnosis was achieved on the basis of the combined investigations, usually within 24 or 36 hours from admission. Table VI compares the clinical diagnosis on admission, based on the history of illness and the results of previous investigation, with the diagnosis reached by combined early investigation.

TABLE VI
CLINICAL IMPRESSION OF CAUSE OF HAEMORRHAGE COMPARED WITH DIAGNOSIS FROM EARLY INVESTIGATION IN PEPTIC ULCER GROUP

Final Diagnosis	No. of Patients	Correct Diagnosis on Admission (%)	Correct Diagnosis from Early Investigation (%)
Acute ulcer	41	37	85
Duodenal ulcer	38	55	79
Gastric ulcer	18	17	66
Total	97	42	80

The greater reliability of the early diagnostic procedures in forecasting correct eventual diagnosis is well shown in each of the three groups of chronic gastric ulcer, chronic duodenal ulcer, and acute ulcer.

The results obtained by early investigation of the cause of bleeding after haematemesis have provided clear evidence of its value, not only in the facilitation of earlier diagnosis but notably also in the management of patients who bleed again after admission to hospital. In the present investigation 15 patients underwent partial gastrectomy, in nine of whom operation was done as an emergency procedure for uncontrolled bleeding. Emergency gastrectomy was necessary in two patients bleeding from chronic duodenal ulcer and in both a firm pre-operative diagnosis of the cause had been made. Three of four emergency gastrectomies in the group of patients bleeding from chronic gastric ulcer were undertaken with foreknowledge of the responsible lesion. Severe recurrent haemorrhage may demand operation even though a pre-operative diagnosis of acute peptic ulceration has been made by early investigation, as in two of three patients in whom surgery was required (with one post-operative death from pulmonary embolism).

Nevertheless, despite careful investigation and as complete assessment of the patient as was possible within the framework of this study, mistakes occurred, as the following case illustrates.

CASE REPORT.—A man of 46 gave a 20-year history of upper abdominal discomfort occurring one hour after food with long periods of relief. Fifteen years ago he had had an attack of melaena. He was admitted to the Central Middlesex Hospital after a further attack of melaena. Immediate intubation showed extremely high levels of gastric acidity at night, no lesion was seen in

FIG. 2

FIG. 3

FIG. 4

FIG. 2.—Film taken in the ward of barium meal examination of a man aged 36 admitted after haematemesis. Note moderate-sized benign gastric ulcer.

FIG. 3.—Barium meal film taken in the ward of a man aged 52 admitted with haematemesis and melaena. Note deformed duodenal cap containing an ulcer crater.

FIG. 4.—Barium meal film taken in the ward of a man aged 68 admitted because of recent haematemesis. Note narrowing of proximal stomach and infiltration of lower oesophagus by carcinoma.

the stomach at gastroscopy the next morning, and barium meal examination in the ward disclosed the presence of a duodenal ulcer. This lesion was confirmed at a subsequent barium meal examination in the X-ray Department which showed no other abnormality. Blood group was $O + ve$. He made a good recovery, aided by blood transfusion, and was discharged home after 11 days. Because of recurrent pain, operation was advised when he was next seen in the Out-patient Department, but was declined by the patient. Two months later he was readmitted with the signs of ascites and an obviously malignant infiltration of the liver from a primary growth in the fundus of the stomach.

However, the small amount of misleading information is notable, particularly from gastroscopy and radiological examination in the ward, incorrect assumptions being made in only five cases out of 92 patients studied by early radiography. Figs. 2, 3, and 4 are photographs of x-ray films taken with the portable x-ray apparatus and demonstrate the value of this method in early aetiological diagnosis.

Inevitably some patients escaped inclusion in this investigation during the period of study. These exclusions mainly concerned the old and frail, those acutely ill from haemorrhage whose only hope lay in immediate surgery, and finally, a group of patients whose illness was either too mild to justify immediate investigation or in whom associated diseases contraindicated it. Three patients were not investigated because of their general enfeeblement.

One of these, a diabetic woman aged 84, died from bed sores and further bleeding three weeks after admission, and necropsy showed acute gastric ulcers. Two patients died a few hours after admission; a woman aged 65 succumbed to exsanguinating haemorrhage from a large artery in the base of a chronic gastric ulcer shortly after entry to the ward, and a man aged 61, whose duodenal ulcer had both perforated and bled, died on the second hospital day from peritonitis. Four patients admitted with haematemesis or melaena were not studied because of severe associated diseases; congestive heart failure and cor pulmonale most commonly prohibited early investigation. There were no deaths in this group. Thirteen patients, admitted after gastro-duodenal haemorrhage were not investigated for reasons that lay outside our control. None of these patients died.

We are not primarily concerned in this communication with the effect of early investigation and subsequent treatment on mortality from bleeding peptic ulcer. The numbers are too small to form an important basis for comparison with other series or previous experience. There were two deaths amongst 97 ulcer patients studied by immediate investigation, and in the whole period under review, of 119 patients admitted because of haemorrhage from peptic ulcer, five died, a mortality rate of 4.2%. Nevertheless these figures indicate that the

procedure of early investigation is safe, and suggests that its application may well be effective in lowering mortality.

DISCUSSION

The difficulty in correctly diagnosing the cause of the haemorrhage has been recognized in previous reports dealing with haematemesis, especially in the acute stages. A short history of preceding dyspepsia is more commonly found in those patients bleeding from acute than from chronic peptic ulcers, but the diagnosis is not always obvious and the history often misleading. The circumstances of a shocked patient, anxious relatives, and the pressing demands of resuscitation only too often militate against accurate history taking. We have frequently been impressed by the relative ease with which peptic ulcer can be diagnosed in the ambulant patient attending the Out-patient Department compared with the difficulties surrounding the same conclusion in the emergency ward after an attack of haematemesis. Yet early accurate identification of the lesion responsible for bleeding is essential if the mortality from haematemesis is to be reduced from its present unsatisfactory level. By no means easy, the problem must be solved of detecting those patients in whom the prognosis with medical treatment must be considered poor, and who will bleed to death unless surgery is employed. If chronic peptic ulceration can be diagnosed with reasonable confidence, operative treatment is to be recommended for those older patients in whom bleeding is severe or recurs after admission to hospital. As early as 1918 Finsterer (1939) proposed the application of radical surgical measures, the operation being performed within the first 24 to 48 hours from the onset of haemorrhage; his reported operative mortality for early cases was 5%. Gordon-Taylor (1935) commented:

"Finsterer's first 48 hours is still the optimum period for surgical attack in haematemesis and the golden age of gastric surgery will have been attained only when all cases of haemorrhage from chronic ulcer come to operation within that space of time."

And Tanner (1954) found that the best results were obtained by early and frequent surgery. While the mortality with medical management can be as low as that achieved by Meulengracht (1935), it is unlikely that a universal surgical approach will provide comparable success and achieve wide popularity. In general, surgical intervention has been limited to selected patients (Bohn, 1949; Parsons and Aldridge, 1951; Pedersen, 1951), the best results being achieved by prompt surgery in patients with proved or probable peptic ulcers. As Tanner (1950) has stressed, the criterion for success or failure of a

surgical policy is its influence on overall mortality and not the mortality for surgical intervention as such, which depends on the type of risk accepted. Avery Jones (1947), in a study of 400 consecutive admissions for haematemesis, found particular indications for emergency gastrectomy in patients over 50 years with good clinical evidence of chronic peptic ulcer who had brisk recurrent haemorrhage after admission. The same author (1952) again showed that in the group of middle-aged or older subjects with chronic peptic ulceration the mortality is high with medical treatment, and that it is in such patients that the best surgical contribution to the reduction of mortality can be achieved, provided an early decision is made in suitable cases.

Decisions as to correct treatment of the patient with haematemesis most often depend on clinical judgment and there is need for a method of investigation that will yield reliable diagnostic information in the acute stages of illness. The results obtained in this investigation by combining gastric aspiration with gastroscopy and barium meal examination in the ward have provided good evidence of its usefulness in the facilitation of earlier diagnosis of the cause of bleeding. Thus correct early diagnosis was achieved by means of combined investigation in 80% of patients with haemorrhage from peptic ulcer, usually within 24 or 36 hours from admission. These early diagnostic procedures proved to be much more reliable in forecasting the correct diagnosis than did the clinical impression of the cause of bleeding. From knowledge of the results obtained by early investigation a more confident assumption could be made as to the pathological basis of the illness than would otherwise have been possible.

The experience gained from this investigation has an important practical application in the management of haematemesis. Thus, when the early diagnostic procedures indicate the presence of chronic peptic ulcer, and if bleeding occurs after admission, the surgeon on duty is asked to see the patient, especially if over 45 years of age, with a view to immediate operation. If bleeding has stopped, surgery is delayed pending further evidence of recurrence. Chronic gastric ulcer is a particular indication for surgery; bleeding from this source carries a high mortality under medical treatment and its operative arrest by gastrectomy is generally easier than is the surgery of chronic duodenal ulcer. When the evidence from early combined investigation indicates that haemorrhage is from acute peptic ulcer, continued medical treatment is generally advisable. Nevertheless surgery may still be required to control bleeding in such patients; continued massive haemorrhage is an indication for

surgical intervention, though the need for this is rarely so urgent as in bleeding chronic peptic ulcer. In every patient all evidence of chronic peptic ulcer from previous investigations must be given due regard, in conjunction with the history before admission, in order to assist the final decision between operative and conservative treatment.

The importance of reaching an early decision as to the surgical treatment of haematemesis cannot be overemphasized. Rapid deterioration, in circumstances of recurrent bleeding despite apparently adequate replacement of blood by transfusion, is common, and delay in seeking surgical aid often fatal. Every patient with haematemesis presents a new challenge to diagnosis and proper management. When the physician is guided by all the facts available from the history, examination, and investigation, correct appraisal is greatly facilitated. Confidence in the recovery of such patients, under either medical or surgical treatment, is usually justified by the event.

The adoption of a policy whereby early diagnosis of the cause of bleeding can be achieved has been found to confer other benefits, particularly in respect of the length of stay of the patient in hospital. Most patients admitted after gastro-duodenal haemorrhage do not bleed again, but despite this it is usual for rest in bed to be enforced until they are judged to be fit for barium meal examination in the X-ray Department, after which slow convalescence is allowed. If the procedure of early investigation is followed, there is no reason why the patient whose recovery is uncomplicated should be retained in hospital for this purpose; a second barium meal examination is unnecessary except in the small number of cases where the results of early investigation are conflicting. In the majority of patients barium meal examination in the ward can be accepted as a satisfactory alternative to later radiological investigation. There is no evidence to suggest that recovery after haematemesis is hastened by confinement to bed, the dangers of which are

obvious, especially in older subjects with associated degenerative disease. There is little doubt that, fortified by a diagnosis of the cause of bleeding reached in the acute stages of illness, and in the presence of satisfactory clinical progress, the physician can best serve the interests of the patient by allowing early ambulation. The saving in the time a bed is occupied that results is considerable, and the advantages of this policy are shared equally by the patient, who enjoys an earlier return to his home, and the physician, whose waiting list is materially influenced to the benefit of other patients awaiting admission.

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