MEDICAL INDICATIONS FOR THE SURGICAL TREATMENT OF ACUTELY BLEEDING PEPTIC ULCER

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Treatment of the acutely bleeding peptic ulcer with haematemesis or melaena has for many years been almost solely medical-dietetic (Lenhartz, 1904; Meulengracht and Schjødt, 1934). On the whole the results have been good (Meulengracht, 1939, 1947), but the latest development of gastric surgery has increased interest in the surgical treatment of acute haemorrhage as well as of chronic ulcers. In cases of acute haemorrhage, however, in which the operative risk is increased, immediate operation should probably be carried out only on patients in whom the prognosis with medical treatment must be considered grave.

From a medical point of view the problem must be to detect those patients whose prognosis is grave. An attempt has been made to evaluate the prognosis of peptic ulcer cases from this point of view.

Present Investigation

All the patients discussed here had the symptoms of haematemesis and/or melaena; they were admitted for treatment to our medical department between November 1, 1942, and November 1, 1949. During this seven-year period 17,254 patients were admitted. The haematemesis and/or melaena occurred in 214 cases immediately before or during the patients' stay in hospital.

Eighty-seven patients had melaena only; one of them died from a cachectic state caused by cancer of the stomach. Thus in these 87 patients the prognosis was good, and surgical treatment did not seem to be required in connexion with the haemorrhage. The cause of the haemorrhage and other symptoms has therefore not been further investigated in this group.

The remaining 127 patients had haematemesis with or without melaena; 27 died. The distribution of this group according to age and diagnosis is shown in Table I. They were treated with rest in bed, light diet, iron medication, and vitamins. In the course of the seven-year period there was an increase in the frequency of blood transfusions or intravenous administration of blood substitutes or fluids. It seems, however, that the

TABLE I.—127 Patients with Haematemesis Distributed According to Diagnosis (Cause of Haematemesis) and Age. The Number of Haematemeses that Occurred at Hospital and the Number of Patients who Died are Also Given.

Diagnosis	Age under 40			Age 40-50			Age over 50		
	Age under 40	Died	Haematemesis at Hospital	Age 40-50	Died	Haematemesis at Hospital	Age over 50	Died	Haematemesis at Hospital
"Ulcer" ..	10	0	3	8	0	4	26	11	10
Ulcer of corpus ..	2	0	1	4	1	3	13	3	6
Duodenal ulcer ..	15	1	4	14	0	3	20	5	8
Gastro-jejunal ulcer	1	0	1	2	0	0	0	0	0
Cancer of intestinal tract ..	0	0	0	0	0	0	6	3	2
Oesophageal varices	1	0	1	1	1	1	2	1	2
Other affections ..	0	0	0	0	0	0	2	1	1
	29	1	10	29	2	11	69	24	29

mortality rate was the same during the whole period—for example, from January 1, 1948, to November 1, 1949 (22 months), 43 cases of haematemesis caused by peptic ulcer were treated, with 5 deaths (12%); the mortality in this period corresponds fairly well with that of the whole seven years (16%).

In Table I the cases are grouped according to diagnoses in the following manner:

The "ulcer" group includes patients who had for many years suffered from characteristic ulcer symptoms (tardive cardialgia, pyrosis, nausea, and vomiting), but in whom it was not possible to carry out x-ray examination in connexion with the haematemesis.

The "ulcer of the corpus ventriculi" group includes the patients in whom x-ray examination showed definite changes in connexion with the haemorrhage that were interpreted as ulcer of the corpus. Corresponding criteria were fulfilled by the patients in the "duodenal ulcer" and "gastro-jejunal ulcer" groups. These groups, however, include a few patients in whom the diagnosis was verified only after death.

The "cancer of the intestinal tract" group includes four patients in whom the diagnosis was verified by x-ray examination, one in whom it was verified *post mortem*, and one in whom the course, which was lethal, was regarded as characteristic.

The diagnosis "oesophageal varices" was made in three cases on the basis of the x-ray films, and in one case it was based on a typical *facies morbi*.

The "other diseases" group includes one patient with lymphatic leukaemia and one with pernicious anaemia, neither of whom had any anamnestic, symptomatic, or other signs of peptic ulcer or cancer.

Symptoms of Value in Prognosis

Of the 27 patients who died, 21 had peptic ulcer—one of these died from cerebral thrombosis, one from embolism of the pulmonary artery, and 19 from loss of blood. These 19 peptic ulcer patients who had a "bad prognosis" when treated medically comprise the group we wish to be able to designate *a priori*.

The literature on this subject includes various surveys of the symptoms which are of value in such a designation (Finsterer, 1933; Gordon-Taylor, 1937; Royal Society of Medicine, 1949). On the basis of material which includes 317 verified cases of haematemesis or melaena caused by peptic ulcer, Jørgen Pedersen (1949) has therefore suggested the following three criteria as indications for surgical treatment in the acute phase: the age of the patient over 50 years; haematemesis in hospital; and recognized ulcer.

In order to obtain an impression of how these indications, which were mainly based on post-mortem diagnoses, will work in practice—that is, when we are faced with the clinical picture of each of the cases—an attempt has been made to group the patients of the present series according to these criteria. Table II shows that the group in which immediate operation should have been

TABLE II.—Distribution of Patients with Haematemesis at Hospital According to Age and Diagnosis. Figures in Parentheses Indicate the Number of Deaths.

	Age under 40	Age 40-50	Age over 50	Died without Haematemesis at Hospital
Total cases ..	10 (1)	11 (2)	29 (16)	8
Previously recognized ulcer ..	2 (1)	0	8 (4)	2
Typical history of ulcer ..	2 (0)	4 (0)	2 (0)	3
No ulcer ..	1 (0)	1 (1)	5 (4)	1

indicated (those with a grave prognosis on medical treatment) would have included 8 patients, 4 of whom died, whereas 15 of those who died on account of haemorrhage would not have complied with the suggested criteria.

A purely clinical evaluation has, however, also been attempted. Bohn (1949) has, for instance, on the basis of his experience with 135 cases of haematemesis, considered every case of haematemesis "a potential surgical case," and is of the opinion that the following symptoms are particularly valuable as regards the prognosis in haematemesis: age of patient over 40 years; great loss of blood; good evidence of chronic ulcer, especially ulcer of the corpus; and haematemesis at hospital.

In the present series these symptoms have been evaluated as follows:

Loss of Blood.—The quantity of blood lost has been judged from the condition of the patients and their history, etc., regarding the haemorrhage. (The haemoglobin percentage is of no value at the time when the symptoms are to be considered, but in all surviving patients the haemoglobin percentage was less than 50. Thus it seems justifiable to say that this criterion corresponds to a haemorrhage of 2 litres or more.)

Chronic Ulcers.—The criterion is considered to be fulfilled when the patients have suffered from symptoms of peptic ulcer for more than 10 years.

Ulcers of the Corpus.—Cases in which it was known that previous x-ray examination had demonstrated ulcers of the corpus ventriculi.

Bohn considers each of these symptoms to be equally valuable; an age of above 40 is, however, more essential than the other symptoms. Patients below 40 seldom die from haematemesis; therefore in the following grouping this criterion has been considered obligatory. In the present series 98 of our 127 patients with haematemesis were aged over 40, and 47 of these, moreover, fulfilled two or more of Bohn's suggested indications for surgical treatment.

From Table III we see that 18 of the 19 patients who died from haemorrhage due to ulcer are found in this group.

TABLE III.—Patients over 40 Years who Presented Two or More of Bohn's Indications.

	No.	Dead
Ulcer disease	44	18
No ulcer	3	3

Discussion

If the diagnoses in the series are verified by a retrospective investigation of the prognosis in patients with haematemesis, as has been done by Jørgen Pedersen, the figures seem to be very reliable. In practical work it is, however, necessary to consider the symptoms present in the patients at the time of their haemorrhage, as it is then that, by evaluation of the symptoms, it must be decided whether treatment should be medical or surgical; but it must be remembered that at this time the diagnosis is not always certain, as haematemesis may occur in many different diseases.

It seems, however, that the indications for surgical treatment suggested by Bohn occur only in a comparatively small number of patients with haematemesis due to diseases other than peptic ulcer; in the present series this was the case in only three patients, who, moreover, all died in hospital.

We have 19 patients who died from ulcer haemorrhage; this group we wished to be able to designate *a priori*. It therefore seems natural to try to find criteria which apply to as many of these patients as possible without our obtaining an absurdly large and inhomogeneous group. If we use Jørgen Pedersen's criteria we obtain a group of eight patients which includes four of those who died. If instead of the criterion "verified ulcer" we use "typical long-standing history of ulcer," the group now includes 10 patients, 4 of whom died (see Table II). Among our patients there are 47 aged over 40 who fulfilled two or more of Bohn's criteria, and among these 47 we find 18 of the 19 who died from haemorrhage. This result is obtained at the cost of three patients who also are included in the group but had not got peptic ulcer (one with cancer of the stomach, one with lymphatic leukaemia, and one with oesophageal varices, who all died). The other fatal case was that of a man aged 39 who otherwise fulfilled two of Bohn's criteria.

Apart from the claim that the patient should be over 40, each of Bohn's criteria seems equally valuable. The mortality among the ulcer patients in each of the groups chosen according to one of the symptoms is almost the same: haematemesis in hospital 43%, great loss of blood 43%, chronic ulcer 24%, and corpus ulcer 33%.

Thus if we apply Jørgen Pedersen's or Bohn's criteria we find that in the present material the mortality due to bleeding in patients with haematemesis from peptic ulcer is 40% and 41% in the two groups respectively (the three patients who did not suffer from peptic ulcer have not been included).

When grouping in the above manner on the basis of certain symptoms we may often include cases which supplementary clinical investigation might have excluded—for example, it would probably often be possible to omit patients with oesophageal varices.

On the other hand, the tables do not show that some of the patients had their haematemesis immediately before they died, and so probably not even surgical treatment could have saved their lives. It must also be pointed out that when there is no x-ray verification of an ulcer, the risk that it will not be possible to find any bleeding vessels at operation is increased. The importance of the latter factor cannot be investigated in the present (medically treated) material.

The one point which in future must decide whether such a group of patients as we have here designated is to be chosen for surgical treatment must be the question whether surgical treatment is able to reduce the mortality of the group. The latest investigations on this problem seem to indicate that it does (Welch, 1949).

Conclusions

It seems that among patients with haematemesis it is possible at once to designate a small group in which the mortality is very high with medical treatment. In the present material, using Jørgen Pedersen's and Bohn's methods, the mortality rate was about 40% (as compared with 16.5% in the whole of the investigated material of patients with haematemesis). When applying Jørgen Pedersen's indications we arrived at a group which included only 4 of the 19 deaths. Application of Bohn's criteria led to a group which included 18 of the 19 patients that died. Furthermore, the latter more extensive group incorporated three cases of haematemesis without peptic ulcer (surgical treatment would,

however, not have changed the prognosis in these cases, as they all died).

Thus Bohn's procedure is worthy of recommendation as the criteria are simple, easy to evaluate, and seem to be reliable.

Summary

Among the 17,254 patients treated during a seven-year period, 87 had macroscopic melaena (without haematemesis) and 127 haematemesis with or without melaena.

Only one of the 87 melaena patients died (from cancer); therefore in this group surgery was not indicated.

The 127 patients who had haematemesis were treated with light diet, rest in bed, iron, and vitamin medication, and, as the period investigated advanced, to an increasing degree with blood transfusions. The diagnostic distribution is seen in Table I.

In 115 cases the haemorrhage was caused by peptic ulcer (21 of these patients died); in 12 cases the haemorrhage was due to other affections (6 died). Two of the patients with peptic ulcer died from other affections, while 19 died from their haemorrhage—that is, a mortality rate of 16.5%.

Jørgen Pedersen's criteria for surgical intervention (age over 50 years; haematemesis at hospital; recognized ulcer) were fulfilled in eight patients, four of whom died (Table II).

Bohn's criteria, which apply to patients over 40 years and which indicate surgery when two or more are fulfilled (severe haemorrhage; good evidence of a chronic peptic ulcer, particularly corpus ulcer; haematemesis at hospital) designated 47 patients, including 18 of the 19 that died from haemorrhage in peptic ulcer (Table III). The group includes three cases in which the haemorrhage was not caused by peptic ulcer. In this group the mortality from haematemesis due to peptic ulcer amounts to 40%.

It is concluded that Bohn's criteria must be regarded as suitable for determining which patients are to be subjected to immediate surgery.

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Education authorities in Scotland make provision for less than 4,000 of about 20,000 physically disabled children. Recommendations for meeting this situation have been made by the Advisory Council on Education in Scotland. The council does not think that all such children should necessarily attend special schools; on the contrary, wherever possible they should go to ordinary schools; also, the children should not be removed from their homes unless they would unquestionably benefit from being in residential institutions. The council estimates that there are nearly 16,000 children suffering from lowered vitality, and between 4,000 and 7,000 physically handicapped; epileptic children number 237. Education in day schools with special provision for diet, fresh air, and rest in convalescent and holiday homes is proposed for children with lowered vitality, and as speedy return as possible to normal conditions. Where physically handicapped children are concerned, the council recommends that medical treatment should come first. Vocational training for disabled children should be included in the curriculum towards the end of their school days. A national centre for epileptic children is advocated, and the council suggests that the school-leaving age for physically disabled and epileptic children should be 16 years. The work of the Edinburgh centre for children with cerebral palsy should be encouraged and others set up; basic research in the psychology and education of disabled children should also receive every encouragement.

THE SYNDROME OF SUPRARENAL HAEMORRHAGE IN THE ADULT

WITH A REPORT ON FOUR CASES IN ASSOCIATION WITH PREGNANCY

BY

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Haemorrhage into the suprarenal gland in the adult is not a common condition. It is a well-recognized entity in association with septicaemia in both children and adults, when it is known as the Waterhouse-Friderichsen syndrome. That bleeding can occur into the suprarenals in the absence of infection has long been known, although this condition rarely figures in the differential diagnosis of cases of acute abdominal emergency or unexplained collapse. Despite its infrequency the lesion has long been looked upon as one of considerable importance by the French, and in America Lvenson (1908) published a complete account of the syndrome with an extensive review of the literature. Yet as recently as 1949, referring to the latest reported case of this condition in pregnancy, Arnold, Richer, and Lepore wrote: "If we had thought of the possibility and properly explored the adrenal regions at the time of the first operation, perhaps the patient's life could have been saved. The case strongly emphasizes the necessity of including adrenal haemorrhage in the differential diagnosis of any uncertain abdominal situation." For this reason attention is again called to the syndrome in the hope that consideration of the diagnosis might permit successful treatment of what has almost always been a fatal condition.

The following cases, complicating pregnancy or the puerperium, have occurred in St. Mary's Hospitals, Manchester, since 1946:

Case 1

A 2-gravida aged 31 was admitted to hospital at term on the evening of April 6, 1947. The only abnormality noted in her pregnancy had been an increase in weight of 38 lb. (17.2 kg.). She was in early labour, the vertex was presenting and engaged, and the cervix was two fingers dilated. The blood pressure was 130/80 mm. Hg, pulse 72 a minute; there was no oedema or any abnormality in the urine. Labour continued slowly. At 2 a.m. on April 7 the pulse rate had risen to 120 and by 6.30 a.m. had gone up to 148. The patient did not complain of any pain beyond that due to her uterine contractions.

Abdominal examination showed the uterus to be somewhat tense, and tenderness was evident across the lower abdomen. The blood pressure was 85/50 mm. Hg; pulse 140; the foetal heart sounds could not be heard. The patient presented a generally shocked appearance with air hunger and cold skin, and was perspiring freely. Her temperature was 99.6° F. (37.55° C.). Concealed accidental haemorrhage was provisionally diagnosed, and an intravenous drip of plasma was started, followed later by whole blood. Morphine, $\frac{1}{4}$ gr. (16 mg.), was given by injection. Despite this conservative treatment steady deterioration occurred in the general condition. At 5 p.m. the pulse rate had risen to 180 and the blood pressure was 90/50 mm. Hg; the temperature was 101.6° F. (38.7° C.). Vaginal examination showed the cervix to be three-quarters dilated, the head being in the mid-cavity of the pelvis; the membranes were ruptured artificially. The patient continued to go downhill, however; the pulse became impalpable and the blood pressure fell to 60/45 mm. Hg. Respiration became more