demonstration on tuberculosis of the spine given by the late Professor Hotz at Basle. It began with a series of fine pathological preparations showing every stage of the disease, with skiagrams and photographs to show its clinical progress. A little man with an old healed angular curvature then came in, and he was followed by two bed cases, one of paraplegia and one of psoas abscess. In an hour we had been shown a complete picture of the disease so vivid that it still remains to me a living memory after twenty-five years. Such a demonstration involves resources in material and assistance which are rarely available, but can you question their incomparable value?

Next the student must have access to specimens, to microscopical slides, and to patients, so that he may study every detail of the picture at his leisure. In this College we are rapidly building up a pathological museum with this very object in view, where the student will find ready to his hand all the material for training his mind in exact observation which no book can supply. The patient himself must be studied in the hospital, but perhaps we may in the very distant future have even our own clinic for the more advanced study of disease.

With this experience behind him the ward demonstration will take on for the student an entirely new significance. Here the teacher can draw upon his own experience and illustrate the points he desires to stress from the patients around him, while the student is introduced to the human side of observation as distinct from the purely scientific.

Finally, in the out-patient department the art is acquired of rapid recognition of main symptoms and their separation from a confused mass of unimportant details. The student learns to recognize disease at sight, to become in fact the trained observer.

You will see, then, that the mind of the great observer is replete with pictures of definite entities, each a vivid and living reality based on an actual experience. It has been my good fortune to meet some of these great minds who leave so deep an impress on our own personality, and when I mention the names of Harold Barnard, Henry Head, and Wilfred Trotter many of you will be recalled to happy memories. With Barnard every case was an adventure into the world of romance, every specimen a trophy from a voyage of discovery. To Head a small area of increased sensation was an Open Sesame, a slight change in gait the key to deeply seated processes of vital import. The quiet glance of Trotter could penetrate into the subtle instincts which, to us unknown, play so large a part in all our lives. Each was a great observer and each has left for us the golden harvest of what he saw and the gleaming inspiration of his example.

In the ancient world men looked within themselves for knowledge, and for them the world around had little interest. For us a vast field of Nature has been opened of which they knew nothing, and it seems to be as limitless as the heavens. Whether we look down a microscope at a minute organism, or through a great telescope at a nebula a million years of light away, we realize that there is an infinity beyond. But, infinitely small or infinitely distant, it is there for us to see, and it only awaits our observation. All around us are whole worlds for us to see if we will only look, to hear if we will only listen.

"What does it matter where or how we die
So long as we have health to see it all—
The different ways that different things are done,
And men and women loving in this world?"

Could a better epitaph be found for the great observer we honour to-day—John Hunter?

HAEMATEMESIS

WITH SPECIAL REFERENCE TO CHRONIC PEPTIC ULCER

BY

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AND

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While haematemesis remains one of the common emergencies in hospital practice it is natural that its prognosis should be the subject of controversy. This controversy has been fostered by the widely different fatality rates recorded by various workers. To a great extent these discrepancies have arisen from faulty selection of data and errors in their presentation. The fallacies of many published series have been pointed out by Avery Jones (1947), and he has suggested criteria for estimating the fatality rate which if generally adopted would permit fair comparison of different series. Avery Jones has also presented the largest personal series of cases of haematemesis treated in this country, with a fatality rate of 8%. It is likely that haematemesis carries a considerably higher fatality rate in the country as a whole, for it would be absurd if a highly trained specialist did not obtain better results than less-experienced workers.

The great value of Avery Jones's results is that they set a standard which others may seek to achieve. In this connexion it is noteworthy that the literature shows that most series with a low fatality rate have come from interested single physicians presenting their own cases, whereas studies of gross hospital figures commonly indicate a much less favourable prognosis. Thus Babey and Hurst (1936), Smith (1945), and Avery Jones (1947), who report their own cases, record fatality rates of 6-8%. Conversely, recent publications of mass hospital figures show a fatality rate ranging from 13 to 25% (Chiesman, 1932; Cullinan and Price, 1932; Burger and Hartfall, 1934; Hellier, 1934; Aitken, 1934).

We believe that mass hospital figures are more truly representative of the dangers of haematemesis than are the results obtained by a few specialists, provided that the data are handled with an appreciation of possible fallacies. The one essential is that only those data which are likely to be accurately recorded in the notes should be employed. The present study shows that haematemesis remains a highly dangerous condition.

Data

The sources of data of this study are the in-patient notes of the Radcliffe Infirmary, a general teaching hospital in a half-rural, half-industrial area, covering the ten years 1938-47 inclusive. Case notes of all patients admitted as emergencies because of haematemesis or melaena have been analysed. The cause of the bleeding was classified under the following headings: (1) chronic peptic ulcer; (2) acute peptic ulcer; (3) other causes; (4) unknown.

The criterion used for making the diagnosis of peptic ulcer was a record in the case history of epigastric pain with at least two of the following characteristics: (1) relationship to meals; (2) relief by food, alkalis, or vomiting; (3) periodical remissions. In addition, a history of previous perforation or positive x-ray findings were taken as strong evidence in favour of the diagnosis. Ulceration was deemed to be acute if there was no history of periodicity and the symptoms had been present for less than three months.

FIG. 1.—Whole series: fatality rate from haematemesis

In considering the fatal cases we have adopted the criteria of Avery Jones (1947) in excluding only those deaths due to unrelated diseases or to elective operation after recovery from the bleeding. Those excluded were due to:

- (1) pyaemia arising from a boil (44 days after admission);
- (2) subarachnoid haemorrhage (30 days after admission);
- (3) partial gastrectomy (for perforation on 14th day after admission);
- (4) partial gastrectomy (51st day);
- (5) liver failure due to a concurrent hepatitis (31st day after admission).

Results

Table I and Fig. 1, dealing with the whole series, show the relation between age and fatality rate and demonstrate that the fatality rate climbs steeply with advancing years. There

TABLE I.—Total Series. Fatality Rate from Haematemesis by Age

Age Group	No. of Cases	No. Died	Fatality Rate
< 30	26	0	0%
30-39	42	3	7.1%
40-49	67	5	7.5%
50-59	84	19	22.6%
60-69	56	18	32.1%
70+	30	13	43.3%
Total	305	58	19.0%

TABLE II.—Fatality Rate in Groups Under and Over 50

Age Group	Cases	Fatality Rate	Difference	Standard Error of Difference
< 50	135	5.9%	23.5	4.0
50+	170	29.4%		

TABLE III.—Fatality Rate by Age in the Different Groups

Age	Chronic Ulcers			Acute Ulcers		Other Diagnosis		Unknown	
	No. of Cases	No. Died	% Died	Cases	Died	Cases	Died	Cases	Died
< 30	18	0	0	7	0	2	0	4	0
30-39	30	2	6.6	7	0	0	0	3	1
40-49	44	4	9.1	14	0	3	1	6	0
50-59	59	15	25.4	10	0	7	1	8	3
60-69	41	13	31.7	5	1	2	1	8	3
70+	16	5	31.2	6	2	1	1	7	5
Totals	208	39	18.8	44	3 (6.8%)	17	4 (23.5%)	36	12 (33.3%)

appears to be a sharp increase at about 50 years of age, and the fatality rate of the over-fifties is about five times as great as that of the under-fifties (Table II).

FIG. 2.—Chronic ulcer group: fatality rate from haematemesis.

Table III shows that 208 patients were classified as suffering from chronic ulcer by the criteria already given. The effect of age of patient on liability to death remains as pronounced as with the whole series, and Fig. 2 is similar in shape to Fig. 1.

In what follows we are concerned solely with the group of

cases diagnosed as proved or probable chronic peptic ulcer. A certain number of patients included in the "unknown" or "acute ulcer" groups were later found to be suffering from chronic peptic ulcers. However, we have deliberately not included such cases in our chronic ulcer group for the reason that a diagnosis of chronic ulcer can always be made at necropsy, but the final diagnosis is not necessarily certain if the patient lives. In other words, to work on final diagnosis might unduly weight the "chronic ulcer" group with fatal cases. In consequence we have preferred to deal with those cases whose previous history made the diagnosis of chronic peptic ulcer reasonably certain on admission to hospital. It may be noted that no gross distortion of our main conclusions occurs if we work on final diagnosis.

Effect of Sex

Table IV shows the results of classifying the chronic ulcer group into males and females and two main age groups—i.e., below and above 50 years. Considerably fewer women than men are admitted with haematemesis due to chronic ulcer, and the discrepancy between the sexes is more pronounced in the younger of these groups. The effect of age on fatality rate appears to be similar in men and women, so that when we deal with the whole group this effect is not an artifact due to different proportions of men and women in various age groups. For comparison we have regrouped Avery Jones's data in the same way (Table V). It will be seen that a similar sex distribution occurs.

TABLE IV.—Chronic Ulcer Group Only: Effect of Sex on Fatality Rate

Age Group	Males		Females	
	No. of Patients	No. Died	No. of Patients	No. Died
< 50	74	5	18	1
50+	83	26	33	7
Totals	157	31	51	8

TABLE V.—Avery Jones's Figures Regrouped as in Table IV

Age Group	Males		Females	
	No. of Patients	No. Died	No. of Patients	No. Died
< 50	166	3	54	2
50+	180	25	130	12

bution occurs. A small point worth mentioning is that among the men the proportion of patients over 50 is almost identical in the two series. Avery Jones's belief that municipal hospitals have to deal with an unduly large proportion of elderly patients therefore does not appear to be well founded.

Length of Ulcer History

Although it is well known that older patients are more prone to die from haematemesis, there is little clear evidence to show the precise reason. It is important to elucidate whether the change in fatality rate is brought about by (a) general bodily changes due to ageing of the patient or (b) local conditions in the ulcer, particularly those due to chronicity. Since a chronic peptic ulcer may persist for many years it is evident that among the older age groups there would be a large proportion of patients with long-standing ulcers. Therefore in order to separate the effects of age of patient from length of ulcer history we have so analysed our data as to show the influence of both these factors simultaneously (Table VI and Fig. 3).

From Table VI it appears clear that the age of the patient is of profound importance and the length of ulcer history negligible. The finding is so clear-cut that it is unlikely to be an artifact. Unfortunately, previous workers have not presented their data in such a way as to demonstrate whether or not this is a general finding. It is true that Burger and Hartfall (1934) mention the length of history of all their cases of peptic ulcer and of the fatal cases, but no account is taken of the patient's age. When their data are rearranged and presented as in Table VI we find that patients with a history of more than ten years have a worse prognosis than those with a history of 1-5 years, but the difference is not great (Table VII). The

FIG. 3.—Fatality rate in relation to length of ulcer history and age group.

TABLE VI.—Chronic Ulcer Group. Influence on Fatality Rate of Age of Patient and Length of Ulcer History

Length of Ulcer History	Age of Patients in Years					
	< 50			50 +		
	No. of Patients	No. Died	Fatality Rate	No. of Patients	No. Died	Fatality Rate
5 years ..	30	3	10.0%	18	6	33.3%
5-9 ..	24	0	0.0%	22	6	27.3%
10-19 ..	22	2	9.1%	48	15	31.2%
20- ..	12	1	8.3%	27	6	22.2%
Not specified ..	4	0	—	1	0	—
< 10 years ..	54	3	5.6%	40	12	30.0%
10+ ..	34	3	8.8%	75	21	28.0%

TABLE VII.—Fatality Rate from Rearrangement of Burger and Hartfall's Data

Length of Ulcer History	No. of Patients	No. Died	Fatality Rate
1-5 years ..	51	14	28%
5-9 ..	12	1	8%
10+ ..	29	11	38%

group of patients with a history of 5-10 years is so small that little attention can be paid to its low fatality rate. When we bear in mind that long-standing ulcers are more common in older age groups the greater average age of such patients might well account for the small difference observed.

Prognostic Significance of Previous Haematemesis

A history of previous haematemesis is not uncommon among patients in the chronic ulcer group. It is naturally important to know whether or not a past history of haematemesis influences prognosis. Table VIII shows the results of comparing patients with and without a history of previous haematemesis in the two main age groups.

TABLE VIII.—Chronic Ulcer Group. Prognostic Significance of History of Previous Haematemesis

	< 50			50 +		
	No. of Patients	Fatality Rate	Difference and Standard Error	No. of Patients	Fatality Rate	Difference and Standard Error
With previous haematemesis	33	9.1%	4.0 ± 5.8	47	27.7%	1.3 ± 8.6
Without previous haematemesis	59	5.1%		69	29.0%	

There is no significant difference in fatality rate between these two classes of patient, but the effect of age remains unaltered. In other words, a history of previous haematemesis has no bearing on immediate prognosis. Conversely, the greater fatality rate among older age groups is not because they contain a large proportion of patients with a history of previous haematemesis.

Severity of Bleeding

In considering why older patients are more prone to die from haematemesis we must take account of the possibility that such patients may bleed more profusely or for a longer time than younger patients, possibly because their vessels are arteriosclerotic and cannot retract efficiently. It is evident that no accurate estimate of the extent of bleeding can be obtained without precise and repeated studies of haemoglobin and blood volume. Such elaborate data are not available in case notes, and we have been forced to rely upon (a) a record of repeated frank haematemesis or melaena, or of general signs of internal haemorrhage, to indicate the occurrence of further bleeding after admission to hospital, and (b) the amount of blood transfused as a rough indication of the total blood loss.

Table IX shows that while recurrent bleeding is more common in the older age-groups the difference is not great, and it is certainly not sufficient to account for the much higher fatality rate.

TABLE IX.—Chronic Ulcer Group. Frequency of Recurrent Bleeding Among Age Groups

Age Group	No. of Cases	No. with R.B.	Difference	Standard Error of Difference
< 50	92	28 (30.4%)	6.7	6.6
50 +	116	43 (37.1%)		

Table X shows the amount of blood transfused to patients in the two main age groups. If we define a massive blood transfusion as one of ten pints (5.68 litres) or more, it is of interest that in each of the age groups about the same proportion of patients received such a massive transfusion: 6 out of 92 (6.5%), compared with 10 out of 116 (8.5%). Massive bleeding is therefore not uncommon in the younger age groups, but it does not often appear to be fatal when treated with blood transfusion.

TABLE X.—Chronic Ulcer Group. Amount of Blood Transfused

No. of Bottles of Blood	Age: < 50		50 +	
	Cases	Died	Cases	Died
0 ..	49	0	38	4
1-4 ..	29	4	47	15
5-9 ..	7	0	18	5
10+ ..	6	1	10	6
Unknown ..	1	—	3	—

Within the limitations inevitably imposed by the nature of our data, these findings do not suggest that the greater fatality among older age groups is mainly due to more severe haemorrhage. We are thus led back to our previous conclusion that the difference is due to the general bodily changes which occur with age.

Results of Surgery

Very few cases were treated surgically. Eight patients, all over 50, were treated by emergency partial gastrectomy because of recurrent bleeding. The results were not encouraging, for five patients died. In such a small group random sampling errors may be very large, so that no firm conclusion can be drawn from this result. Six patients were treated by other surgical procedures, such as under-sewing the ulcer or ligating an artery. Among these, of four who were under 50 three lived, and of two over 50 both died. We are not concerned here with the relative merits of surgical and medical treatment, for which an *ad hoc* inquiry is preferable. One reason for including these figures is to show that the over-fifties are a poor risk with haematemesis whether treated medically or surgically. More important in the present context, the number of cases treated surgically is not large enough to distort our main conclusions.

Discussion

The most prominent feature of this series is the great increase of fatality rate with increasing age of the patient. This has been noted previously by many workers both in this country and in America, but little attention has been focused on the underlying reasons for it. It is conceivable that the older patients may die more readily either because the ageing organism becomes less adaptable or because local changes which predispose to massive haemorrhage may develop in the ulcer as a result of chronicity. Analysis of the present series shows that the length of history among patients with proved or probable chronic peptic ulcer has no bearing on the expectation of death, which seems to be related to general changes in the body consequent upon age. This conclusion is supported by other findings. Thus recurrent bleeding after admission to hospital occurs very little more frequently in the older than in the younger age groups. About the same proportion of young and old patients require massive blood transfusion; but, whereas the younger patients receiving massive transfusion mostly live, the older ones mostly die.

It would be convenient if we were able to compare this finding with the fatality of haemorrhage occurring from other causes, but there is no common cause of massive haemorrhage occurring over a wide age group. We have therefore been unable to seek confirmation along these lines. However, the general bodily changes induced by haemorrhage are somewhat similar to those occurring in "shock," and it is therefore of interest to examine the prognosis of perforated peptic ulcer in relation to age. Table XI, which has been compiled from the records of the Radcliffe Infirmary, shows that perforation of peptic ulcer produces a fatality rate which climbs steeply with advancing age.

It is unlikely that the local conditions in perforated ulcers can account for the great difference in prognosis between young and old patients. The marked increase in fatality rate with advancing years is therefore presumably due to changes in the whole organism. The similarity between these findings and those in haematemeses reinforces our previous conclusion that in haematemeses the poor prognosis in later life is mainly due to general bodily changes and not to local conditions.

TABLE XI.—Fatality Rate of Perforated Ulcer by Age Groups

Age Group	No. of Cases	No. Died	% Died
< 30 ..	18	1	5.6
30-39 ..	34	1	2.9
40-49 ..	48	10	20.8
50-59 ..	41	12	29.2
60-69 ..	23	7	30.5
70 + ..	9	3	33.3
Total ..	173	34	19.7

Haematemeses and perforation are the commonest major complications of chronic peptic ulcer, and both are dangerous to life if they occur in middle age or later. It is natural to speculate whether patients approaching middle age with a chronic peptic ulcer should be treated by partial gastrectomy largely as a prophylactic measure. In order to arrive at a decision we must be able to weigh the risk of elective partial gastrectomy against the chance of dying in the future from haematemeses or perforation of a chronic ulcer. On the one hand, the operative fatality rate of partial gastrectomy is known to be about 5% or less in patients under 50. On the other, there appears to be no precise knowledge of the chance of developing either of these complications. With this serious omission in our knowledge it is consequently impossible to reach any valid conclusion.

Summary

Among 305 cases of haematemeses admitted to the Radcliffe Infirmary as emergencies during the period 1938-47 there were 58 (19%) deaths.

Of these patients 208 had a history of proved or probable chronic peptic ulcer. The fatality rate among them was also 19%.

Both for the whole series and for the group with chronic peptic ulcer age was the most important factor influencing prognosis. The fatality rate rose steeply in middle age.

Among patients with chronic peptic ulcer the length of ulcer history had little bearing on immediate prognosis.

The frequency of recurrent bleeding was about the same in old and young patients, and about the same proportion received massive blood transfusions.

These findings suggest that general bodily changes, and not local conditions in the ulcer, are mainly responsible for the poor prognosis in later life.

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PUNCH PROSTATECTOMY

BY

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Punch prostatectomy is a subtotal prostatectomy carried out through the urethra, thus avoiding an abdominal incision. Any paper that refers to the mortality rate for prostatectomy, by whatever method, must offer particular and precise information on at least the following points: the age and type of patient, the indications for prostatectomy, the number of permanent ambulatory suprapubic cystostomies, and whether those cases admitted with retention were subjected to early or late prostatectomy. These points largely determine mortality rates, and a low mortality rate in any series that omits particular reference to them carries no conviction; it merely reflects an accepted view that the present-day hazards of abdominal surgery in good or in moderately good risks are not high.

The mortality rate is known to be lower for private than for hospital patients. "This is due to the fact that the average hospital case is a notoriously bad risk, having neglected himself until complete retention or renal failure forces him to seek advice, whereas the private patient presents himself at an earlier and more favourable stage of the disease" (Kenneth Walker, 1933).

One may add a further and notable distinction—namely, that between municipal and voluntary hospital patients, a series of the former being heavily overweighted by physical wrecks with advanced degenerative changes and a physiological age well in advance of their calendar age. Until recent months this series has been composed entirely of municipal patients.

The safety of punch prostatectomy allows it to be performed in preference to suprapubic cystostomy, so that no permanent suprapubic cystostomies in ambulatory patients have been carried out in this series. The indications for