

on re-examination by Qvigstad and Römcke (1946) became 22% and 10% after a further five years. Ogilvie (1952), in comparing the results of surgical and medical treatment of 660 cases, found 34% satisfactory after medical treatment and 70% satisfactory after surgical treatment after 5-10 years.

Figures around 30% seem to be the expected "satisfactory" proportion to be attained after medical treatment. It is essential, however, to be clear what the term "satisfactory" implies. We restricted it to patients who sought no medical advice over two and a half years, but we found that many others could be classed as "satisfactory," as they lost no time from work and had few symptoms. It is significant that in only 25% of cases was surgical treatment necessary. On the whole we feel that medical treatment can keep the patient in a comfortable state in the remaining 75% of cases.

Conclusion

To conclude, it is felt that the time has come to make more use of the field of general practice as a source of information on the natural history and morbidity of certain common diseases such as peptic ulcer, hypertension, rheumatism, and the acute and chronic infections of the chest. These conditions are often followed for only short periods in hospital practice; but in general practice they can be surveyed from the time of diagnosis until death, if necessary. It is to general practice that we should turn for further advances in the study of the true natural history of such disorders.

The methods that need be used are very simple—based essentially on adequate records over a long period.

In presenting these findings from our two practices, even though they cover some 10,000 patients, we fully realize their limitations when an attempt is made to apply them to the country as a whole. Nevertheless, accepting these limitations, it is felt that they indicate the probable trend of the natural history of peptic ulcer.

Summary

A report is given on the incidence, morbidity, and course of peptic ulcer in two South-east London practices with a total of some 10,000 patients at risk.

On July 1, 1954, there were 177 peptic ulcer cases (G.U. 45 and D.U. 132), 124 of them having a history of five or more years' duration (G.U. 31 and D.U. 93). The latter group has been reviewed for the purposes of a five-year follow-up.

For the purposes of assessing morbidity the numbers of medical attendances and the duration of incapacity from work (or its equivalent) were recorded and compared in the various forms of treatment.

In the whole series, including both surgical and medical cases, 37% of patients required no medical attention for digestive symptoms in the two-and-a-half-year period under study, 77% attended on less than the average number of occasions, and 70% did not lose any time away from work.

Surgical treatment with good results was given to 25% of the patients.

Of the remaining medically treated patients (75%), 30% needed no medical attention, a further 40% attended on less than the average number of occasions, and 66% lost no time from work. These results represent a not unsatisfactory economic and personal control of the condition. The results were similar in both gastric and duodenal ulcers.

The course of the disease was complicated by haemorrhage in 18% and by perforation in 10% of cases.

There was no obvious prevalence of any other associated disease with the exception of neurosis. A

fairly severe psychoneurotic state was present in 16% of duodenal ulcer and in 7% of gastric ulcer patients.

The scope for studying the natural course of certain chronic illnesses in general practice is noted.

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GASTRO-INTESTINAL ULCERATION AND NON-ULCERATIVE DYSPEPSIA IN AN URBAN GENERAL PRACTICE

BY

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One of the reasons for our inadequate knowledge of the aetiology of peptic ulcer lies in the difficulty of assessing its true prevalence in a population. Most of the literature on peptic ulcer is based on hospital and post-mortem statistics. The latter give little guide to incidence in this type of chronic disease; and hospital figures reveal only part of the picture, since most uncomplicated cases are treated at home. In general, all cases of peptic ulcer, whether treated in hospital or at home, are seen at the beginning and during the subsequent course of their illness by the family doctor. The general practitioner is therefore in a special position to collect information not only on the prevalence but perhaps also on the natural history and management of the disease.

Method

In this paper the incidence of gastro-intestinal ulceration in an urban general practice over a period of twenty years is analysed; also, its present prevalence is compared with that of non-ulcerative dyspepsias. Duplicate records were kept of all ulcer and dyspepsia cases, and data relating to the clinical and social aspects of the patient's history were transferred to hand-punch cards for analysis.

The diagnosis of cases was especially facilitated by the use of a simple test for occult blood, by means of which all cases with symptoms suggestive of alimentary origin are regularly screened in the practice. An unselected series of 100 patients attending for non-alimentary conditions was tested so that an estimate could be made of the incidence of occult blood in the general practice population.

The simple screening test for occult blood used in the practice* is the Gregersen slide test (G.S.T.), first

*"The practice" refers to the practice in which the material of this paper was collected by the two doctors in partnership (Dr. S. Lipetz and Dr. J. Lipetz).

described in this country by Ogilvie (1927), and illustrated further by Meulengracht and Jensen (1929). More recently Lipetz (1951) and Needham and Simpson (1952) showed the wide usefulness of the G.S.T. in general practice and in hospital respectively.

Before the introduction of the National Health Service, only private x-ray facilities were directly available to the general practitioner in this area. With definite proof of occult blood, however, it was always possible to get a radiological examination in hospital. In 1941, when many patients requested the medical certificate for peptic ulcer without which special rations of milk and eggs could not be obtained, the opportunity was taken to screen all patients not previously investigated with the G.S.T.

Description of the Practice

The practice is a partnership of two, in which the principals have worked for almost thirty years. It is a fairly stable practice; at the beginning of this inquiry (August, 1953) it consisted of 5,331 persons, with males and females in almost equal numbers (ascertained by a complete analysis of the National Health cards). It contains quite a high proportion of elderly and aged persons and a relatively small proportion of children (see Table II). The area served lies in a central part of Edinburgh which has been for more than thirty years an outward rehousing area and before the first world war was the most densely populated in the city and contained a great many condemned houses. Although some of the area has now been rebuilt, a large proportion of our patients are still living in very overcrowded conditions. The practice population is mainly working-class; most of the men and many of the women work in local industry—rubber and printing works, engineering workshops, railway and municipal transport, chemical works, breweries, and distilleries. Many, particularly the females, work in offices and shops. There is also a sprinkling of professional people.

All the patients are in the National Health Service. So far as is known, the figures of gastro-intestinal cases are in no way weighted by the inclusion of patients who came for consultation because of the principals' interest in alimentary disorder.

I. Peptic Ulcer

Twenty-year Incidence

The total number of peptic ulcer cases which occurred in the practice during the past twenty years was 323 (Table I). All the diagnoses were confirmed either radiologically or at

TABLE I.—Total Incidence of Cases of Peptic Ulcer During a Twenty-year Period, 1933-54, by Sex and Age at Time of Diagnosis

Age at Diagnosis (Years)	Duodenal Ulcer		Gastric Ulcer		Total Peptic Ulcer	
	Male	Female	Male	Female	Male	Female
15-19	6	4	—	—	6	4
20-24	13	2	3	2	16	4
25-29	19	3	4	—	23	3
30-34	33	4	2	1	35	5
35-39	34	7	1	3	35	10
40-44	35	17	7	2	42	19
45-49	23	6	—	3	23	9
50-54	20	5	3	1	23	6
55-59	16	5	4	3	20	8
60-64	4	5	2	2	6	7
65-69	5	—	1	1	6	1
70 or over ..	3	4	1	3	4	7
Age not stated ..	—	—	1	—	1	—
Total ..	211	62	29	21	240	83

operation or post-mortem examination. The group consisted of 273 cases of duodenal ulcer and 50 of gastric ulcer, the ratio of males to females being 3.4:1 for duodenal and only 1.4:1 for gastric ulcer. Conversely, for both sexes combined the D.U./G.U. ratio was 5.5:1; for males only, the ratio was much higher, 7.3:1, and for females it was only 3:1. This is in fair agreement with other Scottish findings, such as those of Jamieson, Smith, and Scott (1949) in Glasgow Western Infirmary.

In the twenty-year series the most common age at first diagnosis of duodenal ulcer in men was 30-44 years, these age groups containing just on half the men. In women the most common age at first diagnosis of duodenal ulcer seemed to be a little higher, 35-49 years.

In this peptic ulcer group of 323 cases, 56 (17%) had an immediate family history of peptic ulcer (among parents, siblings, or children). Of these 56 cases, only 4 were of gastric ulcer, and the remaining 52 of duodenal ulcer (39 male and 13 female) were members of only 15 families. The higher percentage of reported family history among duodenal ulcer cases is in line with the findings of Doll and Buch (1950).

Present Prevalence of Peptic Ulcer

The following paragraphs relate to the prevalence rates at one period of time (August, 1953), and include data only for cases in the practice at that time (ascertained from the special record cards kept up to date for all ulcer patients). Patients who had moved away (or died) and patients who have been subsequently diagnosed as suffering from peptic ulcer are not included in the "present prevalence" group.

Table II shows the age-sex distribution of the 250 cases in the practice in August, 1953. The total prevalence of peptic ulcer was 4.7% of the whole practice population—a very high proportion indeed. Among males the prevalence was 7.0%, and among females 2.4%. In the different age-sex groups, the prevalence of both duodenal and gastric

TABLE II.—Prevalence of Peptic Ulcer in Practice Population at August, 1953. Number of Cases in each Age-Sex Group, and Rates per 100 Practice Population in each Age-Sex Group (in Parentheses)

Age at August, 1953	Practice Population		Duodenal Ulcer		Gastric Ulcer		Total	
	Males	Females	Males	Females	Males	Females	Males	Females
			No. %	No. %	No. %	No. %	No. %	No. %
15-24 years	306	357	4 (1.3)	4 (1.1)	—	1 (0.3)	4 (1.3)	5 (1.4)
25-34	422	405	24 (5.7)	3 (0.7)	2 (0.5)	—	26 (6.2)	3 (0.7)
35-44	451	438	29 (6.4)	10 (2.3)	6 (1.3)	1 (0.2)	35 (7.8)	11 (2.5)
45-54	430	382	58 (13.5)	18 (4.7)	9 (2.1)	3 (0.8)	67 (15.6)	21 (5.5)
55-64	265	281	31 (11.7)	7 (2.5)	5 (1.9)	4 (1.4)	36 (13.6)	11 (3.9)
65+	262	289	15 (5.7)	8 (2.8)	4 (1.5)	4 (1.4)	19 (7.3)	12 (4.2)
Total 15+ years ..	2,136	2,152	161 (7.5)	50 (2.3)	26 (1.2)	13 (0.6)	187 (8.8)	63 (2.9)
		4,288		211 (4.9)		39 (0.9)		250 (5.8)
Total all ages ..	2,666	2,665	161 (6.0)	50 (1.9)	26 (1.0)	13 (0.5)	187 (7.0)	63 (2.4)
		5,331		211 (4.0)		39 (0.7)		250 (4.7)

ulcer varied considerably (see Fig.). Among males, the D.U. prevalence rose to 12% at ages 45-49, reached 15% in the age groups 50-54 and 55-59, and thereafter declined. Among females the number of cases in individual age groups was small and the prevalence rates are less reliable; the highest D.U. prevalence was 5% in the age group 45-49, and at higher ages it appeared to decline slowly, though at ages 70 years and over the prevalence was 3.6%. For gastric ulcer, the numbers in each age-sex group were very small and the gastric ulcer rates only serve as an indication of the pattern of distribution.

It was found that the highest prevalence of duodenal and gastric ulcer together was at ages 45-49 years, the prevalence for both sexes combined then being 10.5%. Thus 1 in every 10 patients between the ages of 45 and 59 years had had a peptic ulcer. Among men of these ages the proportion was much higher, being 15.6%; thus nearly 1 in every 6 men aged 45-59 had been found to have a peptic ulcer.

The greater part of this prevalence was due to duodenal ulcer. At the peak ages of 45-49, the D.U./G.U. ratio among males was 8:1; even among females at ages 45-59 the ratio was high, 4.4:1. The male D.U./G.U. ratios decreased on the whole with increasing age; but in the practice the ratios at each age were nearly three times as high as those found by Doll and Avery Jones (1951) in selected groups of employees in England.

These prevalence rates, based on the ages of patients at one date, do not give information regarding "attack" rates of new cases at each age; but they serve another and equally useful purpose. They give a strong indication of the responsibility falling upon the general practitioner in the supervision and treatment of these cases, the greater number of which are in the older age groups, in which ulcer complications are most serious in their results.

Type of Case, Complications, Perforations, Operations, Relapse

Detailed analyses were made of the two acute complications of peptic ulcer—haemorrhage and perforation—and also of many other features (see Table III).

In the whole series of 323 cases the incidence of manifest bleeding—haematemesis or melaena—was 16.4%. There was little difference in incidence of manifest bleeding either between male and female cases or between duodenal as compared with gastric ulcer cases.

Of the 323 cases, 62 (19.2%) suffered perforation. Of these 55 were males, these constituting 22.9% of all male ulcer cases; among females the proportion was only 8.4%—a difference which is statistically significant. The difference was due entirely to the high perforation rate of 25% among male duodenal ulcer cases. These perforation rates do not of course represent the true risk of perforation during the

TABLE III.—Complications, Operations, etc., in Peptic Ulcer Cases, 1933-53 (Numbers of Cases and Percentages of all Cases)

Complications, Operations, etc.	Duodenal Ulcer		Gastric Ulcer		Total P.U.	
	Male	Female	Male	Female	Male	Female
	No. %	No. %	No. %	No. %	No. %	No. %
	211	62	29	21	240	83
Haematemesis/melaena ..	35 16.6	10 16.1	4 13.8	4 19.0	39 16.3	14 16.9
Perforations ..	52 24.6	4 6.5	3 10.3	3 14.3	55 22.9	7 8.4
Relapses ..	93 44.1	24 38.7	7 24.1	6 28.6	100 41.7	30 36.1
Hospitalization ..	96 45.5	14 22.6	12 41.4	11 52.4	108 45.0	25 30.1
Gastroectomy ..	43 20.4	4 6.5	6 20.7	5 23.8	49 20.4	9 10.8
Gastro-enterostomy ..	12 5.7	2 3.2	1 3.4	—	13 5.4	2 2.4

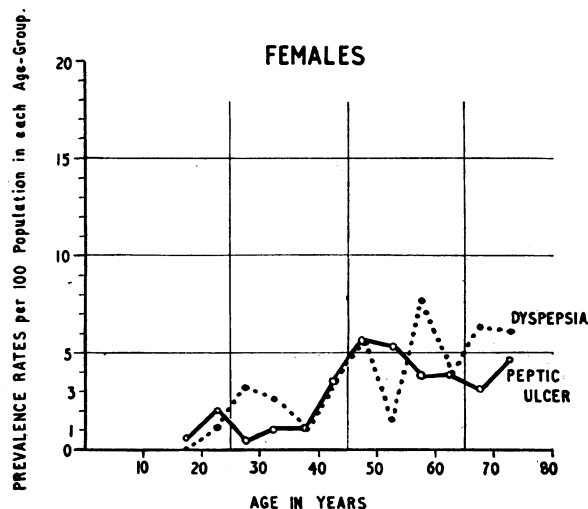
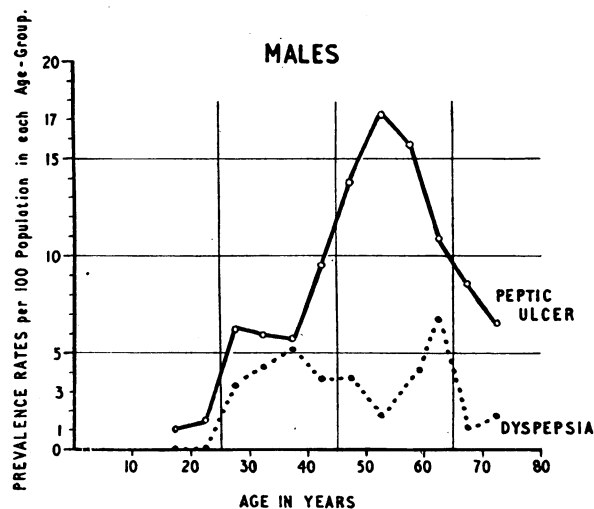
life of an ulcer patient; in this series the period of risk ranged from twenty years to less than one year. Even so, the overall rate of 19% is higher than the 3-13% found by Ivy *et al.* (1950) in a hospital series.

Of the 62 patients who perforated, all survived except two males; one of these died of his third perforation while awaiting gastroectomy, and the other died of haemorrhage after a second perforation. The youngest patient who perforated was a 16-year-old boy with a duodenal ulcer, and the oldest an 82-year-old woman with a gastric ulcer, who comfortably survived operation.

Frequent relapse is a recognized feature of the natural history of peptic ulcer. In this series, 43% of the duodenal and 26% of the gastric ulcer cases had one or more relapses for which they consulted us. These rates are lower than those of Althausen (1949), who in over 3,000 cases of peptic ulcer found relapse rates of 50-90%. It should be emphasized that some of our patients had had a number of relapses before ever consulting the practice. Moreover, some suffer relapse without coming for consultation, sometimes because they "don't want to trouble the doctor," or, more often, because they fear the loss of income should they have to stay off work.

Though the major responsibility falls on the general practitioner, in a considerable number of cases admission to hospital is inevitable. In this series, 41% of the cases had been in hospital at least once—in a few cases not for treatment of their alimentary condition. Hospitalization rates for duodenal and for gastric ulcer cases were not greatly different; rates for males with duodenal ulcer were, however, higher than for females—45% of male D.U. cases had been hospitalized, as compared with 23% of female D.U. cases. It is interesting to note that nearly 60% of all cases with peptic ulcer had not been in-patients in hospital.

Among the 133 patients who were hospitalized, 58 (18% of all the 323 peptic ulcer cases) had gastroectomies and 15 (nearly 5%) gastro-enterostomies. Both operations were



Prevalence of peptic ulcer and dyspepsia in practice population at August, 1953.

more frequent among male than among female cases. Among the gastrectomies, follow-up history showed these results:

No complications and still doing well	34
Serious sequelae but now well for over two years	1
Died at operation	1
Died of alimentary haemorrhage (erosion of duodenal stump) ten weeks after operation ..	1
Died of other causes (not related to operation) ..	6
Pneumonia	1
Coronary thrombosis	1
Non-gastric malignant condition	3
Not stated	3
Too early for assessment	7
Left practice (majority known to be doing well)	8
	<hr/> 58

The results of both gastrectomy and gastro-enterostomy have been most satisfactory. As mortality following operation appears to be low (except perhaps for the oldest age groups), it is considered important to refer patients for surgical appraisal as soon as the clinical or social circumstances indicate it.

II. Chronic "Non-Ulcer Dyspepsias"

The previous section included all cases in which a definite diagnosis of peptic ulcer was established. However, even after full investigations for organic alimentary disease, there remained a number of cases with frequent or persistent symptoms of dyspepsia in which an exact diagnosis could not be made. These are referred to as the "chronic non-ulcer dyspepsias." They do not include digestive upsets of short duration due to indiscretions of diet or those associated with infection or other systemic disturbances.

males and females in almost equal numbers (male/female ratio, 0.9 : 1). Within the three categories, however, the male/female prevalence ratios varied widely. The first category, "query peptic ulcer," contained 0.8% of the males and 0.2% of the females in the practice. This preponderance of males is very similar to that in the proved ulcer groups. In the second category, "biliary dysfunction," the predominance of women was marked; only 0.1% of the males as compared with 1.1% of the females in the practice were in this category. Twelve of the 28 women were of menopausal age, a time when functional disturbance of the digestive system is often indistinguishable from organic biliary disease. The third category of "non-specific dyspepsia" contained 1.6% of the practice population, with males and females in almost equal proportions.

For individual age groups the prevalence rates of chronic dyspepsia were mainly between 3% and 4%, with the peak occurring in the ages 55-64 years. For men alone, there was also an earlier peak at ages 30-39 years, with a prevalence of nearly 5%. For females, the prevalence rose fairly steadily above the age of 40, and reached more than 6% at ages of over 65 years.

Within each of the three categories of chronic dyspepsia, the small numbers of cases make it difficult to determine age trends of prevalence rates. Nevertheless it can be seen that the "query ulcer" group consisted mainly of men over 40 years; and the "biliary dysfunction" group consisted mainly of women over 40. The non-specific dyspepsias had a relatively high prevalence in the younger age groups of both sexes as well as in the older age groups.

TABLE IV.—Prevalence of Non-ulcer Dyspepsia in Practice Population at August, 1953. Number of Cases in each Age-Sex Group, and Rates per 100 Practice Population in each Age-Sex Group (in Parentheses)

Age at August, 1953	"Query Peptic Ulcer"		"Biliary Dyspepsia"		"Non-specific Dyspepsia"		All Chronic Non-ulcer Dyspepsia	
	Males	Females	Males	Females	Males	Females	Males	Females
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
15-24 years	—	—	—	—	—	—	—	—
25-34 "	2 (0.5)	1 (0.2)	2 (0.5)	1 (0.2)	12 (2.8)	2 (0.6)	16 (3.8)	2 (0.6)
35-44 "	6 (1.3)	—	—	—	6 (1.4)	10 (2.5)	12 (3.0)	12 (3.0)
45-54 "	6 (1.4)	1 (0.3)	—	—	14 (3.1)	5 (1.1)	20 (4.4)	11 (2.5)
55-64 "	4 (1.5)	2 (0.7)	—	—	7 (1.8)	6 (1.6)	12 (2.8)	14 (3.7)
65+ "	2 (0.8)	1 (0.3)	—	—	5 (1.8)	10 (3.6)	14 (5.3)	17 (6.1)
			1 (0.4)	9 (3.1)	1 (0.4)	8 (2.8)	4 (1.5)	18 (6.2)
Total 15+ years ..	20 (0.9)	5 (0.2)	3 (0.1)	28 (1.3)	43 (2.0)	41 (1.9)	66 (3.1)	74 (3.4)
	25 (0.6)		31 (0.7)		84 (2.0)		140 (3.3)	
Total all ages	20 (0.8)	5 (0.2)	3 (0.1)	28 (1.1)	43 (1.6)	41 (1.5)	66 (2.5)	74 (2.8)
	25 (0.5)		31 (0.6)		84 (1.6)		140 (2.6)	

Present Prevalence (August, 1953)

The cases of chronic dyspepsia in the practice at August, 1953, numbered 140 (see Table IV). Forty of the group were x-rayed at least once, but without decisive results. Occult blood was found once in 66 cases, whilst in 33 others it was found on two or more occasions.

The "non-ulcer dyspepsias" were grouped in three main categories: (1) patients with symptoms suggestive of peptic ulcer but in whom a firm diagnosis of ulcer was not considered justifiable (20 men and 5 women)*; (2) patients with symptoms suggestive of biliary or cholecystic dysfunction (3 men and 28 women); and (3) non-specific dyspepsia not classified under any single heading—the largest category (43 men and 41 women).

The total prevalence of chronic "non-ulcer dyspepsia," at August, 1953, was 2.6% of the practice population, with

*Since August, 1953, when the statistical analysis was begun, 6 of these cases have been definitely diagnosed as peptic ulcer; and 1, who for two years showed recurrent occult blood and had at first repeatedly negative x-ray findings, has now been operated upon for a carcinoma of the stomach. Of the 6 ulcer cases, 2 have had gastrectomies for gastric ulcer, 1 has had a subacute perforated duodenal ulcer, and the other 3 have been confirmed by x-ray examination. In this paper, however, none of these 6 cases has been included in the ulcer tables of section I.

Comparison of Prevalence of Peptic Ulcer and Chronic "Non-ulcer Dyspepsia"

A comparison of the prevalence rates of all peptic ulcer and all chronic dyspepsia at August, 1953, is illustrated in the Figure. Among men the prevalence of ulcer was much higher than that of dyspepsia; for all ages combined, the ulcer/dyspepsia ratio was 2.8 : 1. Among females there were slightly fewer ulcer than dyspepsia cases (0.9 : 1).

The excess of ulcers over dyspepsias in males was particularly marked in the age groups 45-59, the peak ages for ulcer prevalence; at these ages the ulcer/dyspepsia ratio was 5:1. In the younger age groups, 25-39, at which high dyspepsia rates for males were reached, the ulcers still exceeded the dyspepsias. The pattern of dyspepsia rates in males in the practice was rather different from the pattern of ulcer rates.

For females, smaller numbers were involved, but both sets of rates were of similar order of magnitude. There was perhaps a more definite peak in the ulcer prevalence rates in the age groups 45-54. This may be of interest in relation to Clark's (1953) findings that no fewer than 45% of women claimed that their ulcer symptoms had been aggravated by the menopause.

There are but few investigations with which one can compare the dyspepsia prevalence rates or the ulcer/dyspepsia ratios in the practice. Despite the lack of precise data, there is a general impression among clinicians that chronic dyspepsia is more common than peptic ulcer. In the practice, however, with careful and repeated screening of all patients with persisting dyspeptic symptoms, chronic "non-ulcer dyspepsia" was found far less commonly than peptic ulcer.

III. The Gregersen Slide Test as a Screening Procedure

The prevalence of peptic ulcer in the practice may seem high. However, as all dyspeptic cases have been regularly screened over a long period, it is believed that the present figures represent a closer estimate of prevalence than has previously been obtained in a circumscribed population. The G.S.T. is especially valuable because occult blood is present in a high proportion of active ulcer cases, as shown by Hurst and Stewart (1929) and by others. In the present series of cases of peptic ulcer, one-sixth had manifest bleeding, and in the remaining cases 85% gave a positive G.S.T. finding on one or more occasions.

The G.S.T. will, of course, bring to light many other alimentary conditions. Because of the finding of occult blood 53 cases of organic disease of the gastro-intestinal tract were diagnosed (these were in addition to the many cases of organic alimentary disorder in which diagnosis was obvious). Twenty of these cases were of neoplasm, the most frequent sites being: stomach (9 cases), rectum (4), large bowel (3), and oesophagus (2). Fourteen cases were of diverticulitis, almost all among persons over 40 years. The remaining 19 cases of non-malignant conditions associated with the finding of occult blood had a very wide pathological range, and included gastritis (diagnosed by the radiologist), congenital shortening of the oesophagus, Plummer-Vinson syndrome, regional ileitis, cholecystitis, Hirschsprung's disease, ulcerative colitis, malrotation of the caecum, hiatus and sliding hernia, and "cup and spill" deformity of the stomach.

Comparison of G.S.T. and X-ray Findings.—Several analyses were made to compare the first G.S.T. with the first x-ray findings, and also to assess the contribution of repeated G.S.T.s and x-ray examinations to the final diagnosis. The first G.S.T. was positive in 64% of the peptic ulcer cases, and in one-third of these the first x-ray film was negative or doubtful. Conversely, the first x-ray film was positive in 70% of the cases and in two-fifths of these the first G.S.T. was negative or doubtful. The practical utility of the G.S.T. as a pointer to diagnosis is evident, and it is also clear that a negative finding does not exclude the possibility of an active lesion. Serial testing is therefore always necessary. Analysis of the repeated G.S.T. and x-ray findings showed that the G.S.T. had contributed to diagnosis in 75% of peptic ulcer cases and the x rays in 80%. Moreover, there were 36 cases in which the positive G.S.T. led to the final diagnosis although the radiological findings were repeatedly negative.

Time Interval from First G.S.T. to Definite Diagnosis.—The value of occult blood testing lies also in the speed with which a firm diagnosis can often be established. More than one-half of the cases were firmly diagnosed within one month of their first G.S.T., and half of the remainder were diagnosed within six months. A separate analysis was made of the time interval between the onset of symptoms (as remembered by the patient) and a definite diagnosis. In nearly half the cases the patients had been aware of digestive upsets for more than two years before coming for consultation; in another 8% of the cases there had been symptoms for at least a year. This is not surprising, since many patients do not bother to consult a doctor for ordinary dyspeptic symptoms. Taking these two sets of findings on time intervals together, it appears that when patients reached

the stage at which they felt it necessary to consult a doctor many of them already had a diagnosable organic lesion.

Test of Faeces of 100 Persons Attending for Non-Alimentary Conditions.—It is sometimes stated that the G.S.T. is too sensitive for use in general practice, and may often give false positive results. The frequency of positive G.S.T. findings in patients with no organic alimentary disorder and no dyspeptic symptoms was therefore investigated by examining the faeces of a random series of 100 patients who were attending for symptoms clearly not related to gastro-intestinal disturbance. Patients who were in any case returning were asked to keep to a meat-free diet for three days and to bring a sample of their faeces. Of the 100 patients investigated there were 7 whose faeces were G.S.T.-positive. One—a girl—for psychological reasons was not followed up. Of the other 6 cases, 2 were found to have a duodenal ulcer and a third is being treated for presumptive ulcer. Two others, on detailed and persistent questioning, admitted to occasional dyspeptic symptoms. In the one remaining case, no reason for the positive occult blood finding was discovered.

Conclusion.—Whereas the G.S.T. is helpful in showing the activity of a lesion, the x-ray film is required for its more accurate location. For the general practitioner the G.S.T. has specific advantages: he can use it without reference to hospital; it is easily, rapidly, and cheaply performed in his own consulting-room; and, as has been found in the investigation of a sample of non-dyspeptic patients, the incidence of false positive G.S.T. findings is very low. It would appear that the G.S.T. is an eminently suitable test for general screening, and its use might well be one of the general practitioner's contributions to preventive medicine.

Discussion

In the practice the discovered prevalence of peptic ulcer is much higher than is commonly reported by other investigators; at the same time, the proportion of non-ulcer dyspepsia to ulcer cases is lower than that found in other studies. These features might to some extent reflect a high prevalence of ulcer in Scotland. It would appear from national mortality figures that duodenal ulcer is commoner in Scotland than in England, and this is supported by evidence from the hospital survey of Illingworth *et al.* (1944). But it is unlikely that this in itself would account, for example, for the rate of over 15% in men aged 45-54 or for the dyspepsia/ulcer ratios; it is more probable that in other inquiries there has not been the same opportunity for frequent screening of all dyspeptic cases. This view is supported not only by the overall analysis of the peptic ulcer group (as regards perforation, operation, etc.) but also by the fact that during the preparation of this paper six of the cases appearing in Table IV as "non-ulcer dyspepsia" have already passed into the ulcer category. It is further strengthened by the survey of 100 patients who were attending for quite different conditions, among whom 2 were discovered to be suffering from peptic ulcer and others had dyspeptic symptoms. It is probable that a more thorough combing of the practice would reveal the prevalence of peptic ulcer to be even wider than has been shown.

In a large number of cases in the present series symptoms had persisted for many months, often years, before the patient came for consultation. The results show, moreover, that when the patient reached the threshold beyond which he could no longer endure discomfort or pain and finally came from consultation the condition was clinically diagnosable and already required treatment. It is important, therefore, that the general practitioner should recognize that when patients complain to him of persistent dyspeptic symptoms the majority may have already reached the stage when an organic lesion is diagnosable.

The G.S.T. has been found valuable in the diagnosis not only of peptic ulcer but also of malignant disease. The

large number and variety of other alimentary disorders which might have long escaped diagnosis if a finding of occult blood had not prompted further investigation is impressive. In view of the sometimes vague and protean manifestations of gastro-intestinal ulceration, it seems reasonable that every patient who develops symptoms of dyspepsia, anaemia, or other illness obscure in origin should have the benefit of screening for occult blood.

Despite the considerable prevalence of ulcer in the practice, it is surprising how relatively little time is demanded by these patients. In a one-month period (mid-November to mid-December, 1953)—usually a season of high symptom incidence—only 16 (6.4%) of the peptic ulcer cases and 7 (5%) of the non-ulcer dyspepsias required treatment. This may be partly because patients relapse without attending for consultation, but mainly, it is believed, because most of the intractable chronic cases have been successfully dealt with by the surgeon.

It would be of the greatest value and interest to be able to compare ulcer and dyspepsia rates in other types of practice with those of this practice. Moreover, it is thought that general practitioners could, with proper records, tackle such questions as: the familial incidence of ulcer and dyspepsia; the occupational and domestic background of ulcer patients in relation to treatment and progress; the incidence of stress in the genesis of dyspeptic symptoms; and the clinical history and aetiology of dyspepsias. The opportunities for this kind of study in general practice, given adequate facilities, are greater than in hospital, where the work is essentially short-term and the population at risk is of quite a different kind. And it may be necessary, in view of the present findings, to pursue the same inquiries for all dyspeptic patients as for suspected ulcers. It may well be that, in this way, further knowledge would be gained of a disease in which, in spite of improved methods of diagnosis, the incidence continues to rise and the cause to elude us.

Summary

In an urban general practice, patients with peptic ulcer were closely investigated over a period of twenty years. The records of these 323 patients have been analysed in relation to the general practice population to yield figures of incidence for the twenty years and of prevalence at one date, August, 1953.

The prevalence of peptic ulcer (4.7% of practice) was high—much higher than figures found in other studies. It was particularly high in the age group 45–59 years, 1 out of 10 patients being a sufferer; for males in the same age group, nearly 1 out of every 6 in the practice was a peptic ulcer sufferer, mainly with a duodenal ulcer.

The incidence of other clinical features of the peptic ulcer cases is described: haemorrhage, perforation, relapse, hospitalization, and operation. The results of operation were good.

The prevalence of chronic non-ulcer dyspepsia at August, 1953, was also investigated. The 140 cases appeared to fall into three broad categories: (1) those with symptoms suggestive of peptic ulcer (since the beginning of this study, 6 of the 25 cases in this group have been definitely diagnosed as peptic ulcer); (2) those with symptoms suggesting biliary or cholecystic dysfunction; and (3) non-specific dyspepsia (the largest of the three groups).

A comparison of the prevalence of peptic ulcer (4.7%) with that of chronic dyspepsia (2.6%) revealed that, among males, ulcer patients outnumbered the dyspepsia patients by nearly 3 to 1. Among females there were slightly fewer ulcers than dyspepsia cases. The discovery of the high prevalence of peptic ulcer together with the relatively low prevalence of chronic dyspepsia is largely

attributed to the consistent screening procedures and continuing investigation of doubtful cases.

Clinical investigation and screening of the patients was specially facilitated by the use of the Gregersen slide test for occult blood.

In the routine screening of persons with alimentary disorder, the finding of occult blood led to the discovery of 53 cases of other organic alimentary disorder, including 20 cases of previously unsuspected alimentary neoplasm.

Time-intervals between onset of symptoms, first Gregersen slide test, and firm diagnosis are analysed. A large proportion of the patients had had symptoms for several years, and, by the time they consulted the doctor, had a diagnosable organic lesion which already required treatment.

An examination of the faeces of 100 persons attending for symptoms clearly not associated with alimentary disturbance revealed only 1 case in which a positive occult blood finding could not be accounted for on investigation. Among these 100 patients, 2 with previously unsuspected ulcers and 1 with possible ulcer were discovered.

Attention is drawn to certain problems in the aetiology of peptic ulcer. It is noted that general practice offers the opportunity of long-term investigation of dyspepsia not possible in hospital; and the importance is stressed of long-term follow-up in providing further knowledge regarding the pathogenesis of peptic ulcer.

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ADDENDUM.—Since the completion of the paper, another of these 62 cases has died of a third perforation while on a waiting-list for gastrectomy. It is possible that the three perforation deaths in this practice would have been avoided if partial gastrectomy had been carried out at the time of the second perforation or as soon as possible afterwards. The circumstances of these deaths strengthen the case for partial gastrectomy in patients with a previous history of perforation, and indicate that these patients should have a high priority on waiting-lists.

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The British Legion village, Maidstone, Kent, comprising one unit completely devoted to the treatment and rehabilitation of tuberculous ex-Service men, celebrated its 30th anniversary this year. The sanatorium section, which had the first tomograph x-ray to be installed in Great Britain, is now under the South-east Metropolitan Regional Hospital Board, but remains available for ex-Service patients from all over the country. At the time of the anniversary report the rehabilitation centre, providing training as well as graduated, controlled work, had some vacancies.