Gastric Ulcer Under Modern Medical Management

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Pointers to the cause of a disease may be found in variations of its incidence or severity, either in different populations or areas, or in the same area with the passage of time. Much work has centred on these aspects of gastric ulcer during the past 25 years (Doll et al., 1951, 1961; Pulvertaft, 1959; Weir, 1960; Watkinson, 1961; Susser and Stein, 1962; Gillies and Styring, 1969; Cleave, 1974; Brown et al., 1976). This period has also seen the introduction of new drugs for the treatment of arthritis, which may adversely affect the course of gastric ulcer, and the development of carbenoxolone as an active remedy. Grossman (1971) summarised a detailed study of gastric ulcer as seen in California, but with a follow-up period of only two years; some arthritic cases were excluded. Mowat et al. (1975) reviewed 151 cases seen in north-east Scotland in four years. Carbenoxolone treatment was not a feature of either of these series.

It may be opportune to discuss gastric ulcer as it is seen in England today, with special regard to its course and complications and the influence of modern drugs, including liquorice derivatives and the anti-arthritic preparations. I have reviewed 280 patients who were seen in our clinic in Birmingham in the past 12 years.

AGE AND SEX
The overall male: female ratio was 1.9 : 1 (i.e. 35 per cent were female). The ages at the first onset of symptoms are summarised in Figs 1 and 2. The maximum numbers in both sexes presented in the sixth decade, whereas the incidence in the population at risk continued to rise to the eighth decade. The proportion of women increased over the age of 50, but this reflects an increase in the numbers at risk, the age-corrected sex incidence showing no significant change.

SITE OF ULCERATION
There were multiple gastric ulcers in 16 cases (6 per cent), 14 patients had two ulcers and 2 patients had three. The incidence of associated duodenal ulcer was 15 per cent. The distribution of ulcer sites is indicated in Table 1; 20 per cent were in the antrum. Of the 5 greater curve ulcer cases, 4 were rheumatoid patients on corticosteroid therapy.

The only significant difference in ulcer site between the sexes was the female
preponderance of ulcers high on the posterior wall. Ulcers at this site accounted for 18 per cent of the total in women but only 6 per cent in men. Ulcers high in the stomach were more frequent in the elderly, but this trend was not marked and the incidence of antral ulcers was unrelated to age. Most gastric ulcers combined with duodenal ulcers were on the lower, lesser curve, and 25 per cent of them were in the antrum.

Fig. 1. Age at onset of symptoms in 280 cases of gastric ulcer. Hatched columns indicate women; total columns indicate men.

Fig. 2. Incidence of gastric ulcer in population age groups at risk, calculated at age of onset of symptoms (arbitrary units). Hatched columns indicate women; total columns indicate men.
### Table 1. Site of gastric ulceration (298 ulcers in 280 cases).

|          | Antrum | Lower lesser curve and angulus | Greater curve | Upper lesser curve | Total |
|----------|--------|--------------------------------|--------------|-------------------|-------|
|          | medial | posterior                      |               | medial            | posterior |       |
| Male     | 41     | 97                             | 32           | 12                | 11     | 2     | 195    |
| Female   | 19     | 39                             | 15           | 8                 | 19     | 3     | 103    |
| Total    | 60     | 1.36                           | 47           | 20                | 30     | 5     | 298    |
| Total (%)| 20     | 45.5                           | 15.5         | 6.5               | 10     | 2.5   | 100    |

**COMPLICATIONS**

**Haemorrhage.** Sixty-nine cases presented with haemorrhage and 13 of these were treated by emergency surgery. Of the remainder, 24 patients (11 per cent) bled during a follow-up of 212 cases for a mean period of six years. Of haemorrhage cases, 52 were male and 41 were female, and the mortality rate was 13 per cent.

**Perforation.** During follow-up, two patients had emergency surgery for perforation, and in two other patients, both elderly, perforation accompanied by haemorrhage was a terminal event.

**Penetration.** At necropsy or at operation, 14 patients were found to have deep penetration of the ulcer into adjoining tissues; 11 of these involved the pancreas (with 2 erosions into the splenic artery), 3 involved the liver, and 1 also involved the transverse colon.

**Stricture.** The radiological appearance of hour-glass contracture was seen in 5 cases, but at operation a fibrous stricture was only confirmed in 2 out of 4, the appearance in the others being due to sustained spasm.

**SURGICAL TREATMENT**

Sixteen patients had emergency operations for haemorrhage (partial gastrectomy in 13, vagotomy with pyloroplasty in 2, and oversewing in one) with 2 postoperative deaths, both in elderly men. Seventy-seven patients were treated by elective surgery during follow-up, 72 by gastrectomy and 5 by vagotomy with pyloroplasty. There was one postoperative death in a man aged 49, due to staphylococcal infection, haemorrhage, and pulmonary embolism.

**COURSE UNDER MEDICAL MANAGEMENT**

Except for cases of haemorrhage, intractable pain or vomiting, treatment was on an outpatient basis. The standard drug therapy was with carbenoxolone tablets in a dose of 150 mg daily for 6 to 12 weeks. During the last five years, a daily dose of 300 mg was usually prescribed for the first week except in the very elderly. No treatment was extended beyond six weeks without monitoring of electrolytes and
blood pressure. Patients with hypertension or severe cardiac or renal disease were excluded.

One hundred and sixty patients were treated with carbenoxolone, and initial healing was confirmed in 67 per cent. Adverse effects were observed in 31 (20 per cent), but in only 21 cases (13 per cent) did these give rise to symptoms (Table 2). Five of these patients had, for various reasons, received 300 mg daily for a fortnight or more, and two others, unknown to us, were treated with steroid drugs as well as carbenoxolone. The three cases of congestive cardiac failure had ischaemic heart disease. Of the 31 patients with adverse effects 23 were over 60 years old and only 2 were under 50 years.

Forty-eight patients were treated with a deglycyrrhizinated liquorice-antacid preparation (Caved-S), either in formal clinical trials or because there were contra-indications to carbenoxolone. No ill-effects were observed except for occasional loose bowel action. Healing was achieved in 69 per cent.

Overall, 56 per cent of ulcers healed within 3 months and 67 per cent within the first year. Most of the remainder had been referred for surgery.

The one-year incidence of symptomatic relapse after radiological healing was 29 per cent. Relapses were usually treated by repeated courses of the original drug, but five patients were treated with both drugs at different times.

The final figures on review after 2 to 12 years (with a mean of 6 years) are given in Table 3; 39 per cent had been treated surgically and 39 per cent had

### Table 2. Adverse effects of carbenoxolone observed in 31 cases (19% of the series).

| Effect                          | Cases |
|--------------------------------|-------|
| Hypertension (B.P. rise > 29/14) | 19    |
| Hypokalaemia (Serum K < 3.5 nmol/l) | 16    |
| Oedema                          | 14    |
| Congestive cardiac failure      | 3     |

| Symptoms associated with adverse effects (21 cases): | Cases |
|-----------------------------------------------------|-------|
| Swollen ankles                                      | 17    |
| Epistaxis                                           | 3     |
| Dyspnoea                                            | 3     |
| Symptoms of severe hypokalaemia                     | 2     |
| Stroke (doubtful association)                       | 1     |

### Table 3. Long-term outcome in 212 cases followed for 2 to 12 years (mean 6 years).

| Outcome                             | %   |
|-------------------------------------|-----|
| Died                                | 18  |
| Treated surgically                  | 39  |
| Frequent relapses (more than once a year) | 4   |
| Occasional relapses (less than once a year) | 18  |
| No relapses                         | 21  |
either had no symptomatic relapses or had relapsed less frequently than once a year. Of the surviving medically treated patients, 5 per cent had moderate or severe symptoms at the time of review, whereas 60 per cent regarded themselves as being entirely symptom-free.

INFLUENCE OF THE ANTI-ARTHRITIC DRUGS
Twenty-nine patients had recently been treated for arthritis either with salicylates, corticosteroids, indomethacin or phenylbutazone or with combinations of these drugs.

In four of these patients, there was good evidence that the gastric ulcer preceded the drug administration. Of the remaining 25, 64 per cent were women, 68 per cent had rheumatoid disease, and 40 per cent bled.

The commonest individual drugs associated with ulcer were aspirin in 14 cases and indomethacin in 12 cases. The commonest drug combination was of indomethacin and prednisone in 7 cases. Of the 10 cases of haemorrhage (7 women and 3 men), 8 had recently received salicylates, 4 phenylbutazone, 3 prednisone, and 3 indomethacin. Three of the haemorrhages were fatal, all in patients over 78 years old.

Two patients had 2 ulcers each. Of the 27 ulcers, 7 were in the antrum (lesser curve or posterior wall), 4 were on the greater curve, and 16 elsewhere in the corpus. The four greater curve ulcers were in rheumatoid patients under corticosteroid treatment, two of whom were also receiving indomethacin.

MORTALITY AND CAUSE OF DEATH
Thirty-eight patients died during the period of follow-up. In 13 cases, death was directly due to the gastric ulcer. Twelve died of gastric ulcer haemorrhage, of whom 2 also had a perforation; only 2 of these were operative deaths. The thirteenth case died as a result of elective surgery. Two other patients died as a result of gastrointestinal haemorrhage without operation, but the source of the bleeding proved to be oesophageal varices and a duodenal ulcer respectively. The fact that 12 patients in all died of haemorrhage without operation reflects the great age and the high incidence of serious associated disabilities in these patients. Of the 14 fatal cases of haemorrhage, the age range was 60 to 90 years. Three of these patients were in congestive cardiac failure, four had advanced bronchitis and emphysema, one had a bronchial carcinoma, one had lung metastases from carcinoma of the parotid gland, one had multiple pulmonary emboli and one had cirrhosis.

Chronic lung disease, strokes and malignancy featured among the other 23 patients who died. In all, there were 6 cases of bronchial carcinoma, 3 of gastric carcinoma and 6 of other malignancies (2 still living). Two of the gastric tumours were at a different site from the previous gastric ulcer. The third was at the site of an antral ulcer, which may have been malignant from the onset five years
previously. Three fatal cases had cirrhosis of the liver (one with hepatoma) and two of these were initially misdiagnosed as gastric carcinoma. Only 2 patients died of cardiac infarction.

DISCUSSION

Age, Sex and Site

The data summarised in Table 4 suggest that 20 to 30 years ago there was progressive decrease in the male : female sex ratio of gastric ulcer in England, similar to, but less striking than, that described more recently in Eastern Australia (Billington, 1965). Further change is not obvious in recent years. Limited evidence suggests that the ratio was different in Scotland but has also fallen.

Table 4. Sex ratio of gastric ulcer reported in large series in Britain since 1949.

| Authors            | Area                      | Years reviewed | Male : female ratio |
|--------------------|---------------------------|----------------|--------------------|
| Martin and Lewis (1949) | Cambridge                | 1934-48        | 3.4:1              |
| Swynnerton and Tanner (1953) | London               | 1940-46        | 3.5:1              |
| Doll et al. (1958)     | London                   | 1950-51        | 2.6:1              |
| Watkinson (1960)       | England and Scotland     | Autopsies 1956 | 2.2:1              |
| Pulvertaft (1959)      | York                     | 1952-57        | 1.6:1              |
| Johnson (1962)         | England and Wales        | In-patients 1956-57 | 1.9:1           |
| Present series         | Birmingham               | 1963-75        | 1.9:1              |
| Jamieson et al. (1949) | Glasgow                  | 1946-48        | 1.9:1              |
| Weir (1960)            | North-east Scotland      | Perforations   | 1.7:1              |
| Mowat et al. (1975)    | North-east Scotland      | 1967           | 1.4:1              |

Susser and Stein (1962) emphasised that an increase in prevalence in one age or sex group could be a cohort phenomenon due to a peak of incidence in earlier years. For this reason we have taken the age of onset and year of onset as judged from the history, which, in spite of obvious inaccuracies, gives a better idea of incidence than the arbitrary point at which an ulcer is diagnosed in hospital. On this basis, the sex ratio in the cohort of 1964-69 was 1.8 : 1 and in 1969-74 was 1.7 : 1.

Factors that could give rise to a changing sex ratio include smoking habits (Doll et al., 1958) and the use of salicylates (Gillies and Skyring, 1969) and other drugs. Certainly, if gastric ulcers in patients receiving anti-arthritic drugs are excluded, the male : female ratio in our series rises to 2.1 : 1.

It is recognised that the incidence of gastric ulcer rises with age and also that relatively acute ulcers are more commonly seen in old age. Excluding the arthritic cases, 47 per cent of our cases with a history of three months or less were over 60 years old, as compared to 36 per cent of patients with a longer history. This was
not due to increased presentation with haemorrhage: it might simply be due to the fact that elderly patients who would later present with a long history die before doing so.

Ulcers with a short history were relatively more common in women at all ages (48 per cent female), and so were ulcers presenting with haemorrhage (42 per cent female). Analysis of a 10 per cent in-patient inquiry in 1956-57 also showed that 40 per cent of haemorrhages were in women (Johnson, 1962).

With regard to ulcer site, no recent changes are apparent. The unexplained female predominance of ulcers high on the posterior aspect of the lesser curve has been observed previously (Swynnerton and Tanner, 1953).

It is well known that a gastric ulcer almost invariably occurs just distal to the junctional zone of parietal cell and alkaline mucosa (Magnus, 1954; Oi and Sugimura, 1959; Marks and Shay, 1959; Capper et al., 1966) and that in gastric ulcer patients the alkaline area is increased due to chronic gastritis (du Plessis, 1965). It has also been shown graphically by Kimura et al. (1970) that this alkaline type of mucosa associated with, or indistinguishable from, chronic gastritis, extends proximally with increasing age. It follows that ulcers should be more proximal in older subjects, and this trend has been recorded in two recent series (Mowat et al., 1975; Holmes and Cockel, 1975) as well as in our own. It might also follow that in duodenal ulcer subjects with associated gastric ulcer the latter would tend to be distal. This trend was only slight and inconstant in our series; presumably by the time a gastric ulcer develops in these patients, the parietal cell area has already been diminished by gastritis.

The proportions of antral ulcers and of associated duodenal ulcers in our series were both lower than in the Scottish or Californian series (Mowat et al., 1975; Grossman, 1971).

Avery Jones (1974) suggested that acute gastric ulcers causing haemorrhage have a wider distribution — particularly in the upper and posterior wall of the stomach — not necessarily related to the junctional mucosal zone, that they are less liable to become chronic in women, and that in either sex they are more liable to become chronic when they are sited below the junctional zone on the lesser curve. I cannot entirely confirm the second of these propositions. Although an acute presentation was relatively more common in women, many of the high posterior gastric ulcers in women were known to be chronic. While it is true that haemorrhage in the elderly was frequently due to high posterior ulcers, with only a short or absent history of dyspepsia, it is hardly possible to make a distinction between acute and chronic ulcers in these cases either from their X-rays and endoscopic appearance or their past history.

Complications
It is difficult to define the incidence of complications in peptic ulcer because of case selection. To assess the risk of haemorrhage or perforation by including those
cases that presented with these complications is to produce an unacceptable degree of bias; if all these cases are excluded there may be a slight bias in the other direction. On the latter basis in our series, during follow-up 11 per cent of patients bled and 2 per cent perforated in a mean period of 6 years, although the true incidence was slightly higher because of the declining number each year who remained alive and who had avoided surgery. The incidence of re-bleeding during follow-up was not significantly greater in those who bled initially. It can be concluded that the risk of haemorrhage is about 2.5 per cent per year and of perforation about 0.4 per cent per year. These figures agree closely with those of Grossman (1971) in California, who found an incidence of 2.5 per cent for haemorrhage and 0.6 per cent for perforation, and also with past experience in Britain, as reported by Ferriman (1962) (11 per cent haemorrhage and 1 per cent perforation in 5 years) and Martin and Lewis (1949) (14 per cent haemorrhage in a minimal period of 10 years). Doll (1964) quoted a remarkably constant mortality rate of 2 per cent due to ulcer complications in three different series covering the previous two or three decades in Britain and the United States (with a follow-up of 5 to 12 years). Our own figure over a shorter period of 2 to 12 years is 1.5 per cent.

All these findings exclude any decline in severity of the course of chronic gastric ulcer and, therefore, add credence to evidence of a decline in overall incidence based on statistics of perforation (Weir, 1960; Brown et al., 1976) and mortality (Susser and Stein, 1962). In fact, the number of fresh cases of gastric ulcer seen at our clinic each year has remained very constant, but there may be some increase in the local referral rate that would mask a decline in incidence. The decline in gastric ulcer perforations observed in Scotland by Weir (1960) was about 30 per cent over 20 years. Brown et al. (1976) observed a decline in perforation of some 45 per cent from 1958 to 1971 overall in England, Wales and Scotland, with no obvious fall after 1970. The data in Table 4 suggest that the earlier overall decline was largely in men.

Gastric Malignancy
In eight cases, an apparently benign ulcer proved to be malignant within 18 months, and these have been excluded from the series. On subsequent follow-up, the incidence of gastric carcinoma was 0.6 per cent in five years. The implications of these findings have been discussed elsewhere (Montgomery and Richardson, 1975). The late incidence of gastric malignancy is no higher than is to be expected in the population, and there is no justification for regarding this as a complication of chronic gastric ulcer.

The Influence of Anti-arthritic Drugs
The relationship of the anti-arthritic drugs to chronic gastric ulcer was reviewed by Emmanuel and Montgomery (1968). Their use may have been a causal factor
in 25 cases (9 per cent of all gastric ulcers). There is a tendency for these ulcers to be in the antrum or on the greater curve of the stomach, but the actual numbers in these sites were small. The arthritic series showed an above average tendency to bleeding: 40 per cent presented with haemorrhage as compared to 23 per cent of all non-arthritic cases. Bleeding was more frequently seen in women and was more often associated with salicylates and phenylbutazone than with indomethacin or steroid drugs. These associations, however, depend on the relative numbers at risk. It is clear that these drugs, especially when used in combination, are an important factor in the incidence of gastric ulcer haemorrhage. In my experience, it is more usual to find a large ulcer than superficial acute erosions as the source of bleeding in these cases. Early endoscopy is desirable to establish the diagnosis, and extreme old age is no bar to this procedure.

Our data were insufficient to estimate the significance of salicylates in the series as a whole. In this complex field there is some evidence of an increased tendency to antral ulceration in rheumatoid patients, which may be independent of drugs but which may have an additive effect (Emmanuel and Montgomery, 1968). Rooney et al. (1973) reported increased gastrin activity in rheumatoid disease. On the other hand, Gillies and Skyring (1969) in Australia observed a statistical association with aspirin ingestion, particularly in middle-aged women, and Macdonald (1973) found some evidence of distinctive antral ulceration due to aspirin, without the surrounding gastritis characteristic of other antral ulcers. Both indomethacin and aspirin may inhibit prostaglandin biosynthesis (Vane, 1971) and prostaglandin protects against experimental ulceration due to indomethacin (Robert, 1975).

Medical Management
With regard to ulcer remedies, small controlled trials have recently suggested a short-term therapeutic effect in the case of geranyl farnesylacetate (Gefarnate) (Newcombe et al., 1970) and tripotassium dicitrate bismuthate (Denol) (Boyces et al., 1974), and uncertainty still surrounds the role of deglycyrrhizinated liquorice (Wilson, 1972; Montgomery and Cookson, 1972; Enqvist et al., 1973). It is still true, however, that carbenoxolone is the therapeutic agent that has most consistently withstood the critical modern approach to gastric ulcer therapy.

My experience with this drug over twelve years has confirmed its efficacy and safety when used in the proper manner. From the clinical standpoint, the significant adverse effects consisted of oedema in 14 cases (9 per cent), mild congestive cardiac failure in 3 cases, and profound hypokalaemia in 2 cases that were mismanaged. The series of adverse effects reported by Mohammed et al. (1966), Mitchell (1971) and Davies et al. (1974) were also examples of excessive dosage. As in the case of digitalis toxicity, such mishaps serve as a salutary warning rather than as an indictment of the drug. Adverse effects are largely a problem of the elderly, due to a reduction of plasma clearance of the drug, which
Table 5. Retrospective review of healing and relapse of gastric ulcers treated with carbenoxolone and with a deglycirrhizinated liquorice-antacid preparation.

| Treatment Group (Numbers) | Mean Age | Mean previous duration of symptoms (yrs) | Mean duration of follow-up (yrs) | Percentage of ulcers initially healed | Percentage of healed ulcers which relapsed | Percentage of total treated surgically |
|---------------------------|----------|----------------------------------------|---------------------------------|--------------------------------------|------------------------------------------|---------------------------------------|
| Carbenoxolone (148)      | 51.0     | 4.1                                    | 4.6                             | 67                                   | 62                                       | 44                                    |
| Deglycirrhizinated liquorice (45) | 55.4 | 4.1                                    | 4.5                             | 69                                   | 69                                       | 39                                    |
amounts to some 30 per cent in patients over the age of 65 (Hayes and Langman, 1975). Unfortunately, over 20 per cent of cases are of this age, and many have chronic heart disease that contra-indicates the use of carbenoxolone.

It is notable that our results with the use of deglycyrrhizinated liquorice were as good as those with carbenoxolone (in the dose range employed) and were achieved without adverse effects. The difference between the two groups of results in Table 5 are insignificant. Because of selection, the carbenoxolone group was slightly younger and in better health, but the length of preceding history and the duration of follow-up were closely comparable.

Double-blind trials of deglycyrrhizinated liquorice, which have usually shown little or no benefit over placebo, have depended on measurement of the rate of healing over periods of a very few weeks. Our longer-term retrospective findings are presented for what they are worth. They are in line with trends already discernible in an earlier study (Montgomery and Cookson, 1972). In contrast to accumulated evidence of the effect of carbenoxolone on gastric mucosal integrity, cell turnover, and peptic activity, the rationale for the use of deglycyrrhizinated liquorice is confined to its reported spasmolytic action on isolated smooth muscle (Aarsen and von Noordwijk, 1963).

An improved rate of ulcer healing has been observed with the use of glycopyrronium (Baume et al., 1972) the action of which is partly spasmolytic. It has certainly been argued that sustained muscle spasm can play a part both in the symptomatology and aetiology of gastric ulcer (Oi et al., 1969; Qvist, 1974; James and Kenefick, 1975).

Up to 30 per cent of all chronic gastric ulcers fail to heal under any form of medical treatment. Liquorice derivatives have simplified the short-term management of gastric ulcer and in my experience have reduced the proportion of patients who require in-patient treatment. Our findings, however, reveal no other lasting benefit from their use, and the incidence of complications is unchanged. Of our cases, 21 per cent remained free of symptoms, and this compares with 22 per cent recorded uniformly by Qvigstad and Romeke (1946), Malmros and Hiertonn (1949), and Larsen et al. (1961), and 24 per cent by Swynnerton and Tanner (1953).

A one-year controlled trial of maintenance therapy with carbenoxolone in a daily dose of 50 mg showed no effect on a confirmed ulcer relapse rate of 25 per cent (Montgomery et al., 1969), and a single report of favourable results with long-term therapy in South Africa (Bank and Marks, 1970), using a daily dose of 150 mg, has not been substantiated elsewhere. A recent maintenance trial using deglycyrrhizinated liquorice (Green et al., 1975) produced suggestive but inconclusive evidence of a reduced relapse rate. There is no way of ensuring reliability when long-term treatment is offered to symptomless patients outside hospital. The use of repeated courses of an active drug for limited periods is a more hopeful approach.
Prognosis and Associated Diseases

In our series 13 cases, nearly all elderly, died as a result of their gastric ulcer, representing 34 per cent of all deaths. This figure includes those who presented with fatal haemorrhage, and if these are excluded only 3 patients subsequently died, representing 11 per cent of all subsequent deaths. The true risk of an individual ultimately dying of his ulcer lies somewhere between these two figures.

It is clear that, in the population as a whole, gastric ulcer causes considerable morbidity but is an infrequent primary cause of death. This is due to the co-existence of other chronic and potentially lethal disorders. In our series the association with chronic lung disease and malignancy, and in particular bronchial carcinoma, was striking. Also striking, but possibly fortuitous, was the low incidence of fatal coronary artery disease.

In contrast to the findings of Mowat et al. (1975), the overall prognosis was worse in men, only 8 of the 38 deaths being of women. This difference may be due to small samples, but it also reflects the higher incidence of chronic lung disease in men.

In view of the danger and difficulty in carrying out emergency surgery in these elderly patients, it would be valuable to define those patients who are at greatest risk of haemorrhage. The incidence of penetration of the ulcer into surrounding tissues (12 per cent in all surgical or autopsy cases) is important because this is a stage at which medical treatment can offer little hope of relief and at which the risk is considerable. Analysis of these cases showed, however, that the classical features of unrelieved pain penetrating to the back were sometimes absent; radiology and endoscopy seldom showed distinctive features to separate this group from other cases with large ulcers that healed satisfactorily on treatment.

In the uncomplicated ulcer, the role of surgery remains difficult to define. An operative mortality rate of the order of 1 per cent is very small but still has to be justified, while post-gastrectomy deficiency states become increasingly prominent in old age. Surgery almost certainly increases the subsequent risk of gastric malignancy (Montgomery and Richardson, 1975; Gough and Craven, 1975). Not all cases in this series were followed after surgery, but my previous experience (Montgomery, 1970) agreed with that of Mowat et al. (1975) in that the late symptomatology in medical and surgical cases was closely comparable, although the factor of selecting less favourable cases for surgery must be borne in mind.

CONCLUSIONS

Chronic gastric ulcer remains a significant cause of morbidity and continues to pose serious problems in medical and surgical management, particularly in old age. There is suggestive evidence of a relative increase in incidence in women in England about 20 years ago. An overall decline in incidence in the younger age groups tends to be masked in an ageing population. Carbenoxolone has become the mainstay of treatment, but this and other measures of proven value in treating
the relapsed ulcer have had no detectable impact on long-term complications, of which by far the most important is haemorrhage.

Elective surgery is a satisfactory procedure, but no rigid indications for it can be defined and each case should be judged on its merits. Serious suspicion of penetration of the ulcer is one clear indication.

Dyspepsia in patients receiving combinations of anti-arthritic drugs should be regarded seriously. Although these drugs may not greatly influence the total number of gastric ulcer cases, they contribute significantly to massive haemorrhage in the elderly. Their use in rheumatoid disease partly accounts for an increased risk of haemorrhage in women with ulcers as compared to men.

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GETTING TOGETHER

Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice. On such occasions no rivalship or jealousy should be indulged. Candour, probity and all due respect should be exercised towards the physician or surgeon first engaged. Theoretical discussions should be avoided in consultations, as occasioning perplexity and loss of time. In consultations, on medical cases, the junior physician should deliver his opinion first, and the others in the progressive order of seniority. The same order should be observed in chirurgical cases. In consultations on mixed cases, the junior surgeon should deliver his opinion first, and his brethren afterwards in succession, according to progressive seniority. The junior physician present should deliver after the senior surgeon, and the other physicians in the order above prescribed. Due notice should be given of a consultation, and no person admitted to it, except the physicians and surgeons of the hospital, without the unanimous consent of the gentlemen present. If an examination of the patient be previously necessary, the particular circumstances of danger or difficulty should be carefully concealed from him, and every just precaution used to guard him from anxiety or alarm.

(Extracted from the writings of Dr Thomas Percival (1740-1804).)