PERFORATED PEPTIC ULCER AND THE CIVIL DISTURBANCES IN BELFAST 1967 - 74

by

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INTRODUCTION

THE role of stress in the aetiology of perforated peptic ulcer in the civilian population was reported upon during the Second World War by Stewart and Winser (1942) who demonstrated a marked increase in admissions to London hospitals for this condition during the heavy air-raids of the 1940 blitz on London. The civil disturbances in Northern Ireland during the last six years have produced a considerable amount of anxiety in the population as documented by Lyons in 1973, and if stress is a significant factor in the aetiology of perforated peptic ulcer then we would have expected an increase in the incidence of this condition during this period.

We therefore examined the case records of all patients with a discharge diagnosis of perforated peptic ulcer, resident in Belfast and admitted during the years 1967—1974 to any of the five Belfast general hospitals—the Royal Victoria Hospital, Belfast City Hospital, Ulster Hospital Dundonald, Musgrave Park Hospital and Mater Infirmorum Hospital which dealt with emergencies during this period.

The age, sex and social class distributions of peptic ulcer have varied widely over the years; Osler (1901) for example stated that “servant girls seem particularly prone” to peptic ulcer and in a large series he found that 60 percent were in women. He also stated that “the acute perforatory form was much more common in women”.

Consecutive Registrar General’s Reports show that deaths from perforated peptic ulcer in England and Wales have decreased following a peak in the 1950s. The Mortality Rate from Peptic Ulcer (ICD Nos. 531-533) for males though not for females appears to be declining slightly in England and Wales during the years 1968—1972 inclusive (Registrar General 1972) and recent data abstracted from the latest Hospital In-patient Enquiry and published by Brown, Langman and Lambert (1976) show that the frequency of admissions for both perforated and non-perforated peptic ulcer has fallen over the years 1958—1972 in Scotland and England and Wales.
In our study we set out to test the null hypothesis that the civil disturbances have not affected the numbers of perforations admitted to the five major Belfast hospitals in the years 1967—1974. It has been assumed that practically all patients with perforated peptic ulcer occurring in Belfast will have been admitted to one of these hospitals during the period under study. Our results show no clear cut trend and are consistent with the view that the situation in Northern Ireland has not produced a significantly differently pattern of morbidity from that obtaining in England and Wales.

**METHOD**

The conditions we investigated are defined in the International Classification of Disease (1965) as:—

- Perforated gastric ulcer — ICD No. 531.0
- Perforated duodenal ulcer — ICD No. 532.0
- Perforated peptic ulcer — ICD No. 533.0

Serious civil disturbances started during the summer of 1969 so we included admissions for the years 1967 and 1968 as controls. A register was compiled with spaces to cover age, sex, social class, religion, ICD No. postal area of home address, hospital of admission and date of admission. The register was so arranged that results could be filled in as a number code to aid data processing and analysis.

**RESULTS**

There were 527 cases admitted to the five hospitals during the years 1967—1974; 11 per cent had perforated gastric ulcers, 87 per cent perforated duodenal ulcers and 2 per cent were classified as perforated peptic ulcers. The distribution of the 527 patients was 81 per cent male and 19 per cent female.

The table shows admissions by year together with rates per million of the Belfast population. This was done to eliminate effects due to the changing totals

|                   | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|-------------------|------|------|------|------|------|------|------|------|
| **All Belfast (n-527)** | 72   | 69   | 55   | 65   | 65   | 70   | 59   | 72   |
| **Population**    | 398500 | 390700 | 385900 | 383600 | 360200 | 362400 | 353700 | 353700 |
| **Rates/Mill. popn.** | 181  | 177  | 143  | 169  | 180  | 193  | 167  | 204  |
| **Mean Rate/Mill. popn.** | 179  |      |      |      |      |      |      |      |

*Apart from the census year 1971 the population figures are RG's estimates. No figure available for 1974 owing to boundary changes; 1973 estimate used.
of the city's population which were estimated by the Registrar General of Northern Ireland to have taken place during this period. The figure is a histogram of the yearly totals for the whole city and for the districts most affected by the civil disturbances namely those of the Falls and Shankill. It will be seen that the number of perforations during the troubles has not exceeded the pre-1969 figure.

We compared the distribution by Registrar General's Social Class of the 326 Royal Victoria Hospital patients with the distribution of all admissions to the Royal Victoria Hospital by Social Class for the period under study and found that Classes IV and V were over-represented in our series and Classes I and II under-represented.

We found no significant difference in the distribution of cases between Catholics and non-Catholics over the eight years; 34 per cent of the Belfast population (according to the 1971 Government Census of Northern Ireland) and 30.3 per cent of the 402 patients whose religion could be ascertained were Catholics.

**DISCUSSION**

The evidence for the relationship between stress and perforated peptic ulcer is most clear-cut in Stewart and Winser's 1942 paper. They examined the case records of perforated ulcer patients admitted to 16 London hospitals for the years 1937 to 1940 and found an increase equal to four times the mean standard deviation of the monthly totals during September and October 1940 which corresponded to the time of the blitz. The monthly average for September and October during the years 1937—1939 was 23, but in 1940 the admissions for each of these months averaged 64. Later Spicer, Stewart and Winser (1944) continued the study by examining the case records for the 18 month period following the blitz and found that the rate of admissions had dropped back to pre-blitz levels. This would strengthen their argument for stress being an aetiological factor in the genesis of
perforated peptic ulcers. However, Illingworth, Scott and Jamieson (1944) studied the records of perforated ulcers which occurred in the West of Scotland during the years 1924–1943 and found a very marked rise in incidence in 1940–1941 followed by a drop thereafter. This rise preceded the air-raids on the West of Scotland but coincided with the time of Stewart and Winser’s reported increase in incidence in London. Illingworth et al. suggested that anxiety about the war, overwork and possibly undernutrition might explain their similar findings in Scotland. This picture of a rising incidence in perforations in Britain was matched by what Lambling and Brissy (1942) described as a veritable “epidemie d’ulcères” in Paris in 1941 as well as similar increases reported for the same year in Austria by two different physicians (Slany, 1942; Mayr, 1948). There were no bombings or air-raids in these latter two situations although there was considerable social upheaval. Another account of psychic stress associated with perforated peptic ulcer was published by Hamperl in 1932 where a ten-fold increase in the incidence of perforations was shown to have taken place in Russia during the famine period of the 1920’s but here diet (or the lack of it) may be presumed to have played a part as well.

Psychiatric studies have demonstrated a relationship between perforated peptic ulcer and psychic stress; for instance, Davies and Wilson found in 1939 that in 16 out of a series of 25 cases of perforated peptic ulcer there had been “an outstanding event in the patient’s life which we felt could be regarded as producing an acute emotional stress”—the time interval between the “outstanding event” and the perforation being “days”. The other 9 cases in Davies and Wilson’s study were suffering from “chronic anxiety”. Castelnuovo-Tedesco (1962) in a detailed psychiatric study of 20 patients under the age of 65 years, who represented consecutive admissions for gastric or duodenal perforation, found that “emotional factors were intimately involved in the perforation in a large majority of the cases”.

In recent years much interest has been focussed on the acute stress ulcer syndrome which comprised 3.3 per cent of 909 admissions for perforation and haematemesis in the study of Hinchey, Hreno and Benoit (1970) for the years 1958–1968. They propounded a decrease in the efficiency of the mechanisms which defend the gastric and duodenal mucosae against attack by gastric acid secretions. Their proposition is based on Dragstedt’s finding in 1956 that normal healthy volunteers had gastric acid levels within normal limits in response to stress. Further support for this viewpoint is provided by O’Neill’s 1967 study on Curling’s (post-burn) ulcer patients who without exception exhibited a low gastric acid output. The low acid secretion both in volume and concentration in gastric ulcer patients studied by James and Pickering in 1949 and Baron in 1963 is also consistent with the proposition of Hinchey et al.

Sibilly’s 1974 review of the gastro-intestinal complications of stress summarize the collected experimental evidence for the destructive role of various substances on the gut mucosa e.g. alcohol, bile, urea, aspirin, cortisone. Such destruction is expedited by pre-existing ischaemia or stasis of the gut, a view which is also amply supported by the evidence presented in Skillman’s 1974 review. Sibilly also includes a series of 727 peptic ulcerations and haemorrhages all of which followed
surgical or non-surgical (e.g. respiratory failure) stress. It should be borne in mind however that the factors involved in the acute stress ulcer syndrome may not be the same factors as these involved in the vast majority (96.7 per cent in Hinchey et al.’s series) of peptic haemorrhages and perforations.

Our study however shows that under the conditions experienced in Belfast during the civil disturbances there was no increase in the incidence of perforated peptic ulcer and therefore our findings do not support any association between psychic stress and this condition.

**Summary**

A study of all the cases of perforated peptic ulcer in Belfast residents admitted to Belfast hospitals in the years 1967—1974 showed that the incidence of this condition during the years of civil disturbance 1969—1974 was at no time higher than in the preceding years 1967 and 1968. Closer studies of admissions for perforated peptic ulcer from the most troubled districts—the Falls and Shankill—confirmed that there has been no increase in incidence even among the residents of these districts.

These results call into question the potency of stress-induced anxiety of the type experienced in Belfast as an aetiological factor in the pathogenesis of perforated peptic ulcer.

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