THE INCIDENCE OF PEPTIC ULCER AND CHRONIC GASTRITIS AMONG SWEDISH SEA PILOTS

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The aetiology of peptic ulcer has for a long time been the subject of lively debate, and various causes have been assumed to contribute to the occurrence of this disease. Among these causes may be mentioned the hereditary factor, the importance of which has been pointed out by Doll and Buch (1950). Attention has been drawn to harassing work and irregular meals as contributory causes of ulcer by several writers, including Hill (1937), Sällström (1945), and Doll, Avery Jones, and Buckatzsch (1951). Shift work and housing conditions have also been discussed in this connexion by Bjerner, Holm, and Swensson (1948) and by Thiis-Evensen (1949). The following report is a preliminary communication on the incidence of ulcer and gastritis in Swedish pilots.

Present Investigation

We have had an opportunity of investigating 416 Swedish pilots in respect of the occurrence of gastric ulcer, duodenal ulcer, and chronic gastritis, and also of considering the hours of work in different pilot stations.

The coast of Sweden is divided into six pilot duty districts with 83 stations in all. Because of the nature of the work the pilots serve, with very few exceptions, at only one station. At each station a head-pilot or a pilot foreman acts as chief. There

are two main types of pilot duty, harbour and long-distance. In addition men may serve on cruising pilot-cutters.

The pilot service is so organized that one of the men, the man first in turn on the list, must always be in or near the watch-room to be ready to turn out at a moment's notice. The other pilots follow on the list as second, third man, and so forth, in turn. In actual practice at stations where the burden of work is heavy the second and third men on the list are often forced to remain in the watch-room, as the boats may come in in quick succession, and it may often happen that the pilot is on the list as first or second man as soon as he has completed a tour of duty. A study of the pilots' log-books shows that with only a few hours' sleep a pilot may be on duty for two or three days. As may be seen from the following table, however, there are very great differences in the work at different stations.

To ascertain the incidence of ulcers in the Pilot Service, all the regular pilots on the active list were sent a questionnaire in which they were asked among other things whether they had been in hospital or had consulted a physician, for any gastric affection. If this had been the case information was sought, where possible, from the physician, the sick-relief branch of the Pilot Service, and the hospital.

TABLE

Pilotage Port or Place of Duty	Number of Men	Average Working Hours in Hours per Day-and-night					
		Pilot Duty on Ships	Duty on Pilot-boat e.g. Look-out and Plotting	Trip to and from Harbour to Pilot Duty	Watch-room Hours (at the ready)	Hours on Call at Home	Total Hours
Sandhamn	17	1.2	3.5	2.5	7.0	5.8	20.0
Stockholm	17	2.6	0.1	6.3	2.2	7.8	19.0
Norrköping	5	1.7	0.2	6.5	—	11.3	19.7
Ronehamn	1	0.1	7.4	0.1	—	6.8	14.2
Påskallavik	2	0.1	6.6	0.2	—	—	6.9
Fagervik	2	0.2	5.2	0.5	1.6	0.2	7.7

A diagnosis of ulcer or of a relapse was accepted only when it had been verified by radiographs or when the patient had had a haematemesis and symptoms of an ulcer. A diagnosis of chronic gastritis was accepted where the pilot had been examined and this condition had been diagnosed by a physician.

Results

The questionnaire was sent to 416 pilots, all of whom replied. The majority had been employed for more than 10 years and a large group for over 20 years (Fig. 1).

Distribution by age showed that the largest group was between 41 and 50 years (Fig. 2).

There were among these 416 men 40 who had had peptic ulcers, the first case being in 1923 and the last (three cases) in 1951. Among these 40 men there were 16 relapses. Altogether 33 men had had chronic gastritis. The average age of onset of peptic ulcer was 38.1 years, and for that of chronic gastritis, 40 years. Thus 73 cases of chronic gastric affection had occurred among the regular pilots on the active list, which gives a morbidity of 17.5% (ulcer 9.6% and chronic gastritis 7.9%).

It was only possible to calculate the annual morbidity for ulcer and gastritis for 1950, during which year all the employed pilots were contacted. During 1950 six pilots had

their first diagnosed ulcer (the average age of onset was 44.7 years), while among the others there were four relapses (average age 42.5 years) and four cases

of chronic gastritis (average age 50.5 years); that is to say, a total morbidity of 3.37%, 2.40% for ulcer and relapse, and 0.97% for gastritis alone.

As it would have been of great interest to compare the morbidity during different years, attempts were made to contact the pilots who had either been pensioned or retired for some other reason during the years 1940-49. This proved difficult, however, and the percentage of replies was so small that it was not possible to make any comparison.

The total number of pilot duties for the years 1925-51 was taken as the criterion for the pilots' burden of work (Fig. 3). Fig. 3 shows that the number of pilot duties was considerably increased during the first year of the second world war (1939) compared with the preceding years. It also shows a rise during the five years immediately following the war. As it was only possible in exceptional cases to take on extra staff, and the number of pilots was thus on the whole constant during the period 1939-50, it is evident that during and after the war the men have been exposed to a marked increase in their burden of work.

FIG. 1

FIG. 2

Since there are considerable differences in the burden of work at the different pilot stations, information was sought from the head pilot officers in all districts concerning their personal opinion of each station from this point of view. At those stations (32) considered by the head pilot officers to be overburdened, 262 men have been employed, of whom 31 and 26 have for the first time contracted a peptic ulcer and chronic gastritis respectively (11.8% and 9.9%). Those pilot stations considered to have an easier burden (51) employed 154 men, of whom nine have or have had ulcers, and seven gastritis, i.e., 5.8% and 4.5% respectively. This difference between the frequency of gastric affections for two groups is statistically significant ($P < 0.02$). As the two groups are very similar in respect of age and duration of employment, it seems that the higher ulcer morbidity in the one group may be caused by its pilots being overburdened with work.

Housing conditions for the pilots seem to be good. The average number of rooms per family is three for all the pilots questioned, with an average of 1.5 children living at home.

There is no statistically significant difference in the housing standards of the pilots suffering from ulcer and the rest of the group.

Discussion and Summary

In order to judge whether there is any reason for morbidity in respect of chronic gastric affection among these pilots, comparative material from a male population in the same age group and with the same age distribution is necessary. As far as we are aware, no such material has been published.

Among the studies already mentioned, those of Doll, Avery Jones, and Buckatzsch, and of Thiis-Evensen provide populations which are nearly comparable with ours. In a group of 60,000 males aged 15 to 64 years Doll and Buch found 5.8% had had peptic ulcers, and among 3,058 men Thiis-Evensen found 4.0% with chronic gastritis. The corresponding figures for the pilots in the age group 26-60 years are 9.6% with ulcers and 7.9% with gastritis. For the pilots, most of whom enter the service at about 25 years of age, ulcer has been recorded only if it

FIG. 3

occurred during the period of employment in the Pilot Service, whereas Doll and Buch have included cases from the whole life time of individuals in the age-group 15-64 years. The figures for the total occurrence of ulcer among the pilots are thus minimum figures.

Bjerner, Holm, and Swensson (personal communication) have determined the annual morbidity for peptic ulcer among 200,000 male annual subscribers to an urban sick-relief fund (Stockholm), finding it to be highest in the age-group 50-65 years with 1.43%, and also among 30,000 male annual subscribers to provincial sick-relief funds, finding in the corresponding age group a morbidity of 0.7%. In the age group 40-49 years the annual morbidity for the city was 1.33% and for the country 0.61%.

Among the pilots we were able to observe the morbidity for the year 1950 only. It was 2.40% for

ulcer diagnosed for the first time and for relapses. Although these groups are not strictly comparable with ours, it appears that morbidity from peptic ulcer is high among pilots.

With the significantly higher incidence of peptic ulcer and gastritis among the men in those stations where the burden of work is heavy, it seems that the exacting duties of the pilot service, with irregular working hours and meals and increased duties during and after the war, have been contributing causes of this high morbidity.

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