DISABILITY PENSIONS DUE TO PEPTIC ULCER IN GERMANY BETWEEN 1953 AND 1983

AMNON SONNENBERG

Sonnenberg, A. (Gastroenterology Division, Beth Israel Hospital, Boston, MA 02215). Disability pensions due to peptic ulcer in Germany between 1953 and 1983. Am J Epidemiol 1985;122:106-11.

In the present study, the number of disability pensions provided in West Germany between 1953 and 1983 because of peptic ulcer served as a marker of peptic ulcer morbidity. A total of 46,426 cases of disability resulting from peptic ulcer occurred, representing 0.6% of all cases of disability in West Germany during this period. Blue collar workers were affected more often than white collar workers, and men more often than women. The proportion of disability pensions due to peptic ulcer markedly declined between 1953 and 1973. This decline affected both sexes and both blue and white collar workers and was accompanied by a shift of the highest age-specific proportions from the middle to the older age groups. These findings show that the previously observed temporal variations of peptic ulcer disease do not apply only to the mortality but also to the prevalence of peptic ulcer.

duodenal ulcer; peptic ulcer

Studies from the United States report that hospital admissions due to duodenal and gastric ulcer have declined (1–3), that ulcer perforations occur less frequently (1), that fewer operations are conducted because of peptic ulcer (4, 5), and that fewer patients die of ulcer disease (1, 5). Similar observations have been made in England and Ireland (6–9). In the present study, the total number of disability pensions provided in West Germany between 1953 and 1983 because of peptic ulcer served as a marker of peptic ulcer morbidity. I analyzed the temporal variations of disability resulting from peptic ulcer to determine whether they corroborate the observations made with respect to mortality and hospital admissions.

METHODS

Under the German social security system every employee holds mandatory disability insurance. There are separate systems for white and blue collar workers. The premiums are paid jointly by the employer and the employee. The insurance provides a pension in the case of partial or total disability to earn income. Partial disability applies when an employee is only able to earn less than 50 per cent of the income of a healthy person with similar occupational qualifications. Total disability applies when an employee is unable to engage in any type of gainful employment. Partial and total disability are granted on the basis of the case history and the results of one or more medical examinations.

In the present analysis, the annual numbers of new disability pensions because of
peptic ulcer disease were evaluated. Both partial and total disability were considered. The data include all disability pensions provided to employees in the Federal Republic of Germany between 1953 and 1983 (10). The annual numbers of new disability pensions are arranged according to five-year age groups of the recipients and to the causes of disability modified from the International Classification of Diseases (ICD) (11). From 1953 to 1967 gastric and duodenal ulcer were coded together. Since the introduction of the eighth revision of the ICD in 1968, gastric and duodenal ulcers have been entered into the statistics as separate codes (ICD codes 531 and 532). From 1968 to 1979 the peptic ulcer of unspecified site (ICD code 533) was lumped together with the ICD codes 534–537. Between 1980 and 1983, the peptic ulcer site unspecified accounted for 4.7 per cent of all disability pensions provided because of peptic ulcer. This was not considered in the present analysis.

In order to adjust the number of pensions to the changes in the number of residents in West Germany between 1953 and 1983 and to the different fractions of blue and white collar workers, two types of adjustments were used. 1) The disability pensions because of peptic ulcer were related to the number of male and female white and blue collar workers covered by the social security system. The total numbers of white and blue collar workers were taken from the annual editions of the Statistical Yearbook of the Federal Republic of Germany (12). 2) The disability pensions because of peptic ulcer were expressed as proportions of all pensions. The second type of adjustment also considers the temporal changes in the general practice of regarding disability awards. In the calculation of the age- and sex-specific proportion of disability pensions, the number of new pensions due to peptic ulcer per 10-year age group and five-year time period was related to the total number of new pensions, irrespective of cause, for the same age, sex, and period. The periods chosen were 1951–1955, 1956–1960, and 1961–1965, etc. For the periods 1951–1955 and 1981–1985, the average proportion of disability pensions was considered representative for a five-year time period, although it could be based on only three consecutive years. In order to evaluate the trends of peptic ulcer between 1953 and 1983, the average proportions of the five-year periods were adjusted to the age distribution of all new pensions in 1971–1975 by the technique of direct standardization (13).

**RESULTS**

From 1953 to 1983, 46,426 cases of disability from peptic ulcer occurred. This represented 0.6 per cent of all cases of disability in West Germany during this period. Disability resulting from peptic ulcer occurred more often in men than in women (table 1). Blue collar workers were affected 1.4 times more often than white collar workers. During the period 1968–1983, 1.6 times more cases of disability resulted from gastric than from duodenal ulcer in blue collar workers. However, both types of ulcers caused similar numbers of disabilities among white collar workers (table 1).

During the period 1953–1983, the annual number of disability pensions because of peptic ulcer fell from 2,983 in 1953–1955 to 930 in 1981–1983. The number of all pensions provided annually irrespective of the cause increased from 184,300 in 1953–1955 to 319,700 in 1981–1983. The proportion of pensions due to peptic ulcer markedly declined between 1953 and 1973 (figure 1). The decline was also present when the disability pensions because of peptic ulcer were related to the total number of employees in West Germany (table 2). It affected both sexes and both blue and white collar workers. Since 1973, the proportion of disability pensions due to peptic ulcer has slightly increased in all four groups. The increase occurred in gastric and duodenal ulcer (figure 2). It was most marked in the
Annual disability pensions due to gastric and duodenal ulcer in West Germany, 1968–1983 and 1953–1983

<table>
<thead>
<tr>
<th>Type of worker and sex</th>
<th>Annual average, by type of ulcer</th>
<th>1968–1983</th>
<th>1953–1983</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gastric</td>
<td>Duodenal</td>
<td>All codes</td>
</tr>
<tr>
<td>Blue collar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>257</td>
<td>175</td>
<td>109,901</td>
</tr>
<tr>
<td>Women</td>
<td>119</td>
<td>60</td>
<td>106,638</td>
</tr>
<tr>
<td>White collar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>39</td>
<td>41</td>
<td>29,716</td>
</tr>
<tr>
<td>Women</td>
<td>30</td>
<td>32</td>
<td>39,029</td>
</tr>
</tbody>
</table>

In the 1950’s, the proportion of pensions due to peptic ulcer was highest in the age group 45–54 years (figure 3). In the next two decades, the age-specific proportion of pensions decreased more markedly in the young than in the old age groups. Hence, the peak of the age-specific proportion shifted from the age group 45–54 years to the age group 65–74 years.

**DISCUSSION**

The proportion of disability pensions resulting from peptic ulcer has several advantages as a marker of peptic ulcer morbidity. The data cover a long time period (30 years). They are grouped in an age- and sex-specific manner. The separation into blue and white collar workers gives a unique opportunity to study the effect of the social status on the morbidity of peptic ulcer. Since the system of social security includes most of the 60 million people in West Germany, one deals with large and meaningful figures. Every pension is based on one or several medical reports. In order to qualify for a disability pension because of a peptic ulcer, one must suffer from a rather severe course of this disease, for instance, sequelae after a surgical operation for ulcer or fre-

**Table 2**

Rates of disability pensions due to peptic ulcer per 1 million blue and white collar workers

<table>
<thead>
<tr>
<th>Type of worker and sex</th>
<th>Annual average, by year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue collar</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>204.2</td>
</tr>
<tr>
<td>Women</td>
<td>93.7</td>
</tr>
<tr>
<td>White collar</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>138.4</td>
</tr>
<tr>
<td>Women</td>
<td>32.4</td>
</tr>
</tbody>
</table>
MORBIDITY FROM PEPTIC ULCER

There are, however, also some disadvantages associated with this type of analysis. A separate code for gastric and duodenal ulcer was not included in the statistics before 1968. Since the statistics represent only the annual number of new disability pensions, one individual patient could theoretically enter the statistics more than once if his pension was annulled and then resumed. These cases, however, represent only a small fraction of all new pensions (<1/1,000). From the statistics of the social security system, it is not possible to disentangle the changes in incidence and severity of peptic ulcer disease. The severity of the disease could have changed due to changes in the natural history or to improved treatment. The fall between 1953 and 1973 occurred before the introduction of new medical and surgical therapies. The trends between 1953 and 1983 are probably overlaid by changes in practices regarding disability rewards. These changes, however, should affect the nominator as well as the denominator of disability proportion, since there is no indication for the practices to be nonuniformly applied to patients with peptic ulcer and with other diseases.

The decline of peptic ulcer mortality in Europe and the United States can be interpreted in terms of a birth cohort phenomenon (7, 8, 14, 15). The birth cohorts born in the last quarter of the 19th century were exposed to a maximum risk of dying from peptic ulcer, and they carried this risk throughout their lives. Mortality from peptic ulcer increases with age. Peptic ulcer mortality, therefore, increased from 1900 to 1950 as long as those birth cohorts grew older. Since most of them have now died and low-risk birth cohorts are becoming older, peptic ulcer mortality has again declined. In an analysis of peptic ulcer disease in physicians from Massachusetts, Monson and MacMahon (16) found the cohorts of physicians born in 1870-1901 and 1922-1943 to exhibit a lower prevalence of duodenal ulcer than those born in 1902-1921. When the data of Coggon et al. (6), with respect to the number of hospital admissions for perforated gastric and duodenal ulcer, are replotted in terms of a birth cohort analysis, the curves support the contention that not only mortality, but also the incidence of gastric and duodenal ulcer in men demonstrate characteristics of birth cohort risks. There are no other studies to indicate whether the cohort phenomenon...
applies only to peptic ulcer mortality or to the risk of contracting peptic ulcer as well.

The present analysis reveals a marked decline in the number of disability pensions due to peptic ulcer in the past 30 years. The decline correlates well with the decline described for mortality, hospital admissions, and operations because of peptic ulcer disease (1–9). The number of disability pensions fell predominantly in the young and middle-aged groups. During the period of 20 years between 1958 and 1978, the peak of the age-specific rates of disability pensions shifted from the age group of 45–54 years to that of 65–74 years. This might indicate a birth cohort phenomenon with the high-risk birth cohorts having moved from the age group of 45–54 years in 1958 to the age group of 65–74 years in 1978. There has been a slight increase in the proportions of disability pensions for peptic ulcer in the last 5–10 years. It was most marked in the groups of male and female white collar workers contracting duodenal ulcer. The reasons for this increase are unknown. It cannot be explained by a shift from gastric to duodenal ulcer, for instance, because of more differentiated diagnoses made nowadays by fiberendoscopy, since there is also a slight increase in the rates of gastric ulcer. A longer observation period is needed in order to judge whether the differences can really be trusted as indicating an upward trend.

In England, the Registrar General devised a means of using occupations as an index of social classes (7, 8). The death rates from peptic ulcer during the periods 1949–1953 and 1970–1972 showed a social class gradient, with high death rates in the lower social classes and low death rates in the higher social classes. Susser (8) analyzed the temporal changes in peptic ulcer mortality by social class between 1921 and 1972. His elaboration of the data suggested that the recession of the wave of peptic ulcer began in the higher social classes. The recession occurred first with gastric ulcer and 10 years later with duodenal ulcer (8). The difference between blue and white collar workers found in the present analysis reflects a smaller prevalence of peptic ulcer in the higher social class of white than blue collar workers. It is also influenced by the fact that for a given severity of disease white collar job duties are probably less obstructed than blue collar jobs. This phenomenon, however, affects peptic ulcer similarly to other diseases, i.e., the nominator and denominator of the disability proportion. From 1953 to 1983 the difference in the number of peptic ulcer-related pensions granted to German blue and white collar workers has become smaller. This might be due to the general increase in the social welfare in West Germany.

The higher frequency of disability pensions in men than in women corresponds with the generally higher prevalence of peptic ulcer in men than women (17–19). As is the case with mortality, more disability cases are due to gastric than to duodenal ulcer (14, 15, 20). This indicates that in spite of the higher incidence and prevalence of duodenal over gastric ulcer, the latter represents the more dangerous disease, with more life-threatening and disabling complications. As with other markers of peptic ulcer morbidity, the ratio of gastric to duodenal ulcer is somewhat higher in women than in men (1, 2, 6, 7, 17–19).

In conclusion, the present study shows a marked decline in the disability pensions due to peptic ulcer from 1953 to 1983. The decline was accompanied by a shift of the highest age-specific proportions from the middle to the older age groups. Blue collar workers were affected more often than white collar workers, and men more often than women. The findings show that the previously observed temporal variations of peptic ulcer disease with respect to age and sex do not apply only to the mortality but also to the prevalence of peptic ulcer.

References


