

Apparent Risk Factors for Chronic and Acute Pancreatitis in Stockholm County

Spirits but not Wine and Beer*

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Summary

In Stockholm county, the incidences of hospitalizations for chronic pancreatitis, acute, nongallstone associated pancreatitis, and alcoholic liver disease peaked at 14.1, 40.1, and 24.3/100,000 population in 1974 for the first two conditions, and in 1979 for the last one. After the peaks, a steady decline was seen for each condition. Furthermore, the apparent national and Stockholm *prevalence* of chronic pancreatitis displayed a decline during 1971-1987. A concomitant decline in the Stockholm sales figures of distilled spirits from 9.2 to 5.4 l/person/yr was also observed, whereas the sales figures for wine and beer increased, leaving the overall alcohol purchase unchanged. Thus, the consumption of distilled spirits, but not that of wine and beer, appear as a risk factor for these diseases in Stockholm county.

Key Words: Alcoholic liver disease; incidence; alcohol consumption; nutrient consumption.

INTRODUCTION

Alcohol consumption is the most important risk factor for chronic pancreatitis in the western world (1). It is also a major risk factor for acute pancreatitis (2). In a multicenter survey of the etiology of chronic pancreatitis, protein and fat consumption were also shown to influence the risk for chronic

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pancreatitis, though to a much lesser extent than alcohol consumption (3). It is, indeed, possible, that the variation in the incidence of chronic pancreatitis between countries results from differences in alcohol-, protein- and fat-consumption. Therefore, the incidences during 1969–1987 of chronic pancreatitis, acute alcoholic pancreatitis, and alcoholic liver disease in Stockholm county were established and compared to changes in alcohol and nutrient consumption during the same time period.

MATERIAL AND METHODS

During the time period 1969–1987, 12 hospitals, directed by the Stockholm County Health Care Administration, provided inpatient care for the population of the county (approx 1.5 million people). Since 1969, all hospitalizations and corresponding discharge diagnoses have been registered in computerized form. No similar registration of outpatients has, however, been undertaken.

The total number of inpatients hospitalized 1969–1987 for their first admission for chronic pancreatitis, acute pancreatitis, gallstone disease, and alcoholic liver disease, as well as their sex and age, was obtained from the Stockholm County Central Health Care Administration. An estimation of the variation in the national and Stockholm county prevalence of chronic pancreatitis was made, thanks to the sales figures of digestive enzymes, obtained from the National Corporation of Swedish Pharmacies, Stockholm.

In Sweden, alcoholic beverages with an alcohol concentration exceeding 2.8 vol% are sold exclusively by a state run company, Wine & Spirit Central Distributer Inc. It is estimated that this company provides about 80–85% of the totally consumed alcohol in Sweden. The sales figures for Stockholm county since 1969 were obtained, expressed in liters of 100% alcohol/person, above the age of 15, per year. The sales figures for the individual kinds of alcoholic beverages were also obtained.

National data concerning nutrient consumption in g/person/d were obtained (4) from the Governmental Office of Agriculture, Jönköping, Sweden. Particular consumption data for Stockholm county were, unfortunately, not available.

RESULTS

The population of the county increased from 1,453,754 in 1969 to 1,593,333 in 1986. The total number of patients admitted for chronic pancreatitis was 2,709, with a female/male ratio of 1:2.43. The new hospital admissions peaked at 14.1/100,000 population in 1974, with a subsequent slow decrease to 6.7 in 1987 (Fig. 1).

The total amount of digestive enzymes sold by Swedish pharmacies was 294 Defined Daily Doses (DDD)/100,000 population in 1971, and it decreased slowly to 110 in 1987. No figures, in particular for Stockholm county, were available before 1983, but from that year, the same parameter declined from 212 to 168 in 1987.

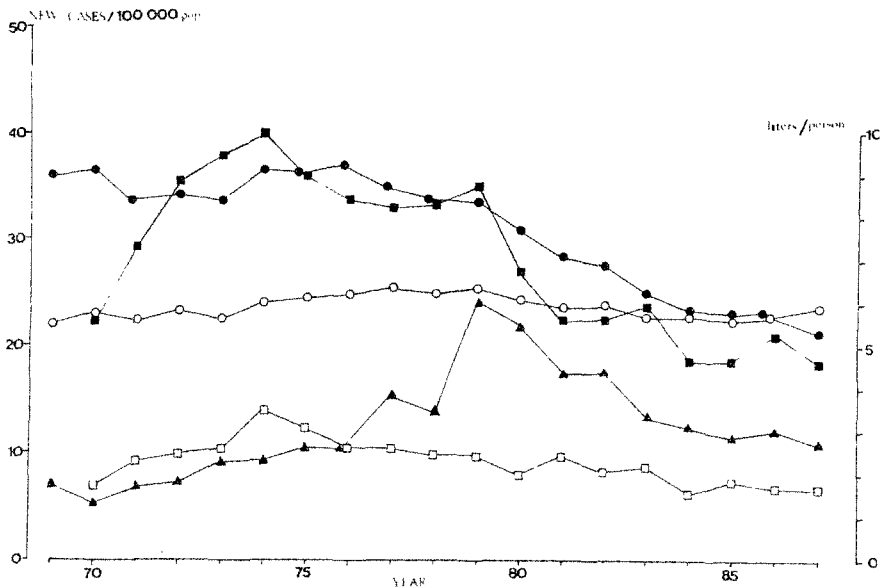


Fig. 1. New hospital admissions for chronic pancreatitis (open squares), acute, nongallstone pancreatitis (filled squares), and alcoholic liver disease (filled triangles) in Stockholm county in 1969–1987 (left ordinate). Total purchase of alcohol in liters of 100% alcohol/person (open circles), and purchase of distilled spirits (filled circles) in Stockholm county 1969–1987 (right ordinate).

The total number of patients newly admitted for acute pancreatitis was 9,166, of whom 988 also received a gallstone disease diagnosis (10.8%). The new hospital admissions for acute pancreatitis, with the exclusion of those suffering also from a gallstone disease, peaked in 1974 at 40.1/100,000 population, and decreased slowly thereafter to 18.4 in 1987 (Fig. 1). The overall female/male ratio was 1:1.98.

The total number of patients newly admitted for alcoholic liver disease was 3,524, with a female/male ratio of 1:2.48. The new hospital admissions increased slowly during the first part of the period, and peaked in 1979 at 24.3/100,000 population, with a subsequent slow decrease to 12.2 in 1986 (Fig. 1).

The age distribution of chronic pancreatitis and acute nongallstone associated pancreatitis in males and females was fairly similar, both when compared between the two diseases and the two sexes (Fig. 2), the only exception being an increased percentage of acute pancreatitis (nearly 9%), compared to chronic pancreatitis (below 5%) in the 20–29 age class, in both sexes.

During the studied time period, the overall alcohol consumption remained fairly stable at approx 6 L 100% alcohol/person/yr (Fig. 1), whereas the amount consumed of distilled spirits decreased from 9.2 L in the beginning of the period to 5.4 L in the end of the period (Fig. 1). The increase in wine

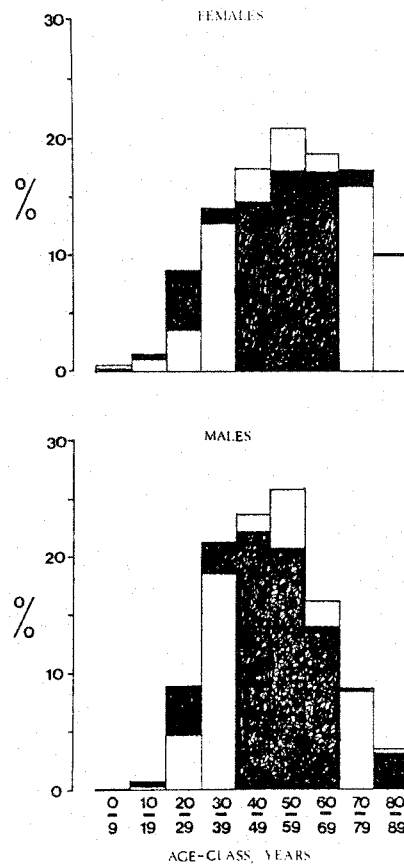


Fig. 2. Age distributions in females and males, at their first hospitalization for chronic (empty columns) and acute nongallstone pancreatitis (shaded columns) in Stockholm county 1969-1987.

consumption from 12.1 to 22.1 L, and the change in beer consumption from 7.3 through 4.9 (1976) to 15.4 L/person/yr explains the stable overall alcohol consumption.

The national consumption of protein increased a little from about 78 g to about 88 g/person/d, and so did that of fat, from 115-120 g to 125-128 g/person/d (Fig. 3). The national consumption of carbohydrates did not change much. It reached a minimum of 333 g/person/d in 1978, and slowly increased to just above 350 g/person/d in the end of the period (Fig. 3).

DISCUSSION

This report presents incidences for first hospitalizations for three alcohol related diseases, rather than the disease incidences themselves. This probably represents an accurate estimation of the true incidence of acute pancreatitis, that is almost exclusively an inpatient diagnosis. The incidence of alcoholic

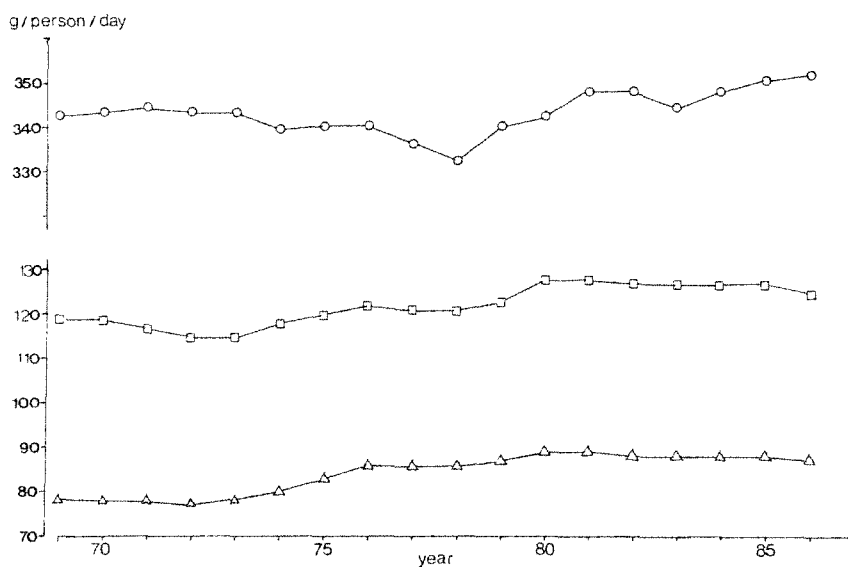


Fig. 3. Mean national consumption of carbohydrates (circles), fat (squares), and proteins (triangles) in Sweden 1969–1987.

liver disease should also be fairly well estimated, as almost all such patients will be hospitalized sooner or later during the development of the disease. The diagnosis of chronic pancreatitis is more likely to be established in outpatients, who will not necessarily ever be hospitalized for the disease, the true incidence of which, thus, may be underestimated. Yet, it appears remarkably high here, in comparison with previously reported figures (5). This may be owing to the fact that complicated cases from other counties, referred to the university hospitals in Stockholm, for specialist evaluation and/or treatment, might erroneously have increased the hospitalization incidence in Stockholm *per se*.

It is evident from this report that nongallstone acute pancreatitis is a much more common disease or, at least, a much more common reason for hospitalization in Stockholm than both chronic pancreatitis (3 t more common) and alcoholic liver disease (2.3 t more common).

The similar age distribution of the two inflammatory pancreatic diseases, as well as their coinciding peaks of incidence in 1974, suggest that they could be related to each other in Stockholm or, rather, that they could be two forms of the same disease. Hence, acute alcoholic pancreatitis in Stockholm may, in fact, largely represent the exacerbating form of chronic pancreatitis.

The alcohol consumption in Sweden has been steadily increasing since the early forties but peaked in the seventies, and has been decreasing thereafter (6). As shown here, the previously increasing total consumption in Stockholm leveled off, but did not decrease during the seventies. Only the consumption of distilled spirits declined, whereas that of wine and beer increased.

The peaking incidences in the seventies of the three alcohol related diseases are very probably reflecting the general increase in overall alcohol consumption until and throughout the sixties, whereas the decreasing incidences and sales figures of digestive enzymes thereafter, parallel only one observed decrease in the pattern of alcohol consumption—the decreased consumption of distilled spirits. Therefore, the critical risk factor in Stockholm for the reported diseases seems to be the consumption of alcohol in this form, rather than the total consumption. Or, more likely, the data suggest that consumers of mainly distilled spirits have been at greater risks than other alcohol consumers. The latter interpretation indicates the population at high risks to be the chronic alcoholics, who are known to be consuming mainly distilled spirits.

Changes in national protein- or fat-consumption do not seem to have influenced the decreasing incidences and/or prevalences of the pancreatic diseases.

The incidence peak of alcoholic liver disease appeared five years later than those of the pancreatic diseases. This delay is compatible with the reported, longer mean duration of alcohol abuse necessary to initiate liver cirrhosis than that needed to initiate chronic pancreatitis (3).

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