Reported Family Aggregation of Pancreatic Cancer Within a Population-Based Case-Control Study in the Francophone Community in Montreal, Canada

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Summary

As part of the SEARCH Collaborating Study Group of the International Agency for Research on Cancer (IARC), a population-based case-control study of cancer of the pancreas was conducted in Montreal, interviewing 179 patients and 179 controls matched for age, sex, and language (French) and selected by a modified random-digit dialing method. Results showed a positive and strong association between cigarette smoking and pancreatic cancer. Total fat, particularly saturated fat, and cholesterol consumption and excess energy derived from fat were associated with positive risk; dietary fiber intake, retinol equivalent, β-carotene, vitamin C, and calcium showed inverse association with risk. History of such medical conditions as constipation, gallbladder problems, and diabetes was also found to be associated with risk. More important, 7.8% of the pancreatic cancer patients reported a positive family history of the same disease, as compared with 0.6% among controls, a 13-fold difference between cases and controls. Within the original case-control study a further study of patients with instances of familial pancreatic cancer was conducted, based on 14 cases and 56 matched controls. The results support the finding of the main study, and there were no apparent differences in environmental-risk-factor profile in familial and nonfamilial cases. This unusual aggregation of familial pancreatic cancer among French Canadians cannot be explained by environmental

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factors alone. Some familial predisposition (hereditary factors) may play an important role in the etiology of this cancer, at least in this study region. The findings suggest the potential importance of conducting genetic studies of pancreatic cancer.

Key Words: Pancreatic cancer; family; epidemiology; etiology.

INTRODUCTION

Cancer of the exocrine pancreas is common in Western countries and is generally among the 10 leading causes of cancer incidence and death in most countries (1). Incidence and mortality rates have been rising in many countries (2). Existing data from the Province of Quebec, Canada, between 1978 and 1981 indicate that the average incidence rate for cancer of the pancreas is, among males, 8.2/100,000, and in females, 5.0/100,000 (1).

Despite being such a common neoplasm, knowledge of etiological factors is remarkably poor (2,3). Apart from cigarette smoking (4), there are no identified risk factors for pancreatic cancer, although there is uncertainty surrounding a number of other factors (2).

Several studies have shown a positive association between certain food habits—such as eating fried and grilled food (3,5), per capita consumption of such foods as meat, dairy products and seafood, poultry and fish (6-8), and particularly fat consumption—(6,9-11) and risk for cancer of the pancreas. Epidemiological studies have shown clear and consistent evidence linking increased risk of pancreatic cancer with cigarette smoking (3,5-7,10,12,13).

Alcohol consumption has for a long time been suggested as a plausible risk factor in cancer of the pancreas. However, some studies showed a positive association (6,14-16), whereas others found no excess risk associated with alcohol (3,10,17-20).

The published evidence concerning the possible role of coffee in the etiology of pancreatic cancer is controversial. In some studies coffee consumption appeared as a risk factor for pancreatic cancer (19,21), whereas other studies failed to confirm this initial finding (16,22).

Familial occurrence of pancreatic cancer is rare. Among the few reported cases in the literature is a discussion of four brothers who developed pancreatic cancer between the ages of 66 and 77 years (23). All four were cigarette smokers; none was alcoholic or had a history of pancreatitis. Another study presents three brothers and a sister who developed this disease between the ages of 69 and 72 (24). A case report on pancreatic cancer among the same generation of family members indicates its occurrence in three brothers within <1 yr (25). All three were farmers until their early 20s, all were heavy coffee-drinkers and smokers, but none were alcoholics. There was no evidence of hereditary pancreatitis among these familial cases. These reports suggest that there may be a hereditary predisposition to pancreatic cancer in later life, but there is no evidence to date to suggest such a predisposition for this disease at earlier ages.