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Pancreatic Cancer - Prevention with a Plant-Based Diet

Stewart Rose and Amanda Strombom*

Plant-Based Diets in Medicine, 19215 SE 46th St, Issaquah, WA 98027, USA

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Corresponding author: Amanda Strombom, Plant-Based Diets in Medicine, 19215 SE 46th St, Issaquah, WA 98027, USA

Abstract

We have previously written that a plant-based diet can reduce the risk of colon cancer, prostate cancer, breast cancer, stomach cancer, glioma and multiple myeloma. However, it can also reduce the risk of pancreatic cancer. This is important because most patients are present with advanced, unresectable disease. Despite improvements in treatment, pancreatic cancer remains a disease with poor long-term prognosis, with a 5-year survival rate of only about 12%. Diet appears to be a modifiable risk factor for pancreatic cancer and a healthy diet can lower the risk. Three recent studies have demonstrated a significantly reduced risk of pancreatic cancer for those following a plant-based diet. Type 2 diabetes is a risk factor for pancreatic cancer, with one study showing that patients with long-standing type 2 diabetes have a 2.4 times increased risk of pancreatic cancer. The fact that those following a plant-based diet have a 78% reduced risk of type 2 diabetes, and 56% reduced risk of metabolic syndrome, may partly explain the reduced risk of pancreatic cancer for those following a plant-based diet. A plant-based diet seems to be a valuable prophylaxis for reducing the risk of pancreatic cancer.

Keywords: Adenocarcinoma; Digestive system cancer; Ductal; Metabolic syndrome; Type 2 diabetes

Abbreviations: IGF: Insulin-like growth hormone; PDAC: Pancreatic ductal adenocarcinoma

Introduction

We have previously written that a plant-based diet can reduce the risk of colon cancer [1], prostate cancer [2], breast cancer [3], stomach cancer [4], glioma [5] and multiple myeloma [6]. However, it can also reduce the risk of pancreatic cancer. This is important because pancreatic ductal adenocarcinoma (PDAC) is the third overall leading cause for cancer-related mortality in the US [7]. Among the histological subtypes of cancer arising in the pancreas, PDAC is both the most frequent exocrine pancreatic neoplasm and the most frequent pancreatic cancer overall [8,9]. While the incidence of some cancer deaths is predicted to decline, pancreatic cancer and liver cancer deaths are predicted to increase. One study estimates that leading cancer incidences and deaths in the US will be notably different by the year 2040 compared with current rankings. Estimates included increases in melanoma incidence, pancreatic cancer deaths, and liver cancer deaths, and decreases in prostate cancer incidence and breast cancer mortalities [10]. As most patients present with advanced, unresectable diseases, despite improvements in treatment, pancreatic cancer remains a disease with poor long-term survival with only about 12% predicted to survive beyond 5 years [9]. The poor prognosis associated with this disease is attributable to its early systemic spread and aggressive local growth. Nearly 50–60% of patients present with distant metastatic disease, 25–30% with regional disease and only 10–15% of patients present with localized disease [7]. Therefore, prevention is especially important. Diet appears to be a modifiable risk factor for pancreatic cancer and a healthy diet can lower the risk [11].

In one study, participants in the highest compared with the lowest quartiles of an overall plant-based diet index had a 26% lower risk of pancreatic cancer. A greater reduction of risk was observed for those following a healthy plant-based diet that emphasized whole foods with a greater nutrient content of 44% [12]. A meta study of digestive system cancers with over 3 million subjects found that a plant-based diet reduced the risk of pancreatic cancer by 29% [13]. Also, a multi case-control study of dietary patterns and the cancers of the esophagus, stomach, and pancreas found a 57% reduction of risk for pancreatic cancer for patients following a plant-based diet or near-plant-based diet [14].

Type 2 diabetes is a risk factor for pancreatic cancer. One study showed that patients with long-standing type 2 diabetes

have 2.4 times the risk of pancreatic cancer [15]. The mechanism that could underline the association between type 2 diabetes and pancreatic cancer is that insulin resistance causes compensatory hyperinsulinemia and increases insulin-like growth hormone (IGF) which stimulates pancreatic ductal carcinogenesis. Insulin promotes cell proliferation and increases glucose use [16], while IGF has mitogenic, angiogenic, and anti-apoptotic activities [17,18]. Those following a plant-based diet have a 78% reduced risk of type 2 diabetes and 56% reduced risk of metabolic syndrome [19]. This may partly explain the reduced risk of pancreatic cancer that those following a plant-based diet have.

Given that pancreatic cancer is now one of the leading causes of cancer mortality and remains very difficult to treat, a plant-based diet would seem to be a valuable prophylaxis for reducing the risk. A plant-based diet can also reduce the risk of chronic diseases besides cancer, such as coronary artery disease [20], stroke and hypertension [21]. A plant-based diet has no adverse reactions or contraindications and should be suggested to all patients interested in lowering their risk of pancreatic cancer and other diseases.

Conflict of Interest

The authors declare that they have no conflict of interest.

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