PANCREAS

Pancreatic cancer—effects of BMI on risk, age of onset, and survival

Excess body weight and obesity are not only associated with an increased risk of pancreatic cancer but, as new data show, they are also associated with earlier age of cancer onset and reduced survival. These associations are particularly strong in individuals who are overweight or obese at a young age. As lead researcher, Donghui Li, explains “...these findings suggest that weight control in young adulthood should have a greater impact on reducing the risk of pancreatic cancer”.

Obesity is a known risk factor for several types of cancer, including pancreatic cancer. Li and colleagues, therefore, conducted a study at the University of Texas M. D. Anderson Cancer Center that aimed to assess the relationships between BMI over an individual's lifetime and the risk, age of onset, and outcome of pancreatic cancer. 841 patients with pancreatic ductal adenocarcinoma were compared with 754 healthy controls. All participants completed a questionnaire administered at a personal interview to collect information on known risk factors, such as cigarette smoking and family history of cancer, and suspected risk factors, such as alcohol use and history of body weight. Each participant was asked to recall their body weight at the age of 14–19 years and subsequently in 10-year blocks (age 20–29 years to age 70–79 years). Patients with pancreatic cancer were also asked to recall their body weight in the year preceding diagnosis. The researchers calculated BMI values for each participant over their lifetime to compare the prevalence of overweight (BMI ≥ 25 kg/m²) or obesity (BMI > 30 kg/m²) at different age periods between cancer patients and cancer-free controls. Age at cancer diagnosis and overall survival duration were compared among normal-weight, overweight and obese cancer patients.

The researchers' findings confirmed the association between excess body weight or obesity and risk of pancreatic cancer; however, the association between excess

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body weight at young ages and pancreatic cancer risk was particularly strong. Individuals who were overweight or obese at age 14–19 years, in their 20s, or in their 30s had a higher risk of pancreatic cancer than those who were not overweight during these ages. The risk of cancer leveled off for individuals who became overweight or obese in their 40s and the risk was nonsignificant for those who became overweight or obese in their 50s.

Individuals who were overweight or obese from 20–49 years of age also had an earlier onset of pancreatic cancer. The median age of cancer diagnosis was 64 years for those who had a normal BMI at 20–49 years of age, but was 61 years for patients who were overweight and 59 years for those who were obese over these years. “Our findings for the first time demonstrate a significant loss of life, especially productive years, caused by obesity in sporadic pancreatic cancers,” says Li.

Obesity late in life, especially in the year preceding diagnosis of pancreatic cancer, was associated with reduced overall survival duration, regardless of the stage of disease or resection status. Patients

with a normal BMI in the year before their diagnosis had a median survival of 18 months, compared with just 13 months for those with excess body weight at this time point. According to Li, this is the first clinical study to demonstrate an association between obesity and survival in patients with pancreatic cancer.

The researchers' next steps will be to determine the factors that modify the association between excess body weight and risk of pancreatic cancer and to elucidate the mechanisms that underlie the poor clinical outcome of obese patients with pancreatic cancer. “Better understanding of the association between obesity and pancreatic cancer will be useful in the development of novel strategies for the primary prevention of this malignancy. Such research will help us to develop preventative strategies and establish biomarkers for early detection of this disease”, concludes Li.

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Original article Li, D. *et al.* Body mass index and risk, age of onset, and survival in patients with pancreatic cancer. *JAMA* 301, 2553–2562 (2009).