ASSOCIATION OF BODY MASS INDEX IN PATIENTS AFTER BARIATRIC SURGERY WITH THE ONSET OF PANCREATIC CANCER: A NATIONWIDE INPATIENT SAMPLE DATABASE ANALYSIS

RUTGERS New Jersey Medical School

Vincent Wong[1], Kamal Amer[2], Anjella Manoharan[1], Shatha Daghash[3], Seyedehsan Navabi[2]

[1]Department of Internal Medicine-Pediatrics, [2]Department of Gastroenterology and Hepatology

Rutgers New Jersey Medical School, Newark, NJ, 07103

[3]Farleigh Dickinson University School of Pharmacy, Florham Park, NJ, 07932

Introduction

- Obesity (Body Mass Index or BMI >= 30) has been associated with a 3.5-fold increased risk of cancer.[1]
- Higher BMI has led to increased cancer-related mortality and chemotherapy resistance.[2]
- Prior studies have demonstrated a protective effect of weight loss in certain cancers (ie. endometrial, breast, and pancreatic).[1,2]
- Literature behind weight loss and the protective effect on pancreatic cancer remains controversial.[3,4]
- This study evaluates the relationship between different BMI ranges in patients who underwent bariatric surgery and the onset of pancreatic cancer.

Methods

- National Inpatient Sample (NIS) database was used to identify hospitalized patients over 18 years old who had bariatric surgery between 2012 to 2017.
- Patients were divided into a cancer and non-cancer group.
- Those with pancreatic cancer were identified and were matched by age, gender, race, and the Elixhauser Comorbidity Index.
- Primary outcomes - associations between BMI ranges in patients who underwent bariatric surgery and pancreatic cancer.
- Chi-squared and t-tests were used to compare demographic data, and multivariate analyses were performed to assess outcomes.

Results

	Control (n=4225)	Pancreatic Cancer (n=4225)	P-Value
Age (years)	*Mean*: 62.5 (SD 9.4)	*Mean*: 62.7 (SD 9.3)	1.0
18-27	0	0	
28-37	30 (0.7%)	30 (0.7%)	
38-47	220 (5.2%)	220 (5.2%)	
48-57	930 (22.0%)	930 (22.0%)	
58-67	1785 (42.2%)	1785 (42.2%)	
68-77	1070 (25.3%)	1070 (25.3%)	
78-87	170 (4.0%)	170 (4.0%)	
>=88	20 (0.5%)	20 (0.5%)	
Gender			1.0
Male	1445 (34.2%)	1445 (34.2%)	
Female	2780 (65.8%)	2780 (65.8%)	
Race			1.0
White	3200 (75.7%)	3200 (75.7%)	
Black	585 (13.8%)	585 (13.8%)	
Hispanic	310 (7.3%)	310 (7.3%)	
Asian or Pacific Islander	40 (0.9%)	40 (0.9%)	
Native American	15 (0.4%)	15 (0.4%)	
Other	75 (1.8%)	75 (1.8%)	
Elixhauser Comorbidity Index	10.6 (SD 9.6)	12.7 (SD 11.6)	1.0

Table 1. Demographics of Patients with and without Pancreatic Cancer who underwent Bariatric Surgery, SD = Standard Deviation

	Odds Ratio (95% Confidence Interval)	P-Value
BMI 30-34.9	0.96 (0.80-1.15)	0.645
BMI 35-39.9	1.02 (0.85-1.23)	0.814
BMI 40-49.9	**0.46 (0.39-0.55)**	**<0.001**
BMI >=50	**0.31 (0.23-0.44)**	**<0.001**

Table 2. Outcomes of Patients who had Bariatric Surgery and Risks for Pancreatic Cancer by Body Mass Index

Results

- From 2012 to 2017, there was a total of 1,695,860 patients who had bariatric surgery, and 4,225 patients had pancreatic cancer.
- The mean age was 62.6 years old, 34.2% were male, and 75.7% were White.
- Results were significant for decreased risk of cancer in patients who underwent bariatric surgery and had BMI 40-49.9 (OR 0.46) and BMI >=50 (OR 0.31).

Discussion

- Weight loss through bariatric surgery has been shown to reduce the risks of various cancers.[1]
- This is likely due to the reduction in adipose tissue regulated chemokine signaling involved in oncogenesis.[1]
- Our data suggests that patients with higher stages of obesity (BMI >=40) who underwent bariatric surgery would benefit the most from risk reduction in pancreatic cancer.

References

1. Xu M, Jung X, Hines OJ, Eibl G, Chen Y. Obesity and pancreatic cancer: Overview of epidemiology and potential prevention by weight loss. *Pancreas*. 2018;47(2):158-162.
2. Li D, Morris JS, Liu J, et al. Body mass index and risk, age of onset, and survival in patients with pancreatic cancer. *JAMA : The Journal of the American Medical Association*. 2009;301(24):2553-2562.
3. Al-Saadi H, Malallah H, Al-Saadi T. 739 Pancreatic cancer and bariatric surgery: Narrative review. *British journal of surgery*. 2021;108(Supplement_6).
4. Shi Y, Yang J, Du P, et al. Effect of body mass index on overall survival of pancreatic cancer: A meta-analysis. *Medicine (Baltimore)*. 2016;95(14):e3305.