

LETTER

The Relationship of Body Underweight to Complication Risks in Acute Pancreatitis

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Dear Sir:

Body overweight and obesity are associated with a worse outcome of a number of diseases, including cardiovascular diseases and acute pancreatitis [1, 2]. Recent studies have unexpectedly demonstrated that patients with ischemic heart disease who are underweight also have an increased mortality risk when compared with their normal-weight counterparts [3, 4]. Whether a similar inverse correlation exists between low body mass index (BMI) and complication rates of acute pancreatitis, is unknown. In this letter, we therefore describe the effect of body underweight on the outcome of patients with pancreatitis of biliary origin.

Patients admitted to our hospital for gallstone pancreatitis have been prospectively studied for many years and a number of clinical, physiological and biochemical measurements are routinely entered into a database. A series of 281 patients was available for the present analysis. One hundred patients had a BMI between 18.5 and 24.9 kg/m² and were taken as the reference group. They were compared with 13 underweight patients (BMI less than 18.5 kg/m²). The remaining 168 patients were either overweight or obese. The end points of the study were severity of disease according to the Atlanta criteria (mild *versus* severe), mortality rate, duration of hospital stay, number of patients who required admission to an intensive care unit (ICU) and number of surgical procedures. For more details concerning patients, methodology and statistical analysis, we refer to an earlier publication [2].

Comparison of the normal-weight group with the

underweight group yielded the following results: age (mean± SEM: 63.5±1.9 years *versus* 45.0±7.6 years (P=0.026); gender (female:male ratio): 62:38 (62.0%:38.0%) *versus* 9:4 (69.2%:30.8%) (P=0.612); APACHE II (mean and range): 6.49 (0-17) *versus* 5.15 (0-19) (P=0.110); outcome (mild:severe ratio): 90:10 (90.0%:10.0%) *versus* 11:2 (84.6%:15.4%) (P=0.627); length of hospital stay (mean and range): 16.5 days (2-119) *versus* 13.3 days (6-47) (P=0.448); deaths: 1/100 (1.0%) *versus* 0/13 (0%) (P=1.000); number of patients admitted to ICU: 26/100 (26.0%) *versus* 1/13 (7.7%) (P=0.185) and number of surgical procedures (mean and range): 1.02 (0-2) *versus* 0.92 (0-1) (P=0.602) (Fisher's exact and Mann-Whitney U tests as appropriate).

The odds ratio and the 95% confidence interval (95% CI) for severe outcome in the underweight patients was 1.636 (95% CI: 0.317-8.454).

The results of the present study suggest that underweight patients with acute pancreatitis are not at risk for developing more complications than those with a normal body weight. This contrasts with other conditions such as ischemic heart disease [3, 4], chronic heart failure [5], renal failure requiring dialysis [6], etc. where patients with a BMI below 18.5 kg/m² do less well than those with a normal BMI. This apparently paradoxical relationship between low BMI and increased morbidity may partially be explained by the presence of active smokers, excessive alcohol consumers, geriatric patients with malnutrition or patients with unidentified malignancies in this group. We therefore limited our study to pancreatitis of biliary origin, excluding possible confounding etiologies such as alcoholism, medications and pancreatic malignancies. The observation of a similar morbidity in lean and normal-weight patients could not be compared with other findings in the literature since many studies have been devoted to the relationship between pancreatitis and obesity, but none to underweight. Only Funnell *et al.* [7] mentioned 15 underweight patients with acute pancreatitis of various etiologies, mostly alcoholic. One patient developed a pseudocyst, but there were no other complications.

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One limitation of the present study was the rather limited number of underweight patients since only 4.6% of our patients had a BMI less than 18.5 kg/m². This reflects the scarcity of lean people in our Western society and the fact that they suffer less from gallstone-related diseases than do obese people.

In summary, we observed that, in contrast to other conditions, underweight subjects with biliary pancreatitis had an outcome comparable to those with a normal body weight. We can only speculate about the reasons, but possible explanations are the younger age of the patients, the rarity of comorbidities and the absence of well-known aggravating factors present in the obese such as increased amounts of peripancreatic fat, reduced respiratory capacity and immunodeficiency [8].

Conflict of interest The authors have no potential conflicts of interest

Ethics Since this letter deals with a purely observational study without treatment arms, according to the rules of the local ethics committee, no informed consent had to be obtained.

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