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Effect of Sarcopenic Obesity on Postoperative Pancreatic Fistula after Pancreaticoduodenectomy in Patients with Pancreas Head Cancer

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Purpose:

Preoperative nutritional status may reflect outcomes after pancreatoduodenectomy (PD) in patients with pancreas head cancer (PHC). Recently, several studies have reported that preoperative sarcopenic obesity (SO), which is a high visceral adipose tissue-to-skeletal muscle ratio, could worsen postoperative complications in patients with various periampullary diseases. However, studies relating SO with postoperative pancreatic fistula (POPF) for patients with PHC are lacking. The purpose of this study is to evaluate the effect of preoperative SO on POPF following PD.

Methods:

Preoperative SO was assessed in 548 consecutive patients undergoing PD for PDAC at Samsung Medical Center between 2007 and 2016. The visceral adipose tissue-to-skeletal muscle ratio was calculated from cross-sectional visceral fat and muscle area on preoperative CT imaging at the third lumbar vertebra level and normalized for height by an automatic calculation program in Matlab version R2010a (Mathworks Inc. Natick, MA, USA). Overall survival (OS) and the rate of POPF with ISGPF grade B or C among postoperative complications were extracted from prospectively maintained databases.

Results:

Preoperative SO was present in 202 (36.9%) of the patients. After multivariate analysis, the presence of SO was the only independent risk factor for developing POPF (HR 2.561, 95%CI: 1.179– 5.564, p=0.018). Age over 63 years (HR 1.465, 95%CI: 1.154–1.859, p=0.002), poorly differentiated carcinoma (HR 2.175, 95%CI:1.709-2.769, p<0.001), nodal metastasis (HR 2.127, 95%CI: 1.604-2.819, p<0.001), portal vein invasion (HR 1.488, 95%CI: 1.143–1.936, p=0.003), and absence of adjuvant treatment (HR 2.454, 95%CI: 1.933-3.116, p<0.001) were identified as independent risk factors for OS, but preoperative SO was not significantly associated with decreased OS.

Conclusions:

Preoperative CT-derived SO is the only predictive factor for CR-POPF after PD in patients with PHC. Preoperative SO measures may stratify patients into risk categories for developing POPF. For evaluation of the effect of SO on survival after PD, more observational studies will be needed.