

The importance of 18F-fluorodeoxyglucose positron emission tomography and carbohydrate antigen 19-9 in patients with periampullary tumors

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Article: Clinical usefulness of fluorodeoxyglucose-positron emission tomography/computed tomography and carbohydrate antigen 19-9 in patients with periampullary tumors (Kim JE, et al. Korean J Clin Oncol 2019;15:56-60)

Periampullary tumors include neoplastic lesions of the pancreatic head, the ampulla of Vater, the duodenum, and the distal common bile duct. Although of different origins, these neoplasms are treated the same, with pancreaticoduodenectomy. Early and accurate diagnosis is extremely important to both the overall survival and the quality of life of patients with periampullary malignant tumors [1]. Unfortunately, until now, there has been no ideal imaging modality for the diagnosis of periampullary lesions. Since it is difficult to use biopsies to confirm the diagnosis because of the anatomical location of the tumors, many noninvasive tests, such as ultrasound, computed tomography (CT), and magnetic resonance imaging, have become important in diagnosing periampullary tumors. Even though there are some diagnostic inaccuracies in these noninvasive tests, invasive procedures, such as endoscopic retrograde cholangiopancreatography or endoscopic ultrasound, also carry risks of complications, such as bleeding, perforation, and the spreading of tumors [2].

Several studies have reported the clinical utility of carbohydrate antigen 19-9 (CA19-9) levels and positron emission tomogra-

phy-CT (PET/CT) in the diagnosis and management of periampullary tumors [3,4]. Serum CA19-9 is an extensively studied and validated biomarker of pancreatic cancer that has also been used for the diagnosis and surveillance of periampullary tumors. It has well-known roles in predicting prognosis, overall survival, response to chemotherapy, and postoperative recurrence [3,5-7]. 18F-fluorodeoxyglucose PET/CT (FDG-PET/CT) is a metabolic imaging system based on glucose uptake capacity [3,6-8]. The accumulation of FDG reflects the rate of carbohydrate metabolism, which is an index of the metabolic activity of the cells. Carbohydrate metabolism is more active in malignant cells, resulting in a significant accumulation of FDG [6]. This examination has been well investigated in the field of esophageal, rectal, and some other cancers for detecting residual, viable cancer after anticancer treatment [5]. The maximum standardized uptake value (SUVmax marker of tumor glucose metabolism detected by [18F]) is a FDG-PET/CT value. The SUVmax reflects tumor aggressiveness and is an independent prognostic factor in pancreatic cancer. The evaluation of SUVmax offers an advanced method of detecting small solid lesions, based on the focal uptake of FDG-labeled glucose in malignant tumor cell populations [3,7].

The authors aimed to determine the preoperative predictive value of the FDG-PET and CA19-9 diagnostic tools for periampullary tumors [9]. They found that elevated CA19-9 levels and the SUVmax of PET/CT were associated with malignancy in periampullary tumors. And thus, normal CA19-9 and no uptake of FDG-PET were correlated with benign lesions. However, there were some limitations to this study due to the small numbers of benign lesions (n = 17) and the heterogeneity of the periampullary tumors, in which important pathologic factors, such as tumor differ-

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entiation and perineural invasion, were not evaluated. Hence, further well designed and large-scaled prospective studies are needed to understand the predictive values of FDG-PET and CA19-9 in periampullary tumors.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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