November 27(Thu), 2014,
[Grand ballroom 102, COEX]

2014년 11월 27일(목),
코엑스 그랜드볼룸 102호

Biliary & Pancreas
Symposium 2.
Current Role and Limitation
The Perioperative Surveillance for Curative Resection of Pancreatic Cancer: How Much is Enough?
(English Session)

Radiologic Imaging

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Radiologic examinations are necessary for the diagnosis of pancreatic cancer, pre-operative staging and the determination of respectability, and monitoring treatment response of pancreatic cancer after neoadjuvant treatment. Among various radiologic examinations, computed tomography (CT) and magnetic resonance imaging (MRI) have played a major role in the evaluation of pancreatic cancer. Recent advances in CT technology enabled isometric three-dimensional imaging within a short period of breath-hold, which allowed for multi-planar reconstruction of images and, in turn, an improved diagnostic accuracy. Because of these improvements, CT has been widely used as the first line examination for the evaluation of pancreatic cancer. Although MRI may not be adequate for the first line examination, mainly due to its relatively high cost and longer examination time, MRI has a complementary role to CT in evaluating pancreatic cancer. Its higher soft tissue contrast helps in detecting small pancreatic cancer which is sometimes iso-attenuating on CT. Recently liver specific MR contrast agents have become available, which improved diagnostic efficacy of MRI in detecting small hepatic metastasis.

The sensitivity of CT in detecting pancreatic cancer has improved over the years and reported as high as 98%. However, its sensitivity in detecting T1 cancer is still disappointing between 68 to 77%. Some pancreatic cancers (reportedly 5-10% of all pancreatic cancer) appear iso-attenuation on CT.[1] These lesions manifest only with secondary sign of the pancreatic cancer, e.g. pancreatic duct dilatation, obstructive pancreatitis, and so on, and thus may be a diagnostic challenge. In this clinical setting, i.e. secondary signs without definite mass on CT, MRI may help in the diagnosis of pancreatic cancer.

For the evaluation of vascular invasion and respectability of pancreatic cancer, the overall accuracy of CT and MRI were similarly reported ranging from 85% to 95%. Vascular encasement which was defined as more than 180 degree involvement of vascular circumference by tumor, typically indicates vascular invasion. Using this criteria, Lu and colleague[2] reported a sensitivity of 84% and a specificity of 98% for diagnosing unresectable pancreatic cancer. Despite some controversy, it have been known that neoadjuvant chemotherapy reduces the accuracies in tumor restaging and in the prediction of respectability after treatment of pancreatic cancer.[3,4] However, a recent study suggested that a new image criteria employing regression of tumor-vessel contact, instead of classic criteria, may improve the diagnostic accuracy of CT in determining respectability of pancreatic cancer after neoadjuvant chemoradiation therapy.[5]

For local staging of pancreatic cancer, MRI has a similar accuracy to CT. However, MRI may have an incremental value to CT in detecting hepatic metastasis. Two recent studies utilizing liver specific contrast agents, consistently reported higher di-

agnostic accuracies of MRI compared with those of CT in detecting hepatic metastases, especially for smaller metastases, although the accuracies of MRI in detecting primary tumor and determining respectability were similar to those of CT.

In conclusion, the advances in radiologic techniques have improved diagnostic efficacies of imaging examinations for evaluating pancreatic cancer. However, there are still limitations of radiologic studies, including the diagnosis of early pancreatic cancer and the assessment of treatment response of pancreatic cancer after neoadjuvant chemotherapy. The use of multi-modality imaging may be helpful to overcome the current limitations of radiologic examinations.

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EUS-Guided Tissue Diagnosis

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Pancreatic cancer is notorious for its poor prognosis even after a curative resection. Moreover, most cases are not the candidates for a surgery. Without surgical resection, the histopathological diagnosis of pancreatic cancer was too difficult due to the location of the cancer and surrounding major vessels before the clinical application of endoscopic ultrasound guided fine needle aspiration (EUS-FNA).

The endoscopic ultrasound (EUS) is a device which has the ultrasound probe at the tip of an endoscope in order to observe a suspicious extraluminal lesion from esophagus, stomach, duodenum, and distal colon. Therefore, EUS guided tissue diagnosis (TD) made a pancreatic lesion punctured from stomach or duodenum observing intervening vessels and finding a safe route. Obtaining tissues nearer to the lesion than any other diagnostic method, the accuracy of pancreatic solid lesion is very high especially of pancreatic cancer. Nowadays, it is the choice of method to make a histopathological diagnosis of unresectable pancre-