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How to Evaluate Tumor Extent CC: CT vs. MRI

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Cholangiocarcinoma is a malignant tumor with poor prognosis arising from the biliary system. Based on the tumor location, cholangiocarcinoma is classified into intrahepatic, perihilar and distal. In this presentation, perihilar and distal cholangiocarcinoma will be presented. In the treatment for cholangiocarcinoma, complete resection is the only curative treatment with long-term survival. Diagnostic imaging plays an important role in the decision of operative indication and method.

Cholangiocarcinoma invades locally and, has spread to regional lymph nodes and distant organs. Primary site extends longitudinally and infiltrates vertically. Vertical infiltration is included vascular vessels like hepatic artery and portal vein, posterior hepatic plexuses and liver parenchyma. Longitudinal extension is divided into intraepithelial and submucosal extension. It is difficult to identify the intraepithelial lesions on computed tomography (CT) and magnetic resonance imaging (MRI), and the purpose of preoperative diagnostic imaging is to evaluate the submucosal lesions.

CT and MRI demonstrate a mass formation or a focal thickening of the bile duct wall with upstream dilatation of the biliary system. Approximately 80% of cases show enhancement on arterial and/or portal phase. Vascular invasion is diagnosed when the occlusion, stenosis, contour deformity or greater than 50% perimeter contact with the tumor is observed. The presence of abnormal attenuation continuous primary site along the nerve route on CT imaging indicates perineural invasion. On MRI, it is reported that adding diffusion-weighted imaging and magnetic resonance cholangiopancreatography (MRCP) are useful for better preoperative evaluation.

A few head to head comparisons of CT and MRI have shown that the accuracy of CT and MRI for biliary duct involvement was 64.3-87.0% and 71.4-90.7%, for hepatic artery involvement was 87.7-90.1% and 82.7-90.1%, for portal vein involvement was 96.3-98.8% and 95.1-97.5%, and lymph node metastasis was 77.8-81.5% and 74.0%, without statistical difference. It is also demonstrated that imaging findings had an excellent agreement between on CT and on MRI (κ=1). A systematic review and meta-analysis has shown that the sensitivities, specificities and the area under the curve of resectability for CT and MRI was 95% and 94%, 69% and 71%, and 0.9269 and 0.9194, without statistical difference. On the other hand, it is reported that CT is useful to diagnose vascular invasion because of low spatial resolution of MRI, or MRI is useful to evaluate the location of stenosis because of clear depiction of all over the biliary system.

This presentation will show the characteristics of CT and MRI, and help you make a better diagnosis.

Keywords: Cholangiocarcinoma, Bile duct, CT, MRI