

Radiologic imaging of bile duct cancer

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Bile duct cancer or cholangiocarcinoma (CC) is a malignant tumor arising from bile duct epithelium. The tumor is classified into intrahepatic (10%) and extrahepatic (hilar or distal bile duct: 50-60% vs. 20-30%). Peripheral CC arises from the bile ducts peripheral to the secondary bifurcation of the left or right hepatic duct. Extrahepatic cholangiocarcinoma refers to a malignant tumor occurring on the left or right hepatic duct to the ampulla. Accurate detection and differentiation from other bile duct disease are highly important. Surgical resection remains the only effective curative treatment for cholangiocarcinoma. Therefore accurate preoperative imaging assessment is critical to determine whether patients are candidates for curative resection or not. Also imaging is helpful for planning palliative treatment.

Technical advances in diagnostic imaging allow for better patient selection, which lead to be treated with surgical resection. Ultrasonography accurately recognizes biliary tract dilatation, and is helpful for depiction of the intraductal tumors. Multidetector-row CT (MDCT) is a widely used noninvasive examination for staging of bile duct cancer. Magnetic resonance (MR) imaging in combination with MR cholangiography can be used as a sole imaging modality for evaluation of bile duct cancer. The role of MRI combined with MRCP is; (1) to differentiate benign from malignant causes of biliary stricture, (2) to determine resectability in patients with malignant disease, (3) to preoperatively stage, (4) to differentiate between the different appearances of growth patterns. With recent advancement of MR techniques, diffusion-weighted imaging (DWI) is widely used in liver and biliary disease. Recent literature suggested that DWI can be helpful for detection and characterization of bile duct cancer. Direct cholangiography including endoscopic retrograde cholangiography (ERC) and percutaneous transhepatic cholangiography (PTC) is still the standard of reference for biliary extent of the tumors. Recently, fusion imaging techniques have been introduced. It may display tumor itself as well as the surrounding vessels and demonstrate complex anatomic relationship in bile duct cancer. These techniques seem to have a great potential to improve the planning of the treatment using MDCT. Hybrid MRI-PET has been developed to provide anatomical and metabolic information.

In this lecture, I am going to discuss radiologic techniques to diagnose the bile duct cancer and focus on the current role of imaging.