Reporting Cholangiocarcinoma: Pathological Aspects

Definitions

Cholangiocarcinoma is a malignant tumour composed of cells resembling those of the bile ducts. According to WHO classification [1] the term cholangiocarcinoma is reserved for carcinomas arising in the intrahepatic bile ducts. For this reason, tumours arising from extrahepatic bile ducts should be designated as extrahepatic bile duct carcinomas. However clinical and pathological differentiation of intrahepatic from extrahepatic bile duct cancers can be difficult. Cancers arising from the bile duct epithelium of the right and left hepatic ducts and at the bifurcation are also considered cholangiocarcinomas and are called “hilar cholangiocarcinomas”. Intrahepatic (or peripheral) cholangiocarcinoma is a primary liver cancer and can arise from any portion of the intrahepatic bile duct epithelium [2].

The TNM staging system of the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC) applies to all primary carcinomas of the liver, including hepatocellular carcinomas, intrahepatic bile duct carcinomas and mixed tumours [3]. General Rules for the Clinical and Pathological Study of Primary Liver Cancer of the Liver Cancer Study Group of Japan also applies to all primary carcinomas of the liver [4]. Hilar cholangiocarcinoma arises from the extrahepatic bile ducts (right and left hepatic ducts at or near their junction) and is considered an extrahepatic carcinoma [5]. The TNM staging system for malignant tumours of the extrahepatic bile ducts of the American Joint Committee on Cancer (AJCC) and the International Union against Cancer (UICC) is recommended [3]. Classification of Biliary Tract Carcinoma of the Japanese Society of Biliary Surgery (JSBS) is also applied [6].

In most peripheral cholangiocarcinomas, hard, compact, and grayish-white massive or nodular lesions are found in the liver. They may grow inside the dilated bile duct lumen or show an infiltrative growth along the portal pedicle. Usually the tumours are not big compared to the whole liver. Haemorrhage and necrosis are infrequent, and the association with cirrhosis is only occasional. Tumour located just beneath the capsule of the liver shows umbilication, as in metastatic liver cancer.
In most hilar cholangiocarcinomas, the tumour infiltrates and proliferates along the extrahepatic bile duct, which is thickened in most cases. Mass formation may be minimal and there could be thickening and enlargement of the portal region. The infiltration in the liver has an arborescent appearance. Extensive parenchymal infiltration is also observed in most cases.

In the peripheral type, there is no dilatation of intrahepatic bile ducts in non-cancerous areas; in the hilar type this dilatation is often prominent. Moreover, in hilar cholangiocarcinoma there is frequently cholestasis, biliary fibrosis and cholangitis with abscess formation. These findings may also be present in peripheral cholangiocarcinoma, which involves the hepatic hilum.

Differentiation of intrahepatic from extrahepatic bile duct cancer may be difficult in cases with massive tumour at the hilum of the liver. In surgical cases, cancers occurring in the hilum are often small and can be identified relatively easily as being intra- or extrahepatic of origin. Maybe the pathological differentiation of intra- and extrahepatic bile duct carcinoma will become easier thanks to morphological, immunohistochemical and molecular studies.

Clinical outcome of intra- and extrahepatic cholangiocarcinoma will become more evident after studying a larger number of surgically resected cases. However it is difficult to compare the benefits of different surgical approaches described in many studies since there are several discrepancies. First of all, different stage classification systems are applied (Japanese vs. UICC), resulting in different tumour stages. Second, there is no consensus on the extent of the pathomorphological examination of the resection specimens; consequently results can vary considerably.

In this study we used a checklist based on a standardized pathological staging of specimens and resection margins for cholangiocarcinoma that closely follows the surgical procedure and also includes the pathological details necessary for comparison with other series, both Japanese and American.

**Clinical Information**

- **Relevant history.** Family history of liver tumours; prior surgery for cancer; ulcerative colitis; viral hepatitis (HBV, HCV); haemochromatosis; cirrhosis; bile duct disease (e.g. sclerosing cholangitis); inflammatory bowel disease.
- **Relevant findings.** Tumoural markers, jaundice.
- **Relevant imaging studies.** CT, MRI, US, ECPR. They should be sent to the Pathologist, especially when there is a hilar cholangiocarcinoma, in order to correlate radiological and pathological findings.
- **Prior diagnostic procedure.** Fine needle aspiration (FNA), brushing, needle biopsy.
- **Clinical diagnosis description.**
- **Procedure description.** Lobectomy, partial hepatectomy, total hepatectomy,