

Supplementary material

Appendix: Example of a hepatocellular carcinoma pathological report

Characteristics of hepatic pathology should be highlighted in the routine pathological report for PLC, including the pathological risk factors related to postoperative recurrence. The pathological report usually comprises gross description, microscopic description, immunohistochemical stains, molecular detection, typical pathological pictures, and the terms of the final pathological diagnosis. The pathological report can be attached with comments or explanations regarding supplementary issues, such as important biological characteristics, lesions of clinical concern, or those that require further differential studies. Moreover, for the convenience of recording and analysis, the clinical and pathological parameters presented as a checklist can be also attached with the pathological report, as appropriate^[1].

Gross descriptions: (1) Specimen of the right hepatic lobe, with a total size of 5.0 cm × 4.5 cm × 4.2 cm; a 2.6 cm × 2.2 cm gray tumor found in the section, with focal hemorrhage and necrosis, complete capsule, macronodular cirrhosis in the surrounding liver tissues, and no tumor thrombi or satellite nodules. The distance between the tumor and surgical margin is 1.5 cm. (2) Specimen of the left hepatic lobe, with a total size of 3.0 cm × 2.0 cm × 2.2 cm; a 1.0 cm × 0.9 cm grey nodule found within the cirrhotic tissues in the section, with no capsule but distinct boundaries with the surrounding liver tissues.

Microscopic descriptions: (1) Tumor of the right hepatic lobe, comprising thin trabecular structures, and polygonal cancer cells with cytoplasm of abundant eosinophils, round nuclei, and mild atypia; transitions found between the cancerous and peritumoral liver cords; one MVI observed within the capsule, two MVIs seen in the peritumoral tissues near the tumor; an atypically dysplastic nidus comprising large cellular changes found in the peritumoral tissues with pseudolobule structures, squeezing the peritumoral liver tissues; no cancer cells found within the resection margin or peritumoral liver tissues far from the tumor. And (2) Tumor of the left

hepatic lobe, comprising pseudoglandular structures, and small cubic cancer cells with no obvious atypical nuclei or peritumoral capsule, but distinct boundaries with the surrounding liver tissues (typical histological pictures may be attached here).

Immunohistochemical staining: Hep Par-1-positive, GPC-3-positive, HBsAg-positive, and diffuse microvascular CD34 staining; GPC-3-positive and CK19-negative in the pseudoglandular regions.

Special staining: Formation of the collagen fibrous septum, which surrounded the pseudolobules, was revealed by Masson's trichrome staining; mesh scaffold collapse in the pseudolobules was shown with reticular fiber staining.

Molecular detection: Significant differences in the loss of heterozygosity among detected microsatellites were found in the tumors between the left and right hepatic lobes, indicating that these two tumors originated from two different clones (specific molecular pathological reports may be attached here).

Pathological diagnosis: (1) (right hepatic lobe) SHCC, thin-trabecular type, grade II; (2) (left hepatic lobe) SHCC; pseudoglandular type, grade II; (3) MVI grade = M1; (4) Macronodular cirrhosis of the liver; and (5) A dysplastic focus in the peritumoral liver tissues.

Comments and suggestions: There are two primary tumors with dysplastic foci in the peritumoral liver tissues, indicating the pathological basis for multi-centric origins under a cirrhotic background. Therefore, please pay close attention to the clinical follow-up.

References

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the examination of specimens from patients with carcinoma of the intrahepatic bile ducts. *Arch Pathol Lab Med* 2010; **134**: e14-e18 [PMID: 20367294 DOI: 10.1043/1543-2165-134.4.e14]

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