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Extended Abstract

Immunohistochemical of diagnostic algorithms neoplastic liver biopsies

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Abstract

Pathological analysis and evaluation of a liver biopsy is an important step in the diagnosis of single or multiple mass lesions in the liver. Accurate diagnosis is paramount in guiding appropriate treatment. This study conducted a search for liver biopsies for the past 6 years with the diagnostic search codes of neoplasm, metastases, metastatic, adenocarcinoma, neuroendocrine carcinoma, sarcoma, and lymphoma. The aim was to review their pathological workup with a view to developing cost-efficient immunohistochemical diagnostic algorithms. A total of 375 consecutive neoplastic liver biopsies were retrieved and subjected to pathological review. As expected the majority up to 95% of the neoplastic lesions were metastatic lesions. A few biopsies up to 1% represented primary hepatocellular /cholangiocarcinoma, haemangioma, and cirrhosis. The commonest metastases [upto 61%] to the liver were colorectal in origin being Hepar-ve, CDX2+ve, and CK20+/CK7-ve. Other lesions included metastases from pancreas [12%], lung [8%] upper gastrointestinal [8%], neuroendocrine lesions [8%], ovarian [1%] and kidney/urothelial [2%]. Uncommon metastases encountered included hepatic metastatic meningioma, endometrial stromal sarcoma, and osteosarcoma. Immunohistochemical stains were the most useful test in identifying the primary site of the tumor. Though diagnostic algorithms were developed especially in the case of the unknown primary, some biopsies received a differential diagnosis of more than one organ as the primary site for clinicopathological correlation. As liver metastases are usually easily accessible for core needle biopsy; accurate identification/specifics of the liver metastases are paramount for individualized precision medicine of treatment that may thus direct surgical resection, radiofrequency ablation/embolization or medical adjuvant therapy as indicated. Phenotypic identification of focal nodular hyperplasia (FNH) and hepatocellular adenoma (HCA) subtypes using immunohistochemical markers has been developed from their molecular characteristics. Our objective was to evaluate the sensitivity of these markers in the definitive diagnosis of these lesions by core needle biopsies. A total of 239 needle biopsies paired with their surgical resection specimen (group A) or without an associated resection specimen (group B) were reviewed. Using a step-by-step algorithm after standard staining, appropriate immunostaining analyses were performed to determine the certainty of diagnosis of FNH, HNF1α-inactivated HCA, inflammatory

HCA, β-catenin-activated HCA, or unclassified HCA. The diagnosis of FNH was certain or probable on routine stains in 53% of needle biopsies of group A, whereas after glutamine synthetase staining, the diagnosis was certain in 86.7% as compared with 100% on the corresponding surgical specimen (P=0.04). In needle biopsies of group A, the diagnosis of HCA was certain on routine stains in 58.6% as compared with 94.3% on surgical specimens. After specific immunostaining, diagnosis was established on biopsies with 74.3% certainty, including all HCA subtypes, with similar distribution in surgical specimens. For each "certain diagnosis" paired diagnostic test (biopsy and surgical specimen), a positive correlation was observed (P<0.001). No significant difference was observed between groups A and B for FNH (P=0.714) or for HCA subtypes (P=0.750). Compared with surgical specimens, immunohistochemical analysis performed on biopsies allowed the discrimination of FNH from HCA and the identification of HCA subtypes with good performance.

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