

Utility of FDG-PET for investigating unexplained serum AFP elevation in patients with suspected hepatocellular carcinoma recurrence

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Abstract

The aim of this study was to evaluate the potential role of positron emission tomography (PET) with 18F-fluorodeoxyglucose (FDG) in patients with unexplained rising serum alpha-fetoprotein (AFP) levels after the treatment of hepatocellular carcinoma (HCC). PATIENTS AND METHODS: Thirty-one FDG-PET studies were performed in 26 patients (age range, 45-83; 21 men and 5 women), who had undergone either surgical resection or interventional therapy for HCC, but were subsequently noted to have high AFP serum levels on routine follow-up examinations, although imaging studies and physical examinations were normal. The FDG-PET results were correlated with histological findings, as well as long-term radiological and clinical follow-up (shortest follow-up period after FDG-PET was 6 months). RESULTS: FDG-PET was abnormal in 22 of the 31 studies (71.0%) among the 26 patients. Intrahepatic lesions were detected in 20 of a total 30 lesions (66.7%) in 18 studies of FDG-PET among 26 patients. Ten FDG-PET studies among 9 patients identified one intrahepatic lesion, while 3 studies among 3 patients identified more than one intrahepatic lesion. Extrahepatic metastases were found in 9/31 studies of FDG-PET (29.0%) among 8 patients. These metastatic foci, composed of increased FDG accumulation, were identified in several locations; lung (4 studies among 4 patients), bone (2 studies among 2 patients) and the peritoneum (4 studies among 3 patients). Overall, FDG-PET for detecting HCC recurrence demonstrated 22 true-positives, 8 false-negatives, 1 true-negative and 0 false-positive results., The sensitivity, specificity and accuracy of FDG-PET for detecting HCC recurrence was 73.3%, 100% and 74.2%, respectively. CONCLUSION: When conventional examinations are normal, FDG-PET is a valuable imaging tool in patients who have rising AFP levels after HCC treatment. FDG-PET whole-body scan also provides an important and valuable imaging study for detecting extrahepatic metastasis.