

18-F-FDG PET-CT in Monitoring of Chemotherapeutic Effect in a Case of Metastatic Hepatic Epithelioid Hemangioendothelioma

Abstract

Hepatic epithelioid hemangioendothelioma is a rare variant of mesenchymal tumor. Surgical resection or partial hepatectomy is the treatment of choice in the case of localized disease. However, in metastatic cases, chemotherapeutic drugs targeting the tyrosine kinase are being used. We hereby present 18-F-fluoroxyglucose positron emission tomography-computed tomography findings in a case of a 35-year old woman with metastatic HEHE showing significant response to Sorafenib therapy after 6 months.

Keywords: FDG PET-CT, hepatic epithelioid hemangioendothelioma, Sorafenib

A 35-year old female patient presented with chief complaints of right hypochondrium pain for 7 days. Her routine examination was unremarkable except for raised serum alkaline phosphatase level (545 IU/ml). Ultrasound of the abdomen revealed multiple hypoechoic areas in the liver. Ultrasound-guided core biopsy from the liver was performed that revealed fibrocollagenous tissue with hyalinization in most area. Numerous vascular channels were seen, which were rounded or flattened with endothelial cells. Immunohistochemistry of the cells was positive for CD31, CK, and hepar1. Overall histological features were suggestive of epithelioid hemangioendothelioma. A baseline 18-F-fluoroxyglucose positron emission tomography-computed tomography (FDG PET-CT) was done that revealed ill-defined hypodense lesion (13 × 7 × 8 cm, SUVmax-4.9) with heterogeneously increased FDG uptake noted in segment V–VIII and discrete hypodense lesions with increased FDG uptake in segment I, II, and IV of liver. Also, there were multiple subcentimeter sized perigastric, paraortic, aortocaval (SUVmax-2.3) lymph nodes with increased FDG uptake. Multiple bilateral pleural and parenchymal-based nodules with mid-FDG uptake (SUVmax-1.5) were noted in the bilateral lung fields [Figure 1(A)-(G)]. The patient was then started on Sorafenib

upon being diagnosed with the metastatic disease. Subsequent 18-F-FDG PET-CT after 6 months revealed decrease in the size and uptake of the liver (SUVmax-3.2), lymph nodes (SUVmax-1.8), and lung (SUVmax-0.9) lesions representing partial response to therapy [Figure 1 (H)-(N)].

Hepatic epithelioid hemangioendothelioma (HEHE) is a rare vascular neoplasm of endothelial origin with primary liver involvement and is characterized by the presence of epithelioid endothelial cells.^[1] The tumor generally affects adults, with a strong female predominance and a peak incidence occurring between 30 and 40 years of age. Establishing diagnosis can be attributed to its variable clinical course and non-specific manifestations.^[2] HEHE carries intermediate malignant potential with partial hepatectomy being the treatment of choice for localized disease and liver transplantation providing long-term cure. Metastatic HEHE is treated with chemotherapeutic drugs.^[3] Sorafenib is one of the therapeutic options for unresectable HEHE. It is an inhibitor of the tyrosine kinase associated with this signaling pathway.^[4] Few studies have evaluated the role of FDG PET-CT in HEHE.^[5-8] Dong *et al.*^[5] in a study of six patients found that FDG uptake in lesions of HEHE depends upon tumor cellularity not on the tumor size. Therefore, SUVmax in HEHE may represent the histopathological nature of the tumor. Kitapci *et al.*^[6]

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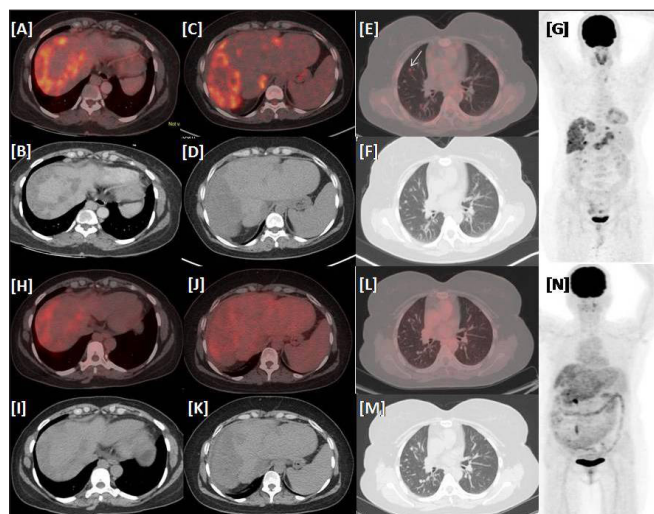


Figure 1: Baseline 18-F-FDG PET-CT revealed ill-defined hypodense lesion with heterogeneously increased FDG uptake in segment V–VIII and discrete hypodense lesions with increased FDG uptake in segment I, II, and IV of liver with multiple subcentimeter sized perigastric, paraortic, aortocaval lymph nodes, and bilateral pleural and parenchymal-based nodules in the bilateral lung fields (A)–(G). Subsequent 18-F-FDG PET-CT following Sorafenib therapy after 6 months revealed decrease in the size and uptake of the liver, lymph nodes, and lung lesions representing partial response to therapy (H)–(N).

demonstrated the role of dual point FDG PET-CT imaging in the case of HEHE. Suga *et al.*^[7] demonstrated the utility of FDG PET-CT in monitoring the effect of radiation therapy in the case of HEHE. However, to the best of our knowledge, it is the first case reported highlighting the role of 18-F-FDG PET/CT in monitoring chemotherapeutic effect in the case of malignant HEHE, thereby further establishing the role of FDG PET-CT in the evaluation of HEHE.

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Conflict of interest

There are no conflicts of interest.

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