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Role of Tc-99m RBC scintigraphy in specific diagnosis of liver hemangioma; a case report.. Article N° AJ32-7

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Abstract

Hemangioma is one of the most common benign tumors. "Differentiating hemangiomas from malignant tumoral lesions and metastases by a non-invasive method is so important". This case shows an asymptomatic patient with incidental finding of a large hepatic hemangioma and the role of the Tc-99m RBC SPECT study in final diagnosis and localization of the tumor.

Key words: Hemangioma, liver, SPECT, Tc-99mRBC scintigraphy

Introduction

Hemangioma is the most common benign tumor of the liver^[1]. The lesions suspected of benign hepatic cavernous hemangiomas are typically first identified on anatomic imaging studies incidentally or during metastatic survey. It is important that they not be mistaken for metastatic or any other tumoral lesion. This case shows an asymptomatic patient with incidental finding of a large hepatic hemangioma and role of the SPECT and CT in the diagnosis and localization of the tumor.

Case report

A 35-year-old woman with headache complaint underwent work-up studies. She had no special medical history (neither estrogen nor any other special medicine). An abdominal ultrasonography showed an incidental solid mass of 13 cm diameter in the left liver lobe. An abdominal CT scan showed a lobulated and hypodense mass in the left hepatic lobe with delayed enhancement by contrast (Fig.1).



Fig 1. CT scan shows a large mass with multiple hypodense regions in the left hepatic lobe.

Tc99m-labeled red blood cell (RBC) scintigraphy was performed by labeling of erythrocytes with 20 mCi Tc-99m pertechnetate by in-vitro method and was injected intravenously. Early perfusion planar images showed area of decreased perfusion in the left lobe of the liver, which gradually showed radiotracer uptake with increasing intensity on the subsequent images until it

became quite hot with a central photopenic zone on the 2 hour image (Fig.2).

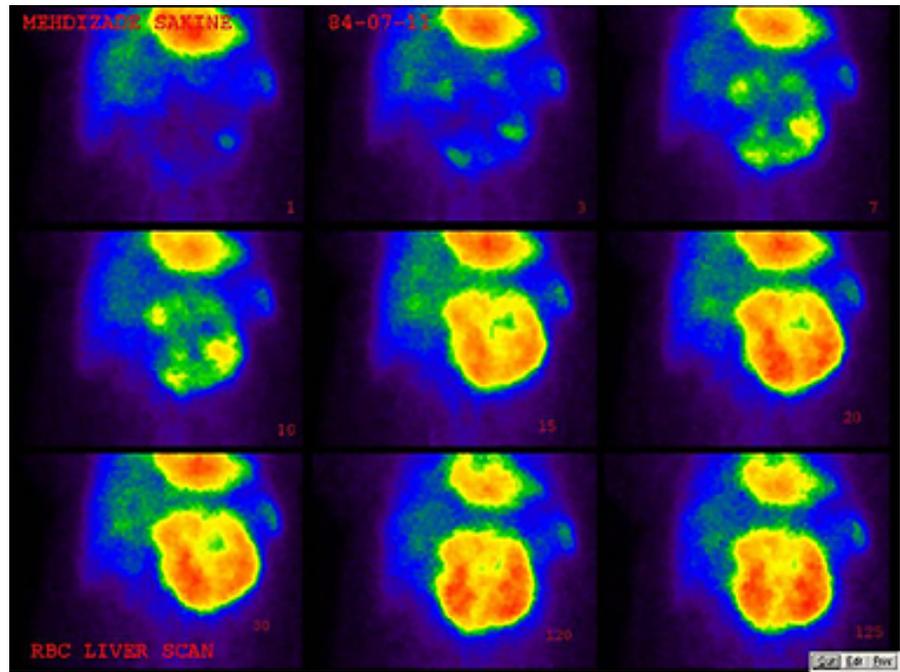


Fig.2. Tc-99m RBC planar images show a left lobe mass with perfusion / blood pool mismatch pattern and increase in blood pool activity from early to late images, typical of liver hemangioma.

Precise localization of this lesion by SPECT method showed involvement of the entire left hepatic lobe (Fig.3). This pattern which is called perfusion / blood pool mismatch is specific for hepatic hemangioma. The central photopenic zone could be due to fibrosis, thrombosis and necrosis, which may be seen in large hemangiomas (hepatic cavernous hemangioma: HCH). Due to exclusively large size of the hemangioma and the serious risk of rupture, the patient underwent abdominal surgery and the entire left lobe of the liver was resected. Pathologic examination confirmed hemangioma diagnosis with a central zone of necrosis.

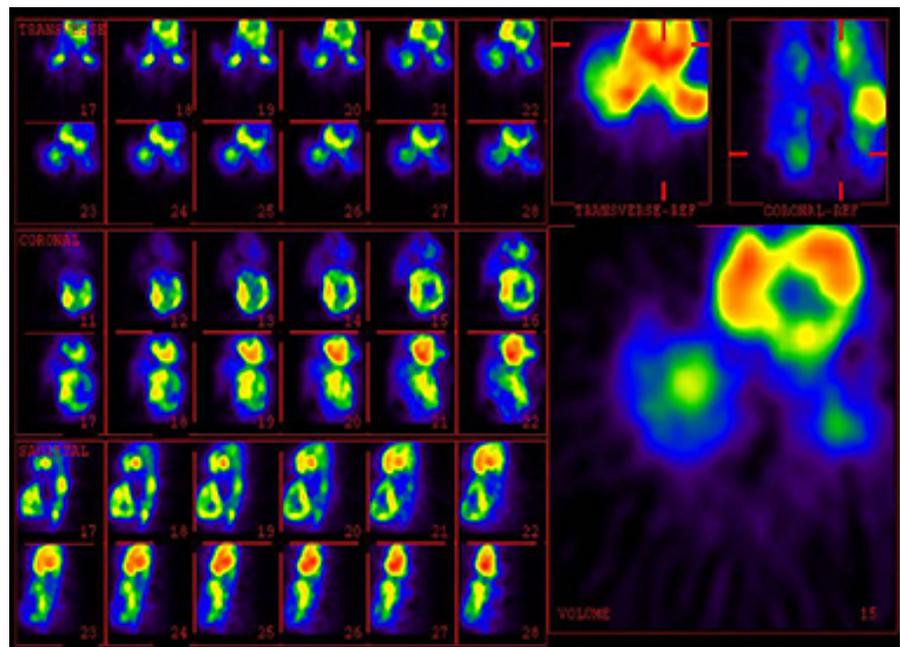


FIG. 3. Tc-99m RBC single photon emission computed tomography (SPECT) in transaxial (upper row, superior to inferior), coronal (middle row, anterior to posterior), and sagittal (lower row, left to right) slices, shows an area of intensely increased uptake with a photopenic central zone, representing significant blood pool surrounding a zone of necrotic-fibrotic region in the left hepatic lobe, corresponding to the large mass that was seen on CT-scan. The area of increased uptake is compatible with hemangioma.

Discussion

Tc-99m RBC scintigraphy is a noninvasive method which provides the most specific diagnosis of hepatic hemangioma^[1]. The classic form of hepatic hemangioma on Tc-99 RBC images is perfusion /blood pool mismatch, which means decreased perfusion on early dynamic images and a gradual increase in activity on blood pool images over time.^[1]

The incidence of hepatic cavernous hemangiomas (HCH) ranges from 0.4% to 7.3% of the population^[1,2]. It is found in all age groups and 60% to 80% of cases are seen in women in whom estrogen may contribute to the growth of these lesions, but their role has not been confirmed^[2]. The majority of HCHs are located in the right lobe of the liver. Patients with giant HCH(>4cm in size) commonly complain of abdominal fullness, pain, belching and weight loss^[1]. Morbidity may be attributed to bleeding, infarction and rarely rupture. Most hemangiomas of the cavernous type are constituted from dilated nonanastomotic vascular spaces, lined by flat endothelial cells and supported by fibrous tissue. False-negative results may be seen due to extensive thrombosis or fibrosis or the small size of the lesion (< 1.4 cm)^[2]. HCC angiosarcoma^[3], metastatic neuroendocrine carcinoid tumor^[3] and metastatic small cell lung carcinoma^[3] are reported to cause false –positive results; however the occurrence of such false-positive results is extremely rare^[1,3]. Reported sensitivities were 17-20 % for the detection of lesions < 1 cm, 65-80% for lesions between 1 cm and 2 cm, and virtually 100% for those > 1.4 cm. It is notable that the specificity of RBC imaging with the SPECT technique remains at 100%, unlike other radiological studies in which an improved sensitivity due to improved resolution and contrast is generally offset by a decreased specificity^[4]. The use of Tc-99m RBC liver scintigraphy is helpful and should be the method of choice for diagnosing HCH, especially in patients with risk of rupture^[1]. The scintigraphic appearance of HCH is considered typical when the lesion appears “cold” in the early dynamic phase and finally is filled- in and becomes hot on delayed images^[1,2]. Although liver hemangiomas usually have characteristic imaging findings, the diagnosis is also often presumed to be correct when a follow- up imaging study shows no interval changes in the diameter of the lesion^[5]. However some reports indicate that hepatic hemangioma can grow significantly in diameter^[5]. It is important to distinguish hemangioma from other vascular structures

and kidney^[6]. It is also essential that labeled RBC scans are correlated with anatomic images to avoid false results^[6,7].

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