

Role of Tc-99m RBC Scintigraphy in Specific Diagnosis of Giant Hepatic Hemangioma: a Case Report

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ABSTRACT

Hemangioma is one of the most common benign liver tumors. They are mostly asymptomatic. Differentiating hemangiomas from malignant tumoral lesions and metastases by a non invasive method is very important. We report a asymptomatic case with incidental finding of a large massive hemangioma occupying almost whole of the right lobe of liver and emphasized its detection by Tc-99m red blood cell (RBC) three phase imaging and localization of the tumor.

Key Words: Hemangioma, Tc-99m Sulphur Colloid Imaging.

INTRODUCTION

Hemangioma is the most common benign tumor of the liver, accounting for nearly 5-7% of all benign tumors (1,2). They are congenital vascular malformations, which increases in size with the growth of the liver. Hemangiomas affect both sexes, occurring at all ages, but manifest clinical symptoms, if at all, usually in the 3rd and 5th decades of life (3). They are relatively more common in women (especially multiparous) than man, with a ratio of 4:1 to 6:1 (3). Patients with giant hepatic cavernous hemangioma (HCH) (>4 cm in size) commonly complain of abdominal fullness, pain, belching and weight loss (1). Morbidity may be attributed to bleeding, infarction and rarely rupture. The real challenge in diagnosing most hemangiomas lies in its differentiation from other types of liver lesions, such as adenoma, focal nodular hyperplasia, and primary or metastatic tumors. The lesions suspected of benign HCHs are typically first identified on anatomic imaging studies incidentally or during metastatic survey. It is important that they not to be mistaken for

metastatic or any other tumoral lesion. Computed Axial Tomography (CAT) scan, Magnetic Resonance Imaging (MRI) and contrast angiography have been traditionally used for diagnosing. Biopsy is contraindicated in case of hemangioma due to risk of fatal bleeding (4). Three phase imaging with Tc-99m RBC carries the highest specificity and is considered the diagnostic modality of choice for confirmation of hepatic hemangiomas (5). Here a case is presented who was asymptomatic with incidental finding of a large hepatic hemangioma and role of the Tc-99m RBC three phase imaging and other modalities like MRI and CT are discussed in the diagnosis and localization of the tumor.

Case report

A 55-years-old man with complaints of dribbling of the urine, weakness, ulceration of mouth and decreased appetite underwent thorough work-up. He had no definite prior medical history of illness. His general physical examination was unremarkable. Systemic examination revealed enlarged liver, palpable mass in the upper abdomen probably originating from liver. His investigation profile revealed normal haemogram. Liver function test and kidney function tests were also within normal limits. On ultrasound examination, the palpable abdominal mass was correlated with a mixed echogenicity hepatic mass predominantly hyperechogenic occupying almost all segments (IV,V,VI,VII and VIII) of right lobe of liver measuring about 14.7 x 11 cm (Fig 1). After application of color and power Doppler applied no blood flow was seen within the mass.

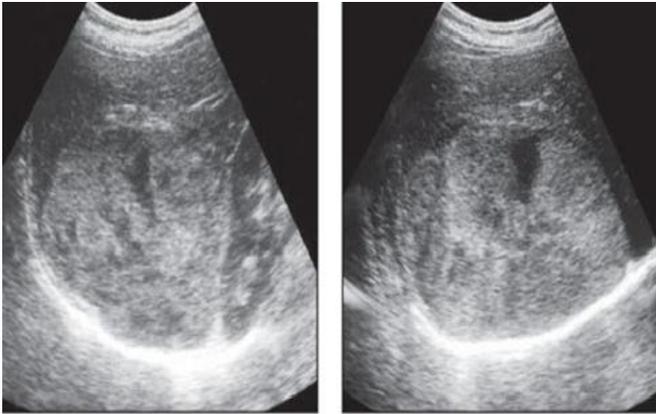


Figure 1. Hepatic US showing big mixed echogenic mass occupying almost whole of the right lobe.

An abdominal CT scan showed an enlarged liver. Multiple space occupying lesions were noted in both lobes, predominantly in the right lobe (the largest one was about 14.7x10.9 cm) consisting both cystic and fatty components showing low density area on plain study but peripheral rim enhancement was noted on early phase and washed out on delayed phase. Final impression of CT scan was suggestive of multi-focal Hepato Cellular Carcinoma (HCC). But other possibilities like secondary deposits, sarcomas also could not be ruled out.

Tc-99m labeled 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 a big area of decreased perfusion in the right lobe of the liver. Blood pool image showed gradual accumulation of tracer in the above mentioned area of decreased perfusion with increasing intensity on the subsequent images until it become hot with some photopenic area inside in the delayed image after four hours. No significant wash out of radiotracer from the above mentioned area was noted in the images after 24 hours. This mismatch RBC scan showing decreased perfusion on early dynamic images and a gradual increase in activity on blood pool images over time in a huge

area of right lobe of liver is with some cold foci giant hemangioma with central necrosis or fibrosis (Fig 2).

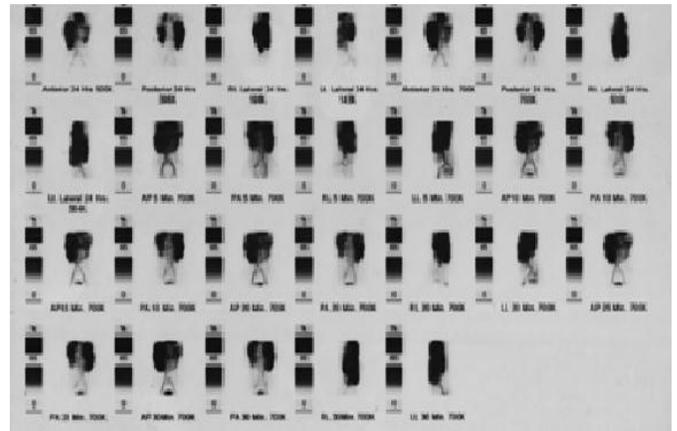


Figure 2. Blood pool image showing gradual accumulation of radio tracer in the giant hepatic hemangioma and no significant washout in delayed images.

Though contraindicated in case of hemangioma, USG guided FNAC was done by the referral physician as according to them multifocal HCC was their first possible diagnosis. FNAC result confirmed hemangioma and was correlated with RBC liver scan report.

DISCUSSION

Tc-99m RBC scintigraphy is a noninvasive method which provides the most specific diagnosis of hepatic hemangioma (1). This study is used to differentiate hemangiomas (vascular malformation) from other focal liver lesions like adenoma, focal nodular hyperplasia, and fibrolamellar carcinoma. The classic form of hepatic hemangioma on Tc-99m 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).

Hepatic hemangioma is found in all age groups and 60% to 80% of cases are women. Estrogen may contribute to the growth of these lesions in women, but their role has not been established (5). The

majority of HCHs are located in the right lobe of the liver. Morbidity may be attributed to bleeding, infarction and rarely rupture. Most hemangiomas of the cavernous type are constituted from dilated non-anastomotic 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) (5). HCC angiosarcoma, metastatic neuroendocrine carcinoid tumor and metastatic small cell lung carcinoma are reported to cause false positive results; however the occurrence of such false-positive results is extremely rare (1,6). The sensitivity and accuracy of Tc-99m RBC imaging depends very much on the size of the hemangioma. Reported sensitivities were 17-20% for the detection of lesions <1 cm, 65-80% for lesions between one to two cm, if lesions are greater than two cm, the sensitivity and accuracy of planar Tc-99m RBC perfusion and Single photon emission computed tomography (SPECT) blood pool imaging varies from 89% to 92% and from 89% to 94% respectively (7). For similar size lesions, MRI sensitivity varies from 85% to 100%. For lesions less than two cm, sensitivity of RBC scintigraphy is 58% and accuracy 60% and MRI carries a sensitivity of 83% and an accuracy of 84% (7). As MRI often fails to differentiate hemangioma from hypervascular neoplasm or focal nodular hyperplasia, blood pool imaging with SPECT is considered the method of choice for confirmation of hemangioma. 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). It is also essential that labeled RBC scans are correlated with anatomic images to avoid false results.

CONCLUSION

Tc-99m RBC imaging is very sensitive and specific imaging modality for detecting hemangiomas. The specificity and sensitivity increases using SPECT

specially in lesions less than two cms. Therefore all patients suspected of having hepatic hemangioma must undergo a Tc-99m RBC scintigraphy. It is safe, cost effective and specific method for diagnosis of hepatic hemangioma.

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