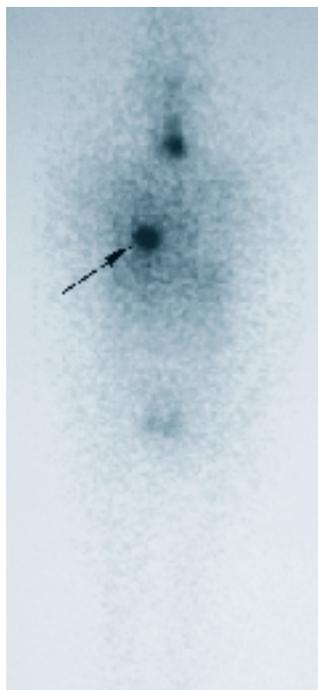
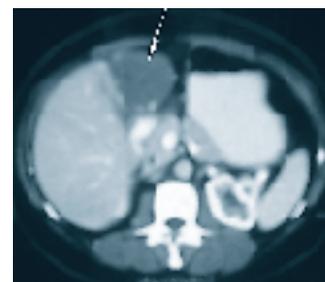


# Uptake of $^{131}\text{I}$ on a post thyroid ablation whole body scan, due to cavernous liver hemangioma, mimicking metastases

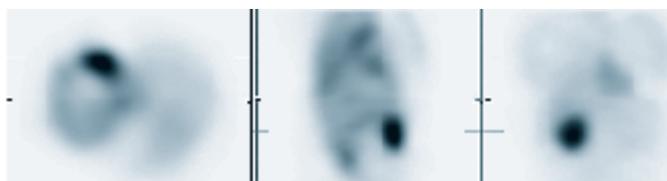
**To the Editor:** The Hellenic Journal of Nuclear Medicine has published a case report about liver hemangioma diagnosed with a mismatch: decreased focal uptake of technetium-99m ( $^{99\text{m}}\text{Tc}$ ) sulphur colloid while the uptake of  $^{99\text{m}}\text{Tc}$ -red blood cells (RBC) on the delayed images at the same liver area was normal or slightly increased [1]. Our case differs from the above in its clinical presentation and the diagnostic means. A 40 years old woman with papillary thyroid carcinoma (PTC) was referred to our clinic for iodine-131 ( $^{131}\text{I}$ ) ablation treatment. Focal liver uptake of the whole body (WB) post ablation scan was shown due to cavernous liver hemangioma, mimicking metastases. Whole-body scans obtained 3 and 8 days after administration of 3,700MBq  $^{131}\text{I}$  showed focal increased uptake in the left lobe of the liver and increased uptake in the thyroid bed (Fig. 1). A contrast enhanced computerised tomography (CECT) scan performed for morphological evaluation revealed a cavernous hemangioma 6x5cm, in the left lateral lobe of the liver, at the same location as the increased  $^{131}\text{I}$  uptake on the  $^{131}\text{I}$  scan (Fig. 2). There was no other lesion in the liver, the lung, the thorax or the abdomen on the CECT scan. Our patient, had no clinical signs related to liver hemangioma. Liver scan false positive findings in these  $^{131}\text{I}$  scans result from both physiological and non-physiological uptake of  $^{131}\text{I}$  in benign and pathological conditions. Single photon emission tomography (SPET) images of the liver using  $^{99\text{m}}\text{Tc}$ -RBC revealed increased uptake in the left lateral lobe compatible with haemangioma (Fig. 3). The post-ablation  $^{131}\text{I}$  scan is a reliable method to establish the presence of residual functioning thyroid tissue or metastatic disease in patients with PTC. The liver is seen in these scans as diffuse, homogeneous hepatic uptake due to the incorporation of  $^{131}\text{I}$  into thyroid hormones in part, degraded in the liver by deiodination and conjugation [2]. Diffuse liver uptake generally indicates functioning thyroid remnant or metastasis [3, 4]. Focal increased liver uptake is always a pathologic finding. Functioning liver metastases from PTC are uncommon and there are only isolated case reports of liver metastases in the literature [5]. Focal  $^{131}\text{I}$  liver uptake due to benign disorders such as simple hepatic cyst, hepatic hydatid cyst, hepatic abscess or intrahepatic duct dilatation have been reported [6-9]. Cavernous liver hemangioma is the most common benign tumor of the liver, with an incidence in autopsy series ranging from 0.4% to 7.3% [9]. There is only one case in the literature concerning  $^{131}\text{I}$  uptake by cavernous liver hemangioma and the authors proposed two possible mecha-



**Figure 1.** A post-ablation whole body scan (anterior position) showed focal increased uptake in the left lobe of the liver (arrow) and increased uptake in the thyroid bed.



**Figure 2.** A contrast enhanced CT scan (axial slice) revealed a large cavernous hemangioma 6x5cm in the left lateral lobe of the liver (arrow).



**Figure 3.** SPET images of the liver using  $^{99\text{m}}\text{Tc}$ -labeled red blood cells revealed increased uptake in left lateral lobe of the liver compatible with hemangioma.

nisms for the visualization of the hemangioma with  $^{131}\text{I}$ : intravascular blood pooling and transcapillary escape of iodine with interstitial retention [10]. Nuclear medicine physicians may keep in mind asymptomatic cavernous liver hemangioma when focal increased liver uptake is seen on the  $^{131}\text{I}$  WB post ablation scan in patients with PTC.

## Bibliography

1. Zincirkeser S, Celen Z, Yilmaz M et al. A false negative by planar scintigraphy liver hemangioma, diagnosed by technetium-99m-red blood cells and technetium-99m-sulfur colloid single photon emission tomography scan. *Hell J Nucl Med* 2006; 9: 109-110.
2. Carlisle MR, Lu C, McDougall IR. The interpretation of  $^{131}\text{I}$  scans in the evaluation of thyroid cancer, with an emphasis on false positive findings. *Clin Nucl Med* 2003; 24: 715-735.
3. Chung JK, Lee YJ, Jeong JM et al. Clinical significance of hepatic visualization on iodine-131 whole body scan in patients with thyroid carcinoma. *J Nucl Med* 1997; 38: 1191-1195.

4. Omur O, Akgun A, Ozcan Z et al. Clinical Implications of Diffuse Hepatic Uptake Observed in Postablative and Post-Therapeutic <sup>131</sup>I Scans. *Clin Nucl Med* 2009; 34: 11-14.
5. Dinneen SF, Valimaki MJ, Bergstralh EJ et al. Distant metastases in papillary thyroid carcinoma: 100 cases observed at one institution during 5 decades. *J Clin Endocrinol Metab* 1995; 80: 2041-2045.
6. Gunawardana DH, Pitman AG, Lichtenstein M. Benign Hepatic Cyst Mimicking a Functional Thyroid Carcinoma Metastasis on Whole-Body <sup>131</sup>I Imaging. *Clin Nucl Med* 2003; 28: 527-528.
7. Omur O, Ozbek SS, Akgun A et al. False-Positive <sup>131</sup>I Accumulation in a Hepatic Hydatid Cyst. *Clin Nucl Med* 2007; 32: 907-909.
8. Pena Pardo FJ, Crespo de la Jara A, Fernandez Morejon F et al. Solitary focus in the liver in a thyroid cancer patient after a whole body scan with iodine-131. *Rev Esp Med Nucl* 2007; 26: 294-296.
9. You DL, Tzen KY, Chen CF et al. False-positive whole-body iodine-131 scan due to intrahepatic duct dilatation. *J Nucl Med* 1997; 38: 1977-1979.
10. Ishak KG, Rabin L. Benign tumors of the liver. *Med Clin North Am* 1975; 59: 995-1013.
11. Huang SH, Hu YH, Huang YH et al. Liver Cavernous Hemangioma Mimicking Metastatic Thyroid Carcinoma on <sup>131</sup>I Imaging: A Case Report and Review of the Literature. *Ann Nucl Med Sci* 2004; 17: 179-183.

**Savas Karyagar, Ercan Uyanik, Mehmet Mulazimoglu, Sevda S Karyagar**

*Department of Nuclear Medicine, Okmeydani Training and Research Hospital, Istanbul, Turkey*

**Savas Karyagar MD,**

Okmeydani Training and Research Hospital, Sisli, Istanbul, Turkey

Tel: 902122217777-1378, Fax: 02122109192,

E-mail: skaryagar@yahoo.com

*Hell J Nucl Med* 2009; 12(2): 177-178

*Published on line: 27 July 2009*

