

# RBC Liver Scintigraphy: An Incidental Finding of Epistaxis

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## Abstract

This article reports an interesting case of frank epistaxis presenting as an incidental finding on  $^{99m}\text{Tc}$  RBC scintigraphic evaluation of cavernous haemangioma in the liver.

## INTRODUCTION

The use of  $^{99m}\text{Tc}$  labelled red blood cells (RBC) for the diagnosis of suspected cavernous haemangioma in the liver has been reported widely in the literature. One might expect to note decreased or normal  $^{99m}\text{Tc}$  RBC accumulation at a site of cavernous haemangioma on initial blood pool images with corresponding increased accumulation in delayed imaging. The procedure has a very high positive predictive value (1).

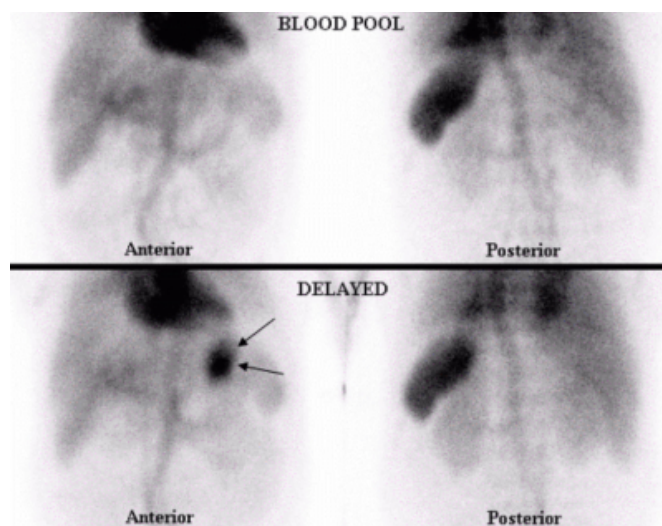
A 47 year old female presented to the department for investigation of a suspected cavernous haemangioma in the liver. Immediate blood pool images followed rapid dynamic imaging of the intravenous return to the patient of invitro labelled  $^{99m}\text{Tc}$  RBCs. Delayed imaging was performed 4 hours after the administration of the  $^{99m}\text{Tc}$  RBCs. Standard anterior and posterior planar images supplemented by SPECT were performed.

## FINDINGS

The planar images demonstrated a large anterior increased accumulation of activity left of midline on the delayed study in the presence of an unremarkable initial blood pool study (Fig. 1). The SPECT study confirmed initial suspicions that the activity accumulation was most likely stomach (Fig. 2).

**Figure 1**

Figure 1: Anterior and posterior projections of the initial blood pool and delayed images. Note the discordant accumulation indicated by the arrow.



**Figure 2**

Figure 2: Coronal SPECT slices of the delayed study. Note the extension of activity inferiorly from the accumulation indicated by the arrows. This appearance is consistent with transit of activity from stomach to small bowel.



Diffuse stomach accumulation on  $^{99m}\text{Tc}$  RBC scintigraphy would be most commonly associated with either free  $^{99m}\text{Tc}$  pertechnetate or gastrointestinal haemorrhage. Unfortunately, the sequence of images did not permit differentiation of possible causes. Breakdown of the  $^{99m}\text{Tc}$  RBC label over time may result in stomach accumulation on

delayed images in its absence on earlier images.

Gastrointestinal haemorrhage initiated at a time after the initial blood pool images were acquired would have a similar scintigraphic presentation. The SPECT study demonstrates a linear extension of activity inferiorly from the stomach (Fig. 2) which may be an indication of either transit of extravasated blood or transit of free  $^{99m}\text{Tc}$  pertechnetate secreted from the gastric mucosa. A simple planar image of the neck to demonstrate the presence or absence of thyroid and salivary gland activity could be used to effectively differentiate the cause. In this case, however, patient history revealed an episode of frank epistaxis (nose bleed) caused by trauma shortly before the delayed acquisitions. Clearly, the patient swallowed a large volume of blood.

### DISCUSSION

Incidental findings are not uncommon in scintigraphy and the biodistribution of labelled RBCs provide frequent opportunities for detection of 'incidentalomas'. A number of authors have reported incidental discovery of aneurysm on  $^{99m}\text{Tc}$  RBC scintigraphy (<sub>2,3,4,5</sub>). Incidental appearance of the gallbladder has also been widely reported (<sub>6,7,8,9</sub>). Hod et al. (<sub>10</sub>) reported hepatic lymphoma as a potential source of false positive on  $^{99m}\text{Tc}$  RBC scintigraphy while Crucitti, Shapiro and Spencer (<sub>11</sub>) demonstrated the umbilical vein in a patient with a portosystemic shunt.  $^{99m}\text{Tc}$  RBC accumulation has also been reported in vascular tumours (<sub>12</sub>). While gastrointestinal haemorrhage is recognised as a potential confounder in the interpretation of  $^{99m}\text{Tc}$  RBC liver studies, epistaxis has not been reported in the literature to either mimic upper gastrointestinal haemorrhage or as an interpretation confounder in RBC liver studies.

Epistaxis is a self limiting condition of frequent occurrence; most of us experiencing an episode at some stage during our lifetime. While most episodes of epistaxis require no medical intervention, the condition should not be taken lightly with possible mortality associated with aspiration, hypotension and hypoxia (<sub>13</sub>). The major cause of epistaxis is trauma causing mucosal laceration (<sub>13</sub>). Despite this, 10% of epistaxis is of unknown aetiology (<sub>13</sub>). Gross, recurrent or bleeding that is difficult to control may have a more sinister underlying pathology. Cordes and Quinn (<sub>13</sub>) report a case where, under direct medical supervision, a patient bled to death due to uncontrolled epistaxis.

This case highlights the susceptibility of diagnostic integrity in Nuclear Medicine to temporal change. Scintigraphic evaluation of organ or systemic function often requires long

periods of time, either as a delay between multiple phases, a sequential dynamic of functional change temporally or a protracted scan due to the low count nature scintigraphy. During this time there may be an alteration to biodistribution, an alteration to functional status or radiopharmaceutical breakdown. These changes are often the basis of scintigraphic interpretation but on occasion may represent a diagnostic conundrum, as is the circumstances in this case report.

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### References

1. Zeissman, HA & Rehm, P 2002, Case review: nuclear medicine, Mosby, St Louis.
2. Sopov, V, Zuckerman, E, Toubi, A & Groshar, D 2004,  $^{99m}\text{Tc}$ -RBC scintigraphy showing portal vein aneurysm, Eur J Nucl Med Mol Imaging, vol. 31, no. 11, p. 1568.
3. Aburano, T, Taniguchi, M, Hisada, K, Miyazaki, Y, Shiozaki, J, Inoue, H & Fujioka, M 1991, Aneurysmal dilatation of portal vein demonstrated on radionuclide hepatic scintiangiogram, Clin Nucl Med, vol. 16, no. 11, pp. 862-864.
4. Duarte, PS, Zhuang, H, Aldighieri, F, Ghesani, N & Alavi, A 2002, Incidental detection of an abdominal aortic aneurysm during evaluation of gastrointestinal bleeding with Tc- $^{99m}$ -tagged erythrocytes, Clin Nucl Med, vol. 27, no. 11, p. 824.
5. Fukui, H, Kashiwagi, T, Kimura, K, Goto, M, Takei, Y, Kasahara, A, Kawano, S, Fusamoto, H, Kozuka, T & Kamada, T 1992, Portal vein aneurysm demonstrated by blood pool SPECT, Clin Nucl Med, vol. 17, no. 11, pp. 871-873.
6. Abello, R, Haynie, TP & Kim, EE 1991, Pitfalls of a  $^{99m}\text{Tc}$ -RBC bleeding study due to gallbladder and ileal-loop visualisation, Gastrointest Radiol, vol. 16, no. 1, pp. 32-34.
7. Brill, DR 1985, Gallbladder visualisation during technetium- $^{99m}$ -labeled red cell scintigraphy for gastrointestinal bleeding, J Nucl Med, vol. 26, no. 12, pp. 1408-1411.
8. Kotlyarov, EV, Mattay, VS & Reba, RC 1988, Gallbladder visualisation during technetium- $^{99m}$  RBC blood pool imaging. Case report and literature review, Clin Nucl Med, vol. 13, no. 7, pp. 515-516.
9. Vidal-Sicart, S, Lomena, F, Setoain, FJ & Herranz, R 1996, Gallbladder visualisation on RBC scintigraphy, Clin Nucl Med, vol. 21, no. 8, pp. 660.
10. Hod, N, Pour, MC, Juven, Y & Horne, T 2004, Positive Tc- $^{99m}$  red blood cell scintigraphy in a patient with hepatic lymphoma, Clin Nucl Med, vol. 29, no. 4, pp. 272-274.
11. Crucitti, TW, Shapiro, HR & Spencer, RP 1984, Tc- $^{99m}$  RBC blood-pool imaging demonstrates umbilical vein in portosystemic shunt, J Nucl Med, vol. 25, no. 12, pp. 1317-1319.
12. Sarikaya, I, Patel, M & Holder, LE 2000, Highly vascular breast cancer detected on a Tc- $^{99m}$  RBC gated cardiac blood pool imaging study, Clin Nucl Med, vol. 25,

no. 8, pp. 641-642.

13. Cordes, S & Quinn, F 1996, Epistaxis, date accessed

11/8/2005, <http://www.otohns.net/>

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