

A Potential False Positive Finding on 99mTc Red Blood Cell Gastrointestinal Bleeding Scintigraphy

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Nükleer Tıp

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Özet

Tc-99m işaretli eritrosit sintigrafisi özellikle alt gastrointestinal kanama değerlendirilmesinde en sık kullanılan yöntemdir. Tc-99m işaretli eritrosit sintigrafisi görüntülerinde gastrointestinal kanama bölgesi başlangıç odak noktası artmış radyotraser aktivitesi olarak görülür. Sonraki takip eden görüntülerde aktivitenin tutulum yoğunluğu artar ve aktivite bölgesi konumunu değiştirir. Bu patern gastrointestinal kanama bölgesi için özgül olmasına rağmen, gastrointestinal kanamayı taklit eden yanlış pozitif bulgular da ortaya çıkabilir. Biz bu olgu sunumunda 2 gündür devam eden hafif hematokezya ile giden alt gastrointestinal kanama ile başvuran, iki yıl önce total kolektomi öyküsü olan bir hastayı sunduk. Tc-99m işaretli eritrosit tarama herhangi bir kanama yeri tespiti için yapıldı. Gastrointestinal kanama odağı gösterilememekle birlikte, dinamik ve geç görüntülerde kanama odağını taklit eden fizyolojik penil aktivite ortaya çıktı. Erkek hastalarda penil aktivite gastrointestinal kanama sintigrafisinde potansiyel yanlış pozitif nedenlerden biridir ve akut kanamayı taklit eden yavaş dolun paterninin yanlışlıkla kanama odağı olarak yorumlanmaması gerekmektedir.

Anahtar kelimeler: *Gastrointestinal kanama sintigrafisi, Yanlış pozitif Penil aktivite*

Abstract

Tc-99m labeled RBC scintigraphy is the most commonly employed method in the evaluation of especially lower gastrointestinal bleeding. On Tc-99m RBC images gastrointestinal bleeding site can be seen as an initial focus of increased radiotracer activity. On subsequent images the intensity of the activity increases and activity site changes position. Although, this pattern is specific for gastrointestinal bleeding site, false positive findings do occur imitating gastrointestinal bleeding. We report a case of a patient who had total colectomy two years ago with minimal hematochezia ongoing for two days that presented with lower gastrointestinal hemorrhage. Tc-99m labeled RBC scan was performed for detection of any bleeding site. Although, gastrointestinal bleeding focus was not shown, in the dynamic and late images physiologic penil activity mimicking bleeding site was revealed. In male patients penil activity is one of the potential false positives in gastrointestinal bleeding scintigraphy and should not be misinterpreted as a focus of hemorrhage, because of slow filling pattern simulating an acute bleed.

Keywords: *Gastrointestinal bleeding scintigraphy, False positive Penil activity*

Introduction

Tc-99m labeled RBC scintigraphy is a commonly employed method in the evaluation of especially lower gastrointestinal bleeding. On Tc-99m RBC images gastrointestinal bleeding site can be seen as an initial focus of increased radiotracer activity. On subsequent images the intensity of the activity increases and activity site migrates due to bowel movements. Although, this pattern is specific for gastrointestinal bleeding site, false positive findings do occur imitating gastrointestinal bleeding. We report a case of a patient who had total colectomy two years prior to the scintigraphy and minimal hematochezia ongoing for two days which was suspicious for lower gastrointestinal hemorrhage.

Case Report

A 36 years old male patient was admitted to the hospital for minimal hematochezia ongoing for two days. The patient had a history of total colectomy because of familial adenomatous polyposis two years ago. Bleeding site was not detected by upper endoscopy. The patient was referred to our clinic for evaluation of bleeding with Tc-99m labeled red blood cell scintigraphy. The modified in vivo technique used for labeling red blood cells with an activity of 20 mCi technetium-99m pertechnetate. Images were obtained with a dual headed gamma camera. Dynamic images were collected during the first 1 hour and static images (500,000 counts per image) were obtained at 2nd, 4th and 24th hours. Dynamic images revealed a small focus of activity in the lower midabdominal region (Figure 1). Post-void anterior-posterior delayed images and lateral images confirmed that the lower abdominal activity at dynamic imaging was actually located at the penil localisation (Figure 2) . The authors concluded that the images were not compatible with gastrointestinal bleeding.

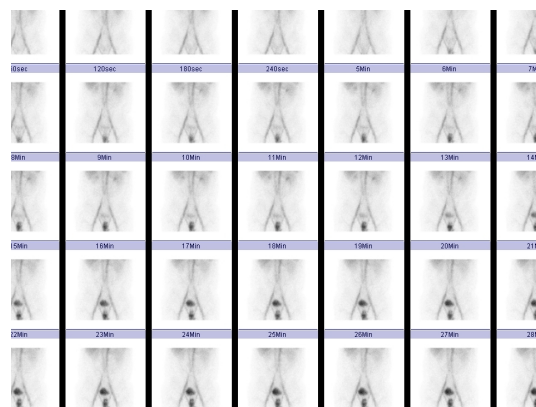


Figure 1

A small activity at lower midabdominal region was observed and the configuration of the activity changed to a linear pattern during dynamic imaging.

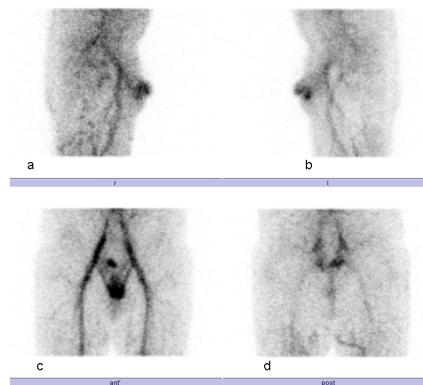


Figure 2

After the dynamic study, postvoid static images [anterior-posterior (c,d) and lateral (a,b)] were taken and they demonstrated that the finding was compatible with penil activity

Discussion

Patients with active upper gastrointestinal bleeding are mostly managed with upper endoscopy. Active lower gastrointestinal bleeding especially when intermittent and slower tends to be a diagnostic dilemma for clinicians. Tc-99m labeled red blood cell scans are routinely employed in patients with suspected lower gastrointestinal bleeding. As in our patient, a dynamic study is carried out for 60 minutes, which was followed by static images up to 24 hours. Angiography has been reported to have a sensitivity ranging from 30% to 47% and a specificity of

100 %.¹⁻² Angiography is known to detect gastrointestinal bleeding at a rate of 1 ml/min. However, scintigraphy with Tc-99m labeled red blood cell scintigraphy can detect gastrointestinal bleeding at a rate as low as 0.04-1 ml/min. The study is useful for confirming bleeding and helps to localize the bleeding site. Because of blood pool activity, patients with suspected intermittent bleeding can be imaged over a period of 24 hours. On Tc-99m labeled red blood cell images gastrointestinal bleeding site can be seen as an initial focus of increased radiotracer activity. On subsequent images the intensity of the activity increases and activity site changes shape and position with bowel movements. A pattern not conforming to normal physiologic and anatomic sites such as renal or bladder activity is usually specific for active bleeding site, false positives do also occur. When the site of the activity is unclear, SPECT/CT with fusion may be helpful in detecting the location of uptake and aid in the diagnosis.³⁻⁴

In our case, in the dynamic and late static images physiologic penil activity mimicking bleeding site was revealed. In male patients penil activity is one of the potential false positives in gastrointestinal bleeding scintigraphy and should not be misinterpreted as a focus of hemorrhage, because of slow filling pattern simulating an acute bleeding

Conclusion: For less experienced physicians the unusual radiotracer accumulation might be quite confusing. Lateral views, late static images and when penil activity is suspected postvoid images may help for the clarification of the diagnosis. In this presented case, one of the potential false positives in gastrointestinal bleeding scintigraphy performed with Tc-99m labeled red blood cells is illustrated.

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