

*Short communication***Increased genital uptake of ^{99m}Tc red blood cells:
A potential cause of false-positive studies
for gastrointestinal bleeding**

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Abstract. We have recently seen several ^{99m}Tc labeled red blood (Tc-RBC) cell studies, for the localization of gastrointestinal (GI) bleeding, which were difficult to interpret because of increased activity in the low abdomen, which was found due to male genital activity. To examine the extent of this problem six recent Tc-RBC studies for GI bleeding in males were examined for the presence of penile activity. Penile activity was seen in all males and was marked enough to require additional views in four. Lateral views readily separated penile from rectal activity, showing that the activity was not posteriorly located. Twenty-four Tc-RBC studies on females were also examined. Although modest levels of perineal activity could be seen, this did not cause problems in diagnosis. Attention to this common problem in males should prevent false-positive diagnoses of GI bleeding from the rectum.

^{99m}Tc -labeled red blood cell studies for gastrointestinal bleeding are becoming increasingly popular due to their high sensitivity and specificity (Winzelberg et al. 1982). Although, generally, interpretation is relatively straightforward, we have seen several cases in which increased activity in the male genitalia was, at first, confusing, resembling a bleeding focus in the rectosigmoid region. Although this phenomenon has been noted previously (Haseman et al. 1982), its occurrence rate had not been studied. To investigate the frequency of this problem, we evaluated six consecutive Tc-RBC GI bleeding studies in males, obtained over the past 10 months at the Mallinckrodt Institute of Radiology. To see if genital activity might be problematic in females, we also examined 24 consecutive Tc-RBC GI bleeding studies in females for the presence of genital activity and whether it made interpretation of the studies difficult as indicated by the obtainment of additional views.

Materials and methods

Thirty consecutive ^{99m}Tc -RBC GI bleeding studies, obtained from February 1982 to January 1983, were retrospectively analyzed for the presence of genital activity. Six male

and twenty-four female cases (on 19 females) were evaluated. All patients had histories suggestive of gastrointestinal bleeding, with melena, maroon stools or bright red blood per rectum. A modified in vitro labeling method ("in vivo") was used (Callahan et al. 1982): one vial of Sn PYP (12.0 mg sodium pyrophosphate and 3.4 mg stannous chloride) in saline was administered IV. Twenty minutes later 3 ml blood were withdrawn into a heparinized syringe (100 units) containing 20 mCi ^{99m}Tc -pertechnetate. This was incubated for 10 min at room temperature, and reinjected IV into the patient. Patients were positioned for the anterior view attempting to image from the inferior cardiac surface to the symphysis pubis region, using a large field of view gamma camera, with a low-energy all-purpose parallel-hole collimator. Sequential one million count anterior images of the abdomen were taken at 5-min intervals over at least 1 h. Images were recorded on X-ray film.

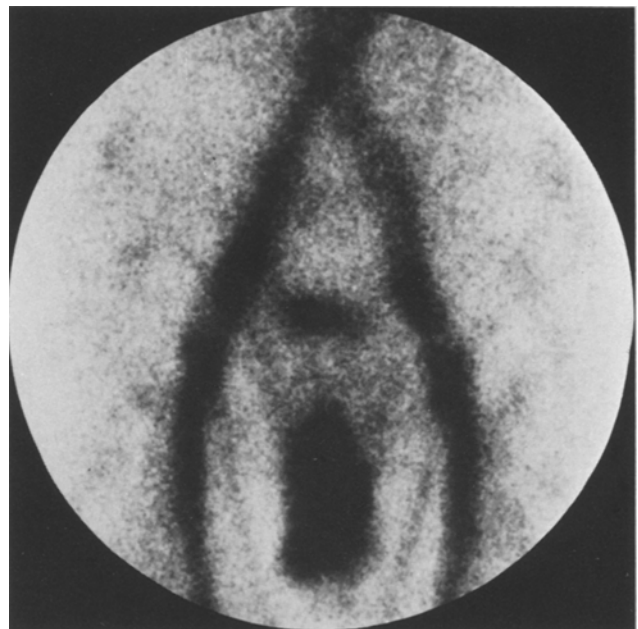


Fig. 1. Anterior view from a ^{99m}Tc -RBC study showing markedly increased uptake in the penis, situated just caudal to the bladder. This markedly increased activity could have been confused with a bleeding site low in the rectosigmoid. A lateral view showed this to be clearly anteriorly situated (not shown)

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Fig. 2. Anterior view of a female patient from a ^{99m}Tc -RBC study showing mildly increased uptake just below the bladder in the region of the perineum (*arrow*). This pattern was common, but not confused with active gastrointestinal bleeding in this series

Results

In all of the six male cases penile activity was present. In two of the cases the activity was marked (Fig. 1) and in four of the cases additional views were required to separate the penile activity from recto-sigmoid activity. In all cases lateral views resolved the confusion. In addition, the activity seen in the midline penis occasionally extended caudally, to further than would be expected for the rectosigmoid.

Fortunately, in none of the cases was an incorrect diagnosis reached due to the penile activity. None of the patients had symptoms of priapism and in none of the cases did the activity wax and wane, suggesting intermittent tumescence of the penis as causal.

A variable degree of perineal activity was seen in all female patients (Fig. 2), but in none of these was it sufficient to be confused with a lower abdominal bleeding site. In no female cases was a lateral view required to clarify the diagnosis.

Discussion

Blood pool activity is very common in both male and female genitalia. This activity in females is of interest, but never was sufficiently intense in this series to be a source of difficulty in interpreting Tc-RBC GI bleeding studies. Visualization of blood pool activity in the normal penis, however, can more frequently be a source of confusion in the interpretation of Tc-RBC GI bleeding studies. Knowledge of this problem and the obtainment of lateral views if questions exist, should prevent misdiagnosis of penile activity as a rectal bleeding site and should increase the accuracy of Tc-RBC GI bleeding studies.

References

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