



Imaging Sciences Interesting Cases

CASE 24

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CLINICAL PRESENTATION: The patient is an 82-year-old male with a history of essential thrombocythemia treated with hydroxyurea, who presents with blood per rectum and hypotension.

IMAGING FINDINGS: Patient's blood was drawn and labeled with the Ultra Tag RBC Labeling Kit with 20.3 mCi of technetium 99 sodium pertechnetate, and then administered intravenously. Subsequently, serial abdominal planar images were acquired until 30 minutes.

There is evidence of active GI hemorrhage, for which the source is likely the hepatic flexure.

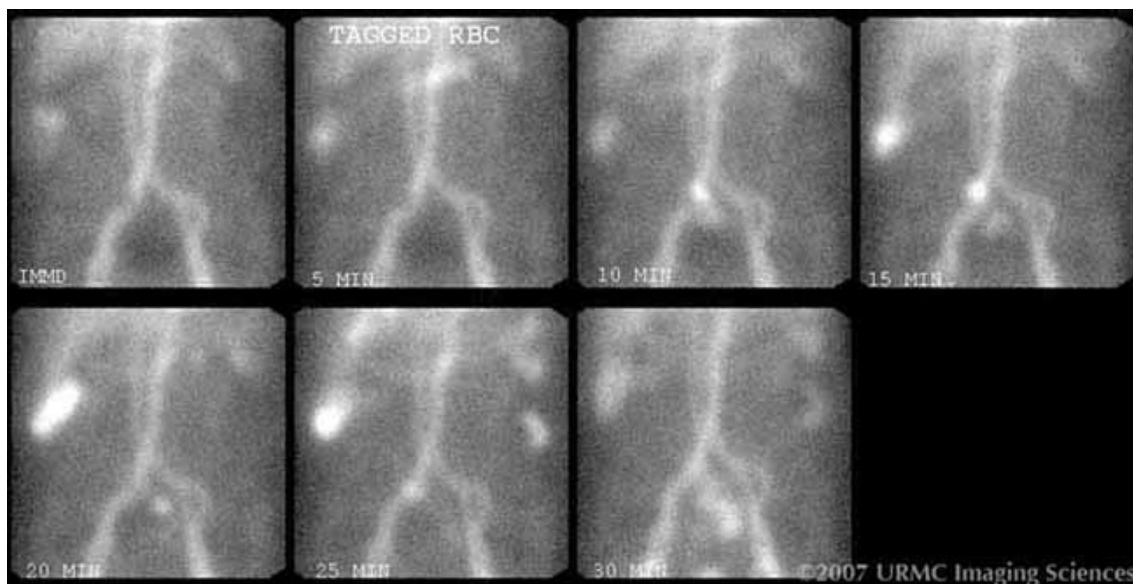


Figure 1: There is a focus of activity in the region of the hepatic flexure apparent at 1 minute scan time. The intensity of this focus waxes and wanes over the 30 minute period. At 5 minutes a linear band of tracer emanates towards the left from the primary focus, presumably representing progression of tracer across the transverse colon. Later scans further reveal progression of radiotracer along the descending colon and sigmoid colon.

DIAGNOSIS: Acute lower Gastrointestinal Bleeding

DISCUSSION: Several techniques have been developed to prepare red blood cells (RBC) for gastrointestinal bleeding scan. These include the in vivo, in vitro, and in vitro RBC labeling methods. The in vitro techniques provide the highest tagging efficiency (>97%) and generally consist of withdrawing several milliliters of blood and applying stannous ion and sodium pertechnetate Tc99m. Typically, 10 to 20mCi doses are utilized. After allowing the mixture to incubate, the preparation is reinjected in the patient. Static image acquisition at one minute frames as well as flow imaging begins promptly and progresses for 60 to 90 minutes. Delayed imaging at several hours can be performed if initial scans are unremarkable.

The main findings on tagged red blood cell bleeding scan that suggest a source of active gastrointestinal bleed include focal abnormal activity that increases with time and activity that progresses either antegrade or retrograde in an anatomical distribution of the intestines. Large intestinal bleeding activity tends to follow a peripheral course, while small intestinal bleeding activity is more centrally situated. Abnormal activity that does not move may represent splenosis, ectopic kidney, or hemangioma. Similarly, increased flow activity that remains in a fixed location suggests a vascular tumor or angiodysplasia.

The accuracy of tagged RBC scintigraphy for the diagnosis of acute gastrointestinal bleeding is still debated. Large studies have found this modality to be sensitive for detecting acute bleeding, particularly when utilizing the cinematic mode for image viewing. Furthermore, the ability of this modality to localize the source of bleeding is useful for planning surgical intervention. Thus, many authors recommend tagged RBC scans as a crucial tool in diagnosing acute gastrointestinal bleeding. However, others have found this test to be of low yield in localizing acute bleeds. Furthermore, in emergent situations, Tc99m sulfur colloid scans may be more appropriate for evaluating acute cases of gastrointestinal bleeding since this modality requires less preparation time compared to tagged RBC scans.

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