



SPECT/CT Saves Time in the Interventional Lab: A GI Bleed Case Study

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GI bleeding scans are performed in nuclear medicine to try to help localize the site of a patient's active bleed in their GI tract. This is done by tagging the patient's red blood cells with ^{99m}Tc , reinjecting those tagged cells and then imaging. Typically, dynamic imaging is performed anteriorly up to 4 hours after injection. These are often difficult cases, as the bleed can only be visualized when active. More recently, we are often using SPECT/CT as soon as an active bleed is observed on the dynamic images. SPECT/CT can be an invaluable tool in precisely locating the area requiring surgical repair.

Patient history

An 87-year-old male with history of lower GI bleed.

Acquisition

Parameters: 15-minute SPECT, 140 kV and 20 mA CT.

Technique: The patient's red blood cells were radiolabeled with 22.3 mCi ^{99m}Tc pertechnetate using the in vitro technique. Following the intravenous re-injection of the tagged red blood cells, dynamic imaging of the abdomen and pelvis was performed at 3 seconds/frame for 1 minute and 1 minute/frame for 90 minutes in the anterior view. SPECT/CT was also performed to help localize the bleed once it was seen on dynamic imaging.

Findings

There is a focus of activity which appears inferior to the bifurcation of the aorta at approximately 10 minutes and moves horizontally in both the right and left directions, which suggests active gastrointestinal bleeding. Initially it was thought to be a small bowel bleed. However, SPECT/CT imaging revealed radionuclide activity in the sigmoid colon adjacent to a diverticulum. Activity was seen coursing through the large bowel down to the rectum.

Discussion

The SPECT/CT helped save time in the interventional lab at Baystate Medical Center. In this particular case, with the Optima™ NM/CT 640 we were able to efficiently localize the bleeding to a precise area. Armed with this information, the angiographer didn't waste any time performing a superior mesenteric artery (SMA) injection and instead was able to perform a selective inferior mesenteric artery (IMA) injection. Time in the angiography suite also exposes the patient to additional radiation. SPECT/CT does not replace dynamic imaging, however, it's a great problem solver. Also, when we can definitively say there is a GI bleed coming from a specific diverticulum, it makes a significant difference to the referring physician who can make quicker and more effective treatment decisions. ■

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Dr. Steve Allen

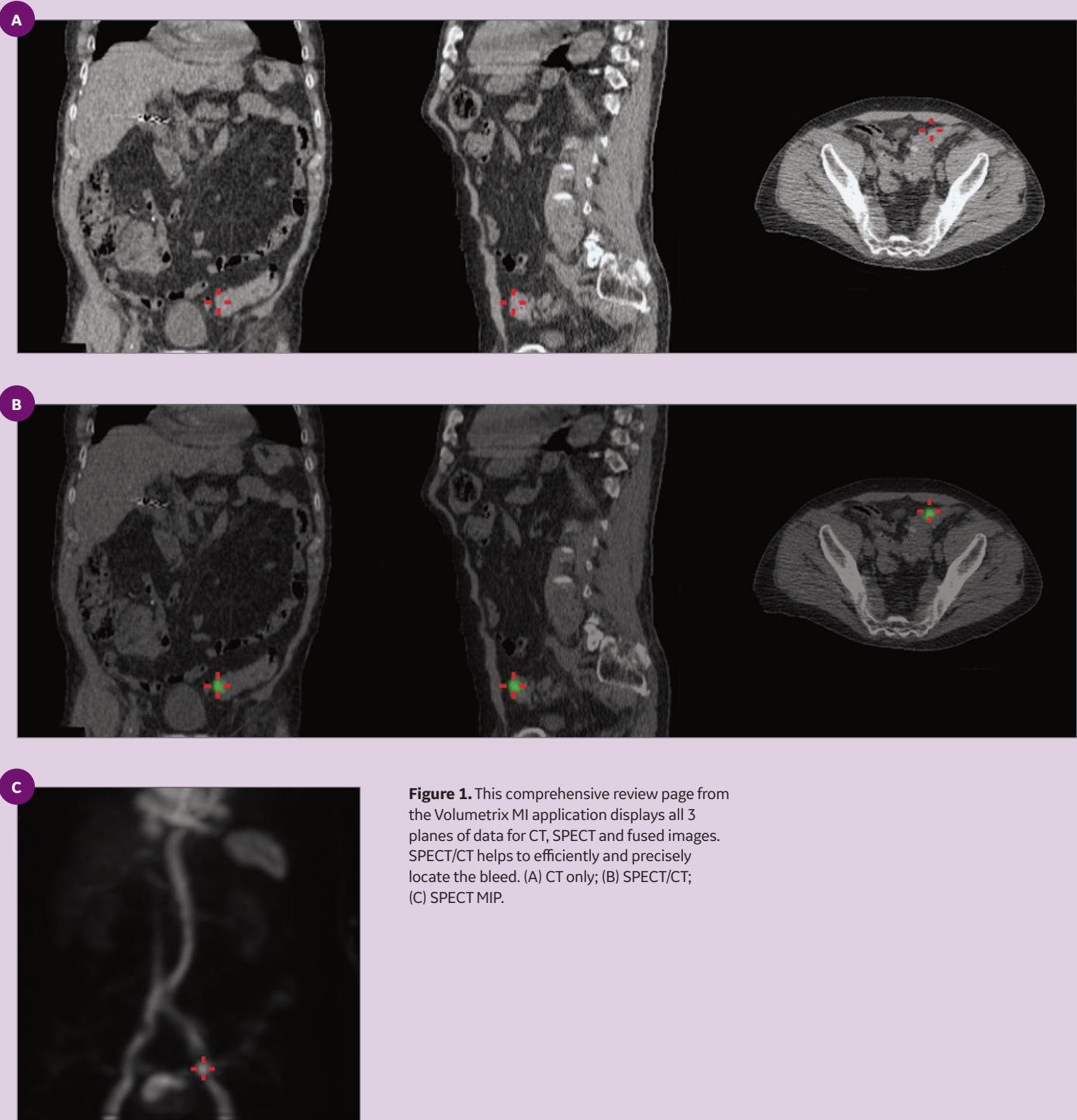


Figure 1. This comprehensive review page from the Volumetrix MI application displays all 3 planes of data for CT, SPECT and fused images. SPECT/CT helps to efficiently and precisely locate the bleed. (A) CT only; (B) SPECT/CT; (C) SPECT MIP.