Case 3: 66 year old man on antibiotics with persistent fever and diarrhea

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Imaging Method

- Anterior and posterior whole body images obtained 24 hours post injection of $^{111}$In.oxine-labeled leukocytes. Spot images of the abdomen and pelvis included.
- Large field of view gamma camera with a medium energy collimator, 20% window set at the 173 and 247 KeV $^{111}$In photopeaks.
Findings:

- Physiologic distribution of $^{111}$In-leukocytes in the expected structures of the liver, spleen and bone marrow producing regions of the axial and proximal appendicular skeleton.
- Diffusely increased activity throughout the colon.
Discussion:

- The presence of bowel activity on $^{111}$In-leukocyte imaging is an uncommon finding. Alternately, there is physiologic bowel activity often detected four hours post injection on $^{99m}$Tc-HMPAO leukocyte imaging as radiolabeled products are excreted in the bile. As a result, $^{99m}$Tc-HMPAO leukocyte abdominal imaging should occur prior to four hours post injection. ¹
• Bowel activity seen on $^{111}\text{In}$-leukocyte imaging may account for an inflammatory process in fever of unknown origin as a colonic distribution of $^{111}\text{In}$-leukocytes has been reported in pseudomembranous colitis, ischemic colitis, diverticulitis, and inflammatory bowel disease.

However, false positive studies attributable to swallowed leukocytes in patients with endotracheal or nasogastric tubes have been reported. Swallowed radiolabeled leukocytes may also occur with associated pneumonia, sinusitis, esophagitis or salivary gland inflammation.

Labeled leukocyte activity in bowel may also be the result of coexistent gastrointestinal bleeding.$^2$
Final Diagnosis:

Colonoscopy indicated evidence for pseudomembranous colitis.

The patient demonstrated clinical improvement following antibiotic coverage for *Clostridium difficile*.
References

1. Roddie ME et al, Radiology 1988; 166 (3): 767-772