

ARTICLE HIGHLIGHTS

Purpose

The authors briefly reviewed PET-CT's role in evaluating the causes of bowel FDG (2-[fluorine-18] fluoro-2-deoxy-D-glucose) uptake. A discussion on imaging protocols for PET-CT was included. Various “physiologic and pathologic patterns” of FDG uptake within the esophagus, stomach, small bowel and colon were described. They emphasized the challenges involved in the interpretation of bowel FDG uptake with PET-CT. The article concluded with their review of current recommendations for the evaluation of bowel disease.

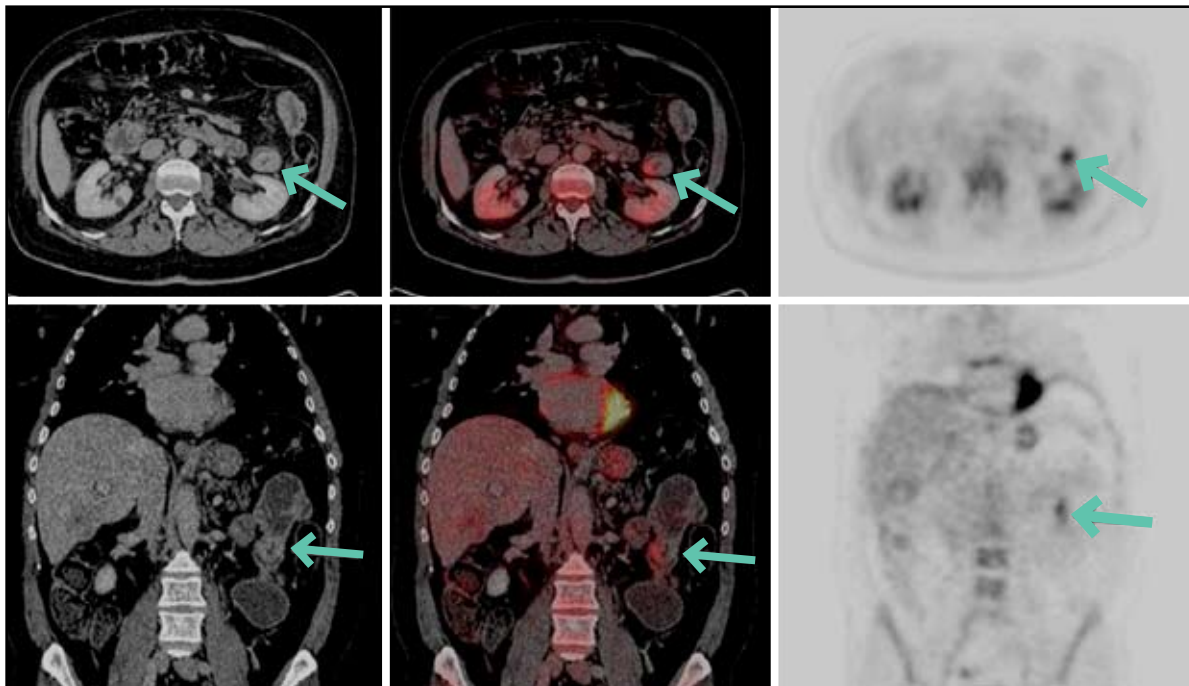
Conclusion

According to the authors, PET-CT “can be useful in localizing and characterizing foci of increased FDG uptake within the bowel.”

The authors noted that administration of oral contrast agents help improve bowel distention. Unfortunately, because of the way CT data are used for attenuation correction in PET-CT, high-density (1-2%), barium-based contrast agents may cause up to a 20% overestimation of PET activity.

The authors use VoLumen® oral contrast in all their PET-CT studies because it is a low-density barium sulfate suspension (0.1%) that behaves like a negative (or “neutral”) oral contrast. VoLumen helps improve bowel distention and eliminates potential artifacts caused by high-density oral contrast agents.

Unless there is a known contraindication, all patients should receive IV contrast for optimized CT scans. The authors stated that IV contrast material is important “in terms of vascular enhancement and parenchymal organ enhancement (particularly within the abdomen).”



Patient with colon cancer. VoLumen helped show narrowing of the splenic flexure with proximal dilatation. Corresponding coronal image shows thickening and an apple core lesion (arrows).

Gastric adenocarcinomas have been found to have a variable FDG uptake. On the other hand, gastrointestinal stromal tumors (GISTs) have a more consistent active FDG uptake. According to the authors, combined PET-CT is a useful adjunct in monitoring treatment in these patients.

They also indicated that correlation with the CT portion of the combined PET-CT may help identify the cause of focal or segmental bowel uptake.

They cautioned that there are possible “pitfalls” in the evaluation of FDG-avid foci within the abdomen.

They concluded that the exact role of PET-CT and its components has yet to be decided. But, they stated, the application of “sound basic principles” when interpreting PET and CT scans and fused PET-CT images is vital for an accurate evaluation of bowel findings.

Reference:

Prabhakar HB, Sahani DV, et. al. Bowel hot spots at PET-CT. *RadioGraphics* 2007; 27:145-159.



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