



## Diagnostic usefulness of technetium-99m-pertechnetate SPECT in a patient with Meckel's diverticulum

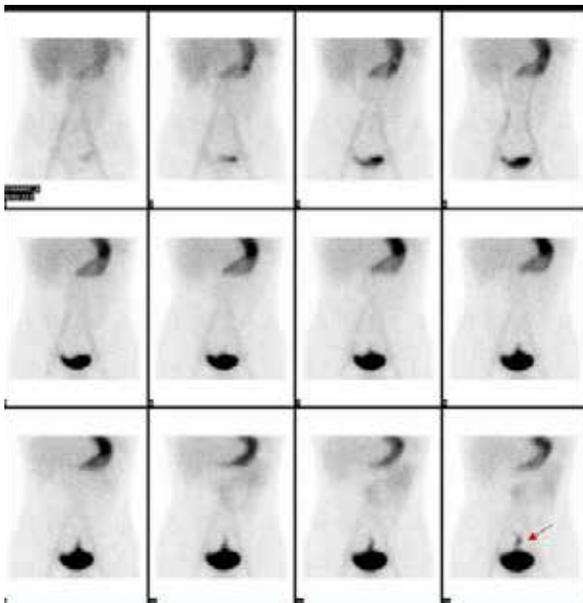
To the Editor,

Meckel's diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract. It is encountered in 2-3% of the population, and the lifetime complication rate is 2-4% (1). Bleeding from MD is rare in adulthood (2).

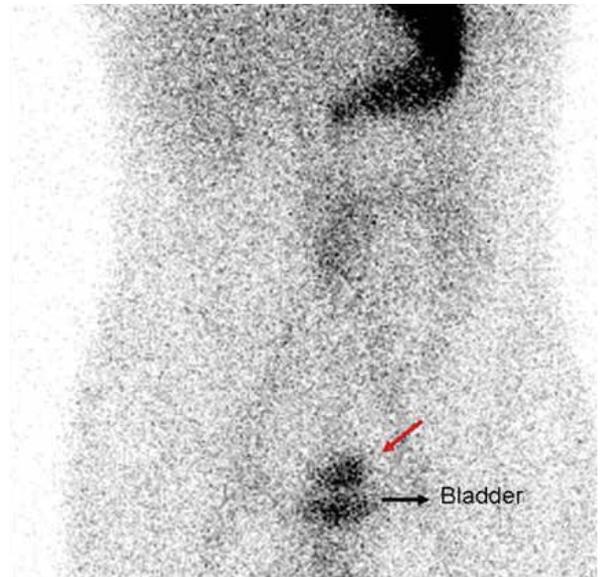
We present an adult case with MD with lower gastrointestinal bleeding and diagnosed by technetium-99m-pertechnetate single-photon emission computed tomography (SPECT).

A 20-year-old male presented with sudden onset painless hematochezia. Complete blood count revealed

anemia (hemoglobin: 7 gr/dL). Upper gastrointestinal endoscopy was normal. Colonoscopy revealed that the cecum and ascending colon were smeared with bright red blood, without any active bleeding. MD was suspected and technetium-99 m-pertechnetate scintigraphy was performed. Dynamic images revealed posteriorly localized focal increased activity superior to the urinary bladder (Figure 1). Postmicture posterior static images better visualized this focus (Figure 2). SPECT imaging acquired for accurate anatomic localization demonstrated focal uptake posterior and superior to the urinary bladder (Figure 3). Surgical exploration revealed MD located 60 centimeters proximal to the terminal ileum. Histopathologic examination confirmed MD.



**Figure 1.** Tc-99 m pertechnetate Meckel scintigraphy. Dynamic images show posteriorly localized focal increased activity superior of the bladder (red arrow). It is thought to be in relation with the bladder (ureter?).



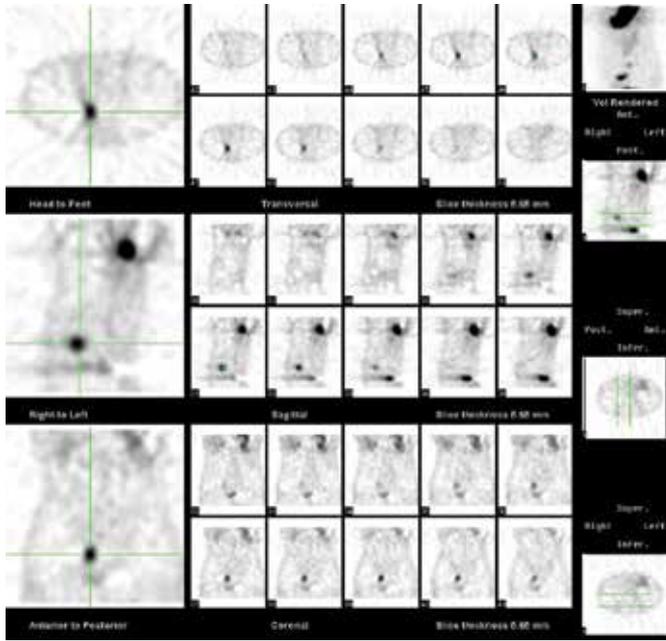
**Figure 2.** Tc-99 m pertechnetate Meckel scintigraphy. Postmicture, posterior static images show posteriorly localized focal increased activity, superior of the bladder (black arrow). It is still suspicious but primarily thought to be ectopic gastric mucosa (Meckel's diverticulum, red arrow).

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**Figure 3.** SPECT imaging demonstrated focal uptake in the right lower quadrant, localized posterior and superior to the urinary bladder.

In the diagnosis of MD, ultrasound, x-ray, and computed tomography display non-specific findings unless there is obstruction or intussusception (2). While technetium-99 m pertechnetate scans detect ectopic gastric mucosa in MD in 90% of pediatric cases, this ratio is 46% in adults due to less gastric mucosa in the diverticulum (3). Traditional planar images in technetium-99 m-pertechnetate scintigraphy may be diagnostic in the appropriate clinical setting. When the index of suspicion for MD is high and planar imaging is negative or ambiguous, SPECT images may be helpful (4,5). Mesenteric angiography, capsule endoscopy, and double-balloon enteroscopy may also be beneficial, but they are not suitable in the hemodynamically unstable patient with active bleeding (2).

Bleeding from MD is unusual in adult patients (2); so, clinical diagnosis depends on a high index of suspicion. Therefore, all patients who present with massive, painless lower gastrointestinal bleeding without risk factors for bleeding and in whom endoscopy and colonoscopy fail to localize a bleeding site, MD should be suspected and scintigraphic evaluation should be performed. Traditional planar images in technetium-99

m-pertechnetate scintigraphy are diagnostic for MD in most of the cases. If planar imaging is equivocal or ambiguous, SPECT imaging may be beneficial for diagnosis and precise localization of MD. A positive SPECT study can aid in planning of the surgical procedure. Diagnostic procedures must be performed promptly, followed by surgical resection, in order to avoid complications and mortality.

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## REFERENCES

1. Levy AD, Hobbs CM. From the archives of the AFIP. Meckel diverticulum: radiologic features with pathologic correlation. *Radiographics* 2004; 24: 565-587. [CrossRef]
2. Yang JF, Sun LM, Wang XF, Dai N. Massive gastrointestinal bleeding from Meckel diverticulum with ectopic pancreatic tissue. *Chin Med J (Eng)* 2011; 124: 631-33.
3. Kiratli PO, Aksoy T, Bozkurt MF, Orhan D. Detection of ectopic gastric mucosa using 99mTc pertechnetate: review of the literature. *Ann Nucl Med* 2009; 23: 97-105. [CrossRef]
4. Dillman JR, Wong KK, Brown RK, Frey KA, Strouse PJ. Utility of SPECT/CT with Meckel's scintigraphy. *Ann Nucl Med* 2009; 23: 813-5. [CrossRef]
5. Connolly LP, Treves ST, Bozorgi F, O'Connor SC. Meckel's diverticulum: demonstration of heterotopic gastric mucosa with technetium-99m-pertechnetate SPECT. *J Nucl Med* 1998; 39: 1458-60.