

# Duodenal Obstruction on $^{99m}\text{Tc}$ -DISIDA Cholescintigraphy: A Noninvasive Approach to Bowel Obstruction Diagnosis

Asif A. Fakhri<sup>1</sup>, Aun Hussain<sup>1</sup>, Abbas Taiyebi<sup>2</sup>, and Amena Fatima Fakhri<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine and Molecular Imaging, University at Buffalo, Jacobs School of Medicine and Biomedical Sciences, Buffalo, New York; and <sup>2</sup>Department of Biological Sciences, New Jersey Institute of Technology, Newark, New Jersey

We present a case study of a 56-y-old man who was admitted with acute abdominal pain and was found to have retroperitoneal hematoma from a ruptured duodenal aneurysm.  $^{99m}\text{Tc}$ -diisopropyliminodiacetic acid cholescintigraphy showed incidental absent transit of radiotracer into the distal duodenum and severe entero-gastric reflux, thought to be secondary to duodenal obstruction from the hematoma. Findings were confirmed on esophagogastroduodenoscopy, and the patient improved after subsequent gastrojejunostomy.

**Key Words:**  $^{99m}\text{Tc}$ -DISIDA; hepatobiliary imaging; small bowel obstruction

**J Nucl Med Technol 2016; 44:265–266**

DOI: 10.2967/jnmt.116.183822

Nuclear imaging using oral radiopharmaceuticals can also be useful for imaging intestinal transit (1). In this case, we present cholescintigraphy as an alternative intravenous method of imaging the small bowel tract (2).

## CASE REPORT

A 56-y-old Caucasian man, with no prior surgical history, was admitted to the hospital for persistent upper abdominal pain associated with anorexia and nausea of 1-wk duration. There was mild right upper quadrant tenderness to palpation on examination and no laboratory abnormalities. A contrast-enhanced abdominopelvic CT demonstrated a retroperitoneal fluid collection adjacent to the duodenum, from a suspected rupture of duodenal gastroduodenal artery (Fig. 1). Because of persistent abdominal pain, there was concern for gallbladder pathology, prompting cholescintigraphy.

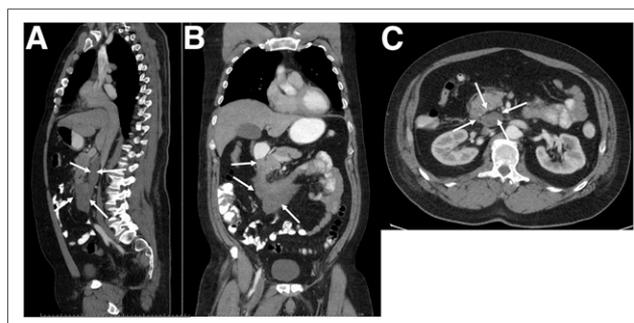
After intravenous administration of 188.7 MBq (5.1 mCi) of  $^{99m}\text{Tc}$ -diisopropyliminodiacetic acid, images were acquired at 5-min intervals up to 60 min with a delayed image at 4 h (Fig. 2). The gallbladder was not visualized up to 4 h,

indicating acute cholecystitis. An incidental finding of stasis of radiotracer in the proximal small bowel and significant progressive backflow of radiotracer into the stomach suggested a severe proximal duodenal obstruction.

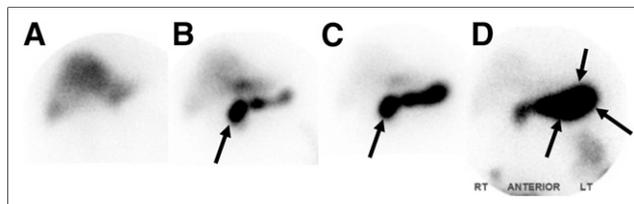
Esophagogastroduodenoscopy confirmed a narrow stricture at the second portion of the duodenum (Fig. 3). Correlation with CT showed the retroperitoneal hematoma had mass effect on the second portion of the duodenum. The patient underwent a gastrojejunostomy, which relieved his symptoms.

## DISCUSSION

Diagnosis of various other primary intestinal pathologies have been previously described using cholescintigraphy (3). In this case, not only was there a diagnosis of acute cholecystitis, but also there was a diagnosis of gastric outlet obstruction. This was an unexpected incidental finding of



**FIGURE 1.** Sagittal (A), coronal (B), and transverse (C) CT images showing mixed soft-tissue density (arrows) consistent with hematoma, having mass effect on second portion of duodenum.



**FIGURE 2.** Cholescintigraphy at 5 min (A), 30 min (B), 60 min (C), and 4 h (D). Gastric outlet obstruction was seen at 30 min, and entero-gastric reflux was seen at 60 min and 4 h (arrows). Nonvisualization of gallbladder was consistent with acute cholecystitis.

Received Sep. 8, 2016; revision accepted Oct. 26, 2016.

For correspondence or reprints contact: Asif A. Fakhri, Department of Nuclear Medicine and Molecular Imaging, University at Buffalo, Jacobs School of Medicine and Biomedical Sciences, 505 Park Lane Villas Court, West Seneca, NY 14224.

E-mail: asiffakh@buffalo.edu

Published online Nov. 10, 2016.

COPYRIGHT © 2016 by the Society of Nuclear Medicine and Molecular Imaging, Inc.



**FIGURE 3.** Esophagogastroduodenoscopy demonstrating narrow stricture (arrows) at second part of duodenum, with no Doppler flow consistent with hematoma.

bowel obstruction on cholescintigraphy secondary to hematoma from ruptured gastroduodenal artery and may have been an additional cause of the patient's symptoms.

Because of negative ultrasound and CT results, gallstone ileus was ruled out (4). Mesenteric ischemia or adhesions from prior surgery were also excluded from the

differential because of negative CT findings and negative surgical history.

## CONCLUSION

This case presents the potential utility of cholescintigraphy in detecting obstructions distal to the duodenal papilla. This method may be easier for the patient than the alternative orally administered agents. Although not performed in this case, SPECT/CT can also improve the accuracy of detecting more distal small bowel obstructions.

## DISCLOSURE

No potential conflict of interest relevant to this article was reported.

## REFERENCES

1. Maurer AH. Gastrointestinal motility, part 2: small-bowel and colon transit. *J Nucl Med Technol.* 2016;44:12–18.
2. Ziessman HA. Hepatobiliary scintigraphy in 2014. *J Nucl Med.* 2014;55:967–975.
3. Chandramouly BS, Burgess CK, Vaccaro RM. Diagnostic significance of unusual small intestinal pattern on technetium-99m DISIDA hepatobiliary imaging studies. *Clin Nucl Med.* 1987;12:852–856.
4. Hayes N, Saha S. Recurrent gallstone ileus. *Clin Med Res.* 2012;10:236–239.