

Letters to the Editor

Questions about "2020 Top Images in Radiology"

From
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Editor:

With great interest I read the article by Dr Anna V. Trofimova and colleagues (1), published in the February 2021 issue of *Radiology* (2). This is an interesting and meaningful report, revealing the success and importance of the Images in *Radiology* articles, and thus stimulating the enthusiasm of radiologists for image research.

I have a question regarding figure 2B, which originally appeared in the article by Dr Liu and colleagues in the June 2020 issue of *Radiology*. I must say that this is a beautiful and meaningful image. My question is: apart from the gallstone indicated by the arrow, we can also see two nodules with the same density in other small intestine (Figure); are they also gallstones? Was this patient diagnosed at surgery

finally? Finally, how could we distinguish the gallstones from other lesions, such as bezoar?

Disclosures of Conflicts of Interest: C.W. disclosed no relevant relationships.

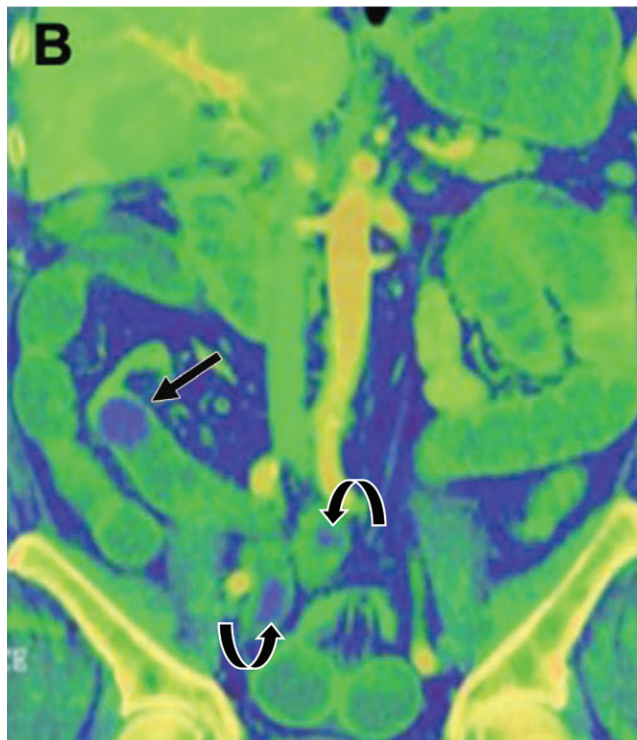
References

1. Trofimova AV, Kim E, Lee SI. 2020 Top Images in Radiology: Radiology In Training Editors' Choices. *Radiology* 2021;298(2):284–286.
2. Liu P, Tan XZ. Dual-Energy CT of Gallstone Ileus. *Radiology* 2020;295(3):516.

Response

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We thank Dr Wang for the close reading of our image (1,2). We acknowledge that the other two nodules in the small intestine are also ectopic gallstones, which were confirmed intraoperatively. However, what we focused on in this case was the cause of small bowel obstruction



Postprocessed p/Z map from this examination shows an impacted ectopic gallstone (straight arrow). We can also see two nodules with the same density in the other small intestine (curved arrows).

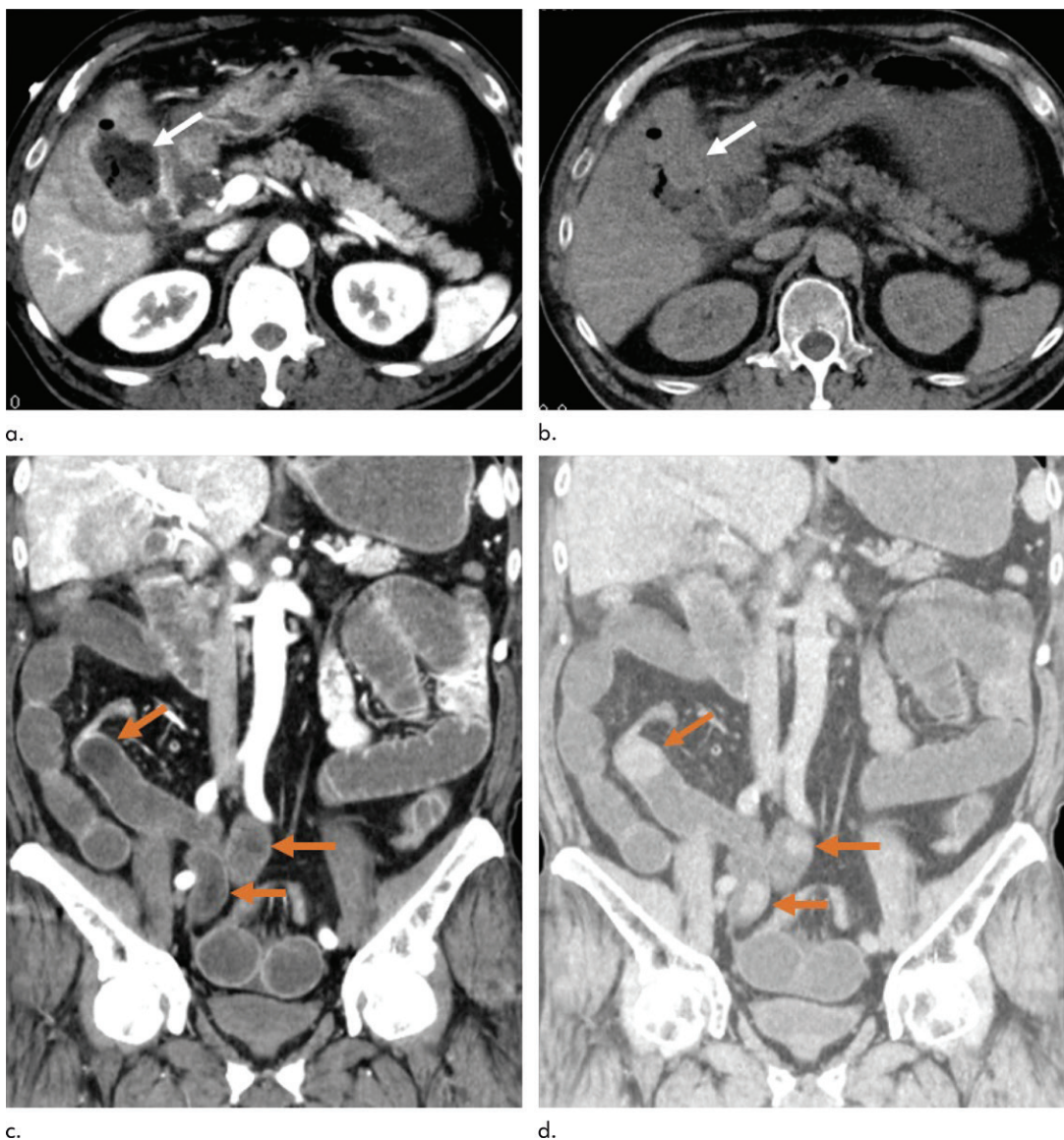


Figure 1: Dual-energy CT virtual monochromatic postprocessing performed to depict isoattenuating stones in gallbladder and ileum. **(A)** Axial 40-keV image shows that the gallbladder stones (arrow) are relatively hypoattenuating to surrounding bile. **(B)** Axial 190-keV image shows that the gallbladder stones (arrow) appear hyperattenuating. **(C)** Coronal 40-keV image shows three ectopic gallstones in ileum (arrows) are relatively hypoattenuating to surrounding fluid. **(D)** Coronal 190-keV image shows that these ectopic gallstones (arrows) appear hyperattenuating.

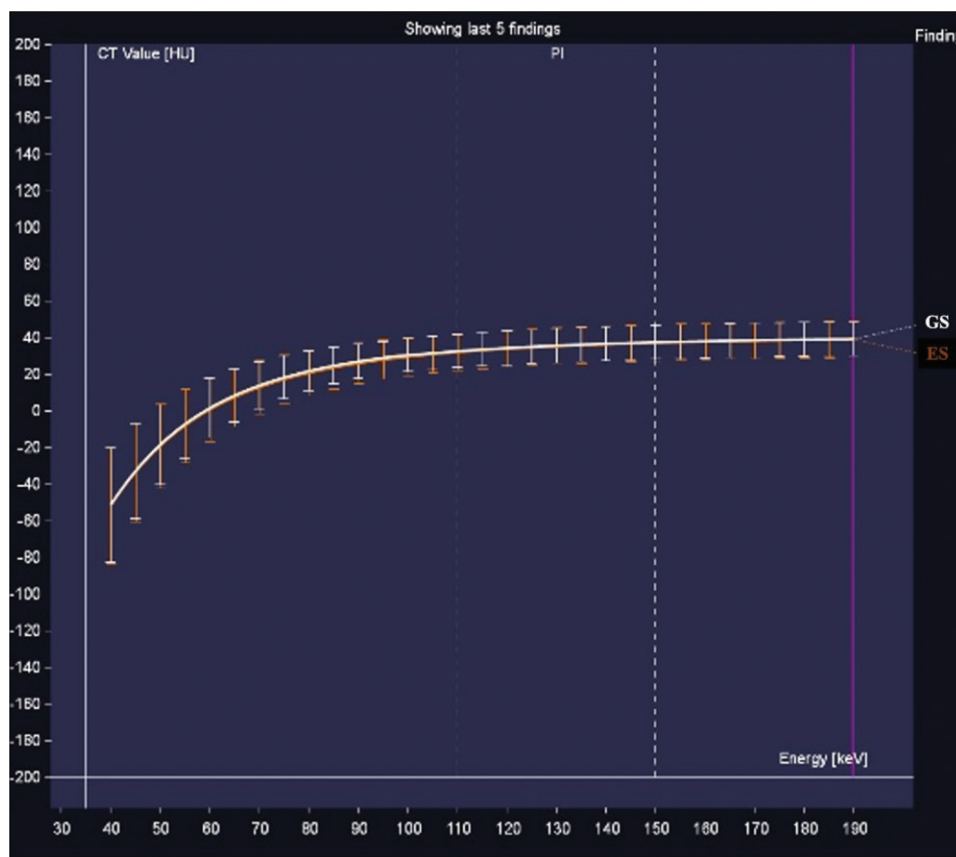


Figure 2: Graph shows the spectra Hounsfield unit curve of the gallbladder stone (GS, in white) and ectopic gallstone (ES, in orange). These lesions share the consistent pattern of spectral Hounsfield unit curve, indicating that they are the same materials.

(SBO). Those two lesions are too small to result in SBO. Therefore, they were not annotated on the image.

The differential diagnosis for intraluminal causes of SBO includes but is not limited to gallstone and bezoar (3). The classic Rigler triad, including SBO, pneumobilia, and ectopic gallstone, is pathognomonic of gallstone ileus (4,5). It is well known that most gallstones appear to be partially or completely calcified except for radiolucent or isoattenuating stones (5). However, a bezoar appears as an intraluminal mass with characteristic appearance of mottled gas pattern (3). Moreover, pneumobilia is not expected to be observed in patients with bezoar-induced SBO. Furthermore, in our case, the intraluminal lesions in ileum have spectral Hounsfield unit curve similar to that of gallbladder stone, indicating that they are gallstones, rather than bezoars (Figs 1, 2). Therefore, the combination of improved depiction of noncalcified gallstones and accurate differentiation of gallstones

from other materials such as bezoars makes dual-energy CT ideal in the diagnosis of gallstone ileus in our case.

Disclosures of Conflicts of Interest: X.T. disclosed no relevant relationships. P.L. disclosed no relevant relationships.

References

1. Liu P, Tan XZ. Dual-Energy CT of Gallstone Ileus. *Radiology* 2020;295(3):516.
2. Trofimova AV, Kim E, Lee SI. 2020 Top Images in Radiology: Radiology In Training Editors' Choices. *Radiology* 2021;298(2):284–286.
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