Gallbladder Uptake Mimicking Liver Metastasis on ^{177}Lu-DOTATATE Posttherapy Scan
Gallbladder Uptake on ^{177}Lu-DOTATATE Scan

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Abstract: We represent the case of a 61-year-old man with atypical carcinoid tumor of the lung. On posttherapy ^{177}Lu-DOTATATE whole-body scan, focal intense uptake in the inferomedial side of the liver was detected. Pretherapy ^{68}Ga-DOTATATE PET/CT showed no sign of liver metastasis, and posttherapy diagnostic dynamic liver MRI is used to exclude metastatic liver disease. Focal intense uptake was attributed to physiological gallbladder uptake.

Key Words: ^{177}Lu-DOTATATE, gallbladder, neuroendocrine tumor, PRRT

(*Clin Nucl Med* 2021;46: e154–e155)

Received for publication May 8, 2020; revision accepted November 6, 2020.
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Conflicts of interest and sources of funding: none declared.
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ISSN: 0363-9762/21/4603–e154
DOI: 10.1097/RLU.0000000000003475

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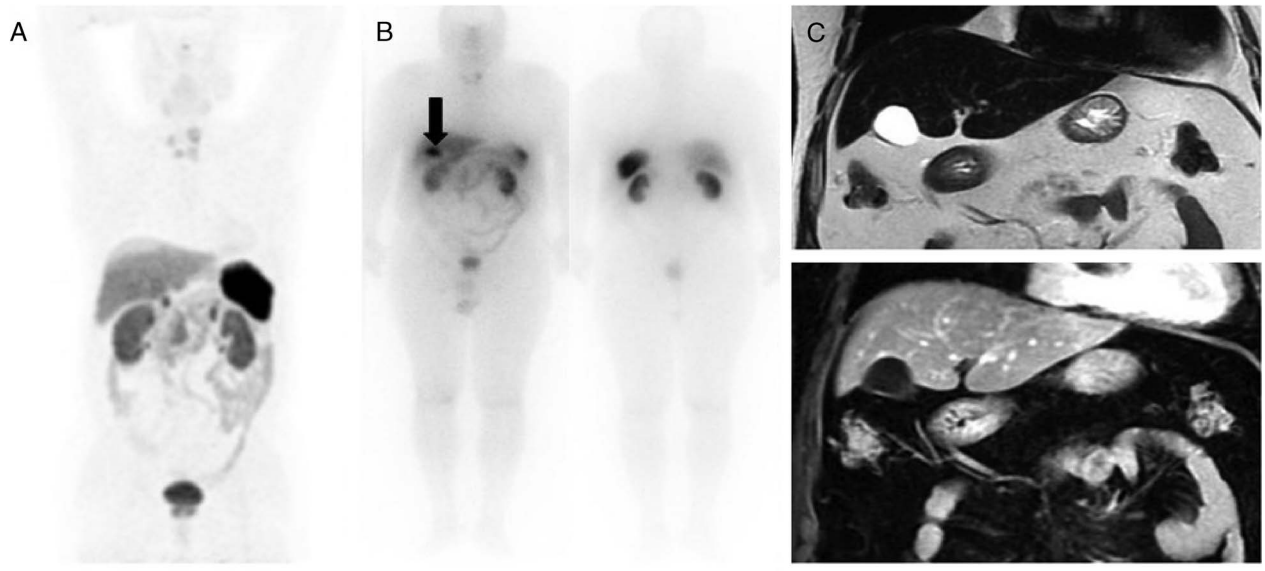


FIGURE 1. The patient was operated on because of an atypical carcinoid tumor of the lung, located in the left inferior lobe, 2.5 cm in size, with Ki67 index of 18%, and chromogranin and synaptophysin immunohistochemistry positive. Metastatic masses were also excised from the neck together with right thyroid lobectomy. One of these masses invaded to the left thyroid cartilage, and the other to the right lobe of the thyroid. In the follow-up, recurrence was detected by ultrasonography in the neck, which was then confirmed to be thyroglobulin- and thyroid transcription factor-1–negative and synaptophysin/chromogranin-A–positive atypical carcinoid metastasis by biopsy. The patient did not receive somatostatin receptor analogs or chemotherapy. ^{177}Lu-DOTATATE therapy was preferred. On pretherapy ^{68}Ga-DOTATATE PET/CT, focal pathological uptake was seen only in the neck; uptake in the liver was regarded as physiological, as demonstrated on maximum intensity projection images (**A**). In the posttherapy whole-body scan following first-cycle ^{177}Lu-DOTATATE therapy, focal intense uptake was seen in the inferomedial side of the liver (black arrow), as well as in the operation site in the neck over the sternal notch, in two separate areas (**B**). Following ^{177}Lu-DOTATATE therapy, dynamic liver MRI was performed to rule out metastasis. Liver MRI was also normal (given in "coronal T2 and fat-suppressed T1 images") (**C**). Thus, ^{177}Lu-DOTATATE was attributed to physiological gallbladder uptake. Somatostatin receptor expression is found in 85% to 90% of all neuroendocrine tumors.[1–3] Physiological uptake sites of ^{177}Lu-DOTATATE are the pituitary gland, thyroid, adrenal glands, pancreatic islet cells, kidneys, liver, and spleen.[2–7] Somatostatin receptor inhibitors have been reported to inhibit gallbladder excretion, but the presented case did not have a history of somatostatin receptor inhibitor use.[8,9] Physiological ^{177}Lu-DOTATATE uptake in the gallbladder has not been reported before, although uptake in the gallbladder was demonstrated on ^{111}In-octreotide SPECT.[10] Gallbladder should be kept in mind as a physiological uptake site of ^{177}Lu-DOTATATE, which may mimic liver metastasis in case SPECT/CT option is not available, and further radiological correlation may be necessary.

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