

Diffuse Pancreatic Neuroendocrine Tumor: A Rare Presentation

Abstract

Diffuse involvement of the pancreas in neuroendocrine tumor is a rare presentation, and its appearance on In-111 pentetreotide scan has not been reported earlier in the literature. We present the whole body images from In-111 pentetreotide scan, contrast-enhanced computed tomography images, and histopathology correlation.

Keywords: *In-111 pentetreotide, neuroendocrine, pancreas*

A 31-year-old female presented to the emergency department with abdominal pain, nausea, and vomiting. Computed tomography (CT) scan of the abdomen showed diffuse enlargement of the pancreas with a hypervascular focus in the tail of the pancreas, suspicious for a neuroendocrine tumor. An In-111 pentetreotide scan was performed, which showed diffuse increased uptake in an enlarged pancreas [Figure 1a and b]. The normal distribution is seen in the spleen, liver, kidneys, and the urinary bladder. No focal lesions or metastatic disease was seen. Corresponding transaxial image [Figure 1c] from the contrast-enhanced CT scan of the abdomen and pelvis shows diffusely enlarged pancreatic body and tail (dashed white arrows) and a focal hypervascular lesion in the tail of the pancreas. A distal pancreatectomy was performed, which showed diffuse involvement of the pancreas with a neuroendocrine tumor [Figure 1d]. A completion total pancreatectomy (Whipple's procedure) was later performed which showed a low-grade diffuse pancreatic neuroendocrine tumor. There was a local invasion of the duodenum with negative margins and no evidence of nodal metastasis. The neuroendocrine differentiation was confirmed on immunohistochemical staining with markers such as chromogranin A [Figure 1e] and Synaptophysin (not shown). Ki67 index (a marker of cellular proliferation) was <2%, suggesting a low-grade tumor.

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Pancreatic neuroendocrine tumors are rare tumors that are typically classified as functional versus nonfunctional (based on laboratory testing) and differentiated versus de-differentiated (based on the immunohistochemistry).^[1-3] They usually present as a focal hypervascular mass on CT imaging, hyperdense on the arterial, and portal venous phases.^[4-6] Since these tumors are neuroendocrine in origin, they express somatostatin receptors on their cell membranes, a binding site for In-111 pentetreotide. In-111 pentetreotide imaging is performed for confirmation (of neuroendocrine origin), whole body staging, and assessing response to treatment.^[7-9] Pancreatic neuroendocrine tumors and metastasis are seen as foci of increased uptake on whole-body imaging with In-111 pentetreotide.^[9] Single-photon emission computed tomography (CT) imaging has been reported to be useful for anatomical localization of metastatic disease when using In-111 pentetreotide.^[10] Diffuse pancreatic infiltration with neuroendocrine tumor is a rare presentation, previously reported once on anatomic imaging.^[6,11] Diffuse uptake of In-111 pentetreotide has previously been reported in the lungs,^[12,13] but diffuse uptake in the pancreas from a neuroendocrine tumor has not been reported previously. In conclusion, this case highlights a rare presentation of a well-differentiated, low-grade neuroendocrine tumor as the diffuse involvement of the pancreas, with local invasion, but no nodal or distant metastasis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the

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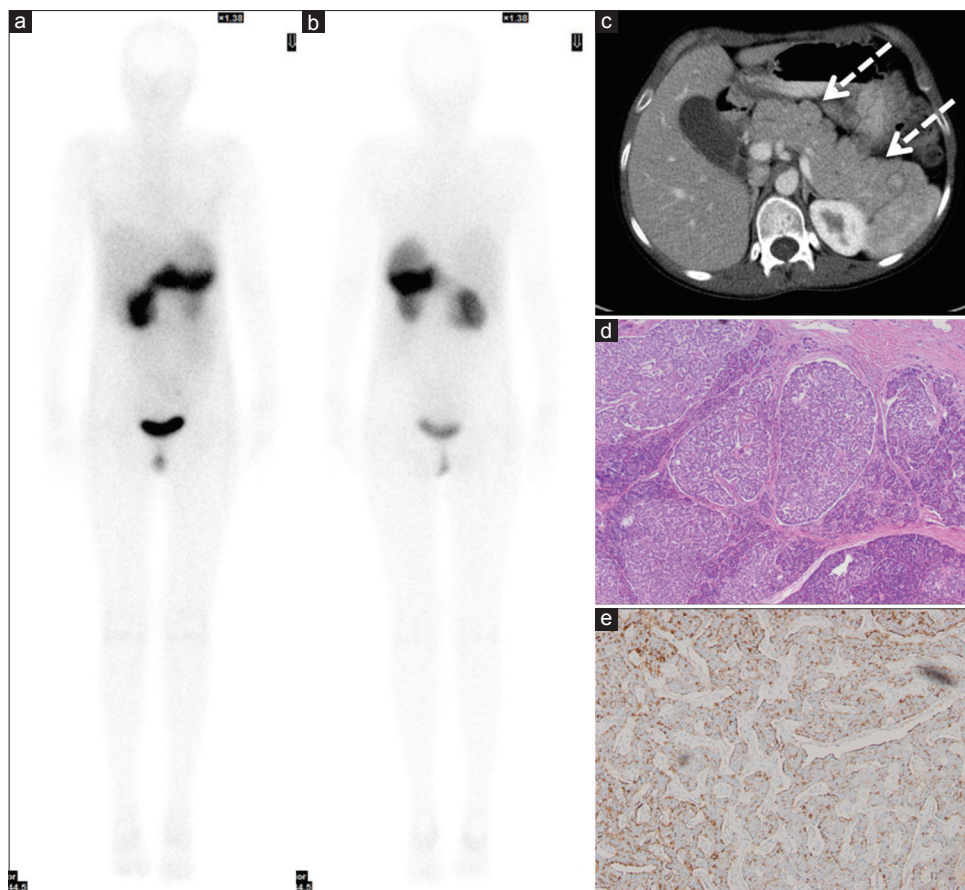


Figure 1: Anterior and posterior whole body images (a and b respectively) acquired 6 hrs after IV administration of 222 MBq (6.0 mCi) of In-111 pentetreotide. Diffuse increased uptake is seen in the enlarged pancreas involving the head, body and the tail of the pancreas. On the posterior whole-body image, a focal attenuation artifact is seen in the midline, from the spine. (c) Transaxial contrast-enhanced computed tomography scan image of the abdomen and pelvis shows diffusely enlarged pancreatic body and tail (dashed white arrows) and a focal hypervascular lesion in the tail of the pancreas. (d) is the (H and E \times 40) of the tumor showing nests of polygonal tumor cells which typically have stippled salt-and-pepper chromatin and eosinophilic granular cytoplasm. (e) immunohistochemical staining with markers such as Chromogranin A shows neuroendocrine differentiation

form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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