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Case Report

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Osteomyelitis Post Nerve Blockage as the Implication of Bone Scan in a Patient With Pancreatic Neuroendocrine Tumor: A Case Report

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Running Title Bone Scan for Nerve Block Induced Osteomyelitis

ABSTRACT

A 41-year-old female with retractable epigastric pain due to an invasive neuroendocrine tumor of the pancreas was treated with blockage and radiofrequency ablation of the celiac and splanchnic plexuses. Then, the patient developed back pain, and a bone scan revealed abnormal uptake in the lower thoracic vertebrae despite a normal CT scan. The findings were interpreted as a local invasion of the tumor or iatrogenic post-manipulation inflammation or infection. MRI data presented the destruction of the thoracic 11th and 12th vertebrae, and pathology examination of the open biopsy sample favored inflammatory changes.

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Introduction

Local invasion of the pancreatic neuroendocrine tumor into the vertebral column is very rare [1]. This may cause back pain, a rare complication of pancreatic neuroendocrine tumors. Also iatrogenic complications after radiofrequency ablation for the painful tumors are very rare [2]. These complications comprise inflammation and fibrosis as well as rare cases of osteomyelitis. Bone scan is a sensitive tool to detect the areas of the skeleton where the bone turnover is increased [3] and may find the tumoral or inflammatory or infective lesions sooner than other modalities including CT and plain radiography [4, 5]. Here, we report a case of neuroendocrine tumor with retractable pain and bone lesion in the bone scan suspected for local tumor invasion or post radiofrequency nerve ablation inflammation.

Case Presentation

he patient was a 41-year-old female with a history of pancreatic neuroendocrine tumors. The pancreatic tumor was diagnosed 7 years ago with exploratory laparotomy pancreatic biopsy. The patient underwent tumor debulking surgeries, two courses of chemotherapies, and external beam radiation to the tumor site. She presented a routine bone scan at that time. The patient had experienced retractable epigastric pain from the early stage of the disease; accordingly, she was treated with repeated celiac plexus and more significant splanchnic blockade from the posterior approach. The left and right greater splanchnic nerves were destructed by radiofrequency ablation, after which the patient developed back pain. The patient was admitted to the hospital to control the back pain with minimal response to the treatment. In her disease, she developed liver metastases (Figure 1) and a somatostatin receptor scan with ^{99m} TC Pentetreotide detected octreotide avid tumor corresponding to the mass in the pancreas (Figure 2). Gradually, she experienced increasing back pain. We repeated the bone scan with Technetium Tc 99m Medronate, and advent significantly enhanced uptake areas were detected in T12 and T11 vertebrae without any corresponding CT finding. The odds of osteometastases and post-blockage inflammatory/infective spondylodiscitis were considered. Afterward, an MRI of the spine was performed, indicating bone marrow edema and destruction of the T11 and T12 vertebra (Figure 3), further indicating the spondylitis rather than the metastasis. The patient underwent vertebral exploration surgery with laminectomy. The pathology excluded neoplastic involvement and was in favor of spondylodiscitis.

Discussion

Complications after radiofrequency ablation are infrequent. This treatment is considered safe and optimal for patients with severe pain secondary to the impingement of a nerve within the visceral tumors [6-8]. The post-ablation alternations include fibrosis and granulomatosis, but bone necrosis may occur as in the reported case [9, 10]. The odds of Osteomyelitis are very rare [11] after radio ablation; however, it was first considered in

Figure 1. Arterial phase contrast-enhanced CT scan at the level of T12 shows neuroendocrine hepatic metastases (1 & 2) and the tumor of the pancreas (3) but the normal vertebral body

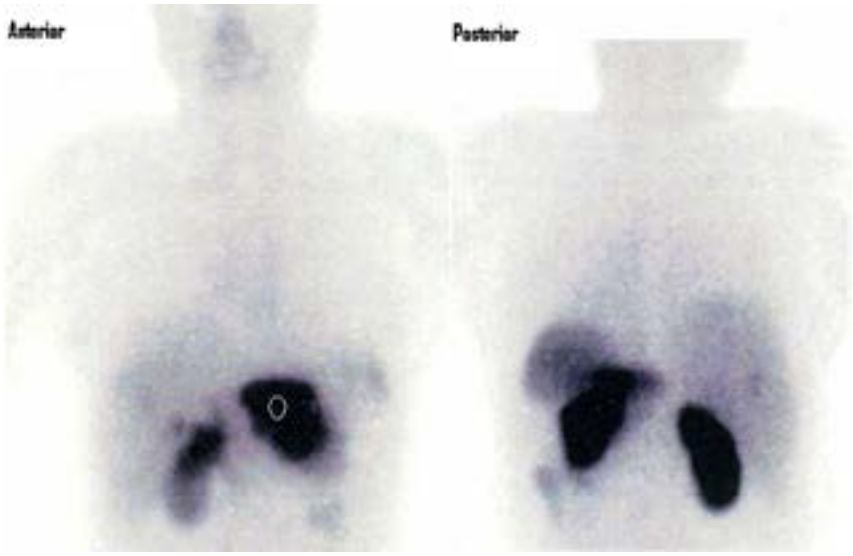

Figure 2. Octeroscan presenting a significant abnormal uptake corresponding to the pancreatic neuroendocrine tumor

this case after evaluating the findings in the bone scan. The sensitivity of the bone scan is very high for the detection of increased bone turnover sites and finds the tumoral and inflammatory lesions much sooner than the CT scan and plain X-ray examinations [12]. Nerve blockade for the pain of invasive visceral tumors near vertebra may rarely cause Osteomyelitis. The bone scan is sensitive for the detection of bone involvement but unspecific to discriminate Osteomyelitis from tumoral invasion.

Ethical Considerations

Compliance with ethical guidelines

There is no ethical concern for this case report except the promised confidentiality of the data reported.

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Figure 3. MRI of the patient with neuroendocrine tumor and retractable dorsal pain

There is a destruction of T11 & T12 body and disc destruction with bone marrow signal change in favor of spondylitis.

Conflict of interest

The authors declared no conflict of interest.

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