

CASE REPORT

Subcutaneous and Muscular Metastasis of Pancreatic Adenocarcinoma

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ABSTRACT

Soft tissue metastasis from pancreatic cancer is a very rare entity. We reported a case presenting with multiorgan and soft tissue metastasis on computed tomography. Computed tomography scan showed a hypovascular mass in the pancreatic body and tail. Computed tomography guided biopsy from muscle metastases diagnosed an undifferentiated tumor. Based on clinical, radiological and pathological correlation, the diagnosis of pancreatic adenocarcinoma was established. There are few reported cases of skeletal muscle metastasis from pancreatic cancer. Immunohistochemical staining and imaging findings should be used together to determine the correct diagnosis.

INTRODUCTION

Pancreatic cancer is one of the most lethal cancers, almost all patients develop metastases [1]. The most frequent sites for metastasis are lymph nodes, lung, liver, adrenal glands and bone [2]. Skeletal muscle and subcutaneous tissue are very unusual sites of metastasis [3]. Herein, we present a pancreatic cancer with multiple muscular and subcutaneous metastases.

CASE REPORT

A Fifty-year-old man was admitted to our emergency department with jaundice and left flank pain. His past medical history was unremarkable. Sonography revealed a distended gall bladder with thickened wall and biliary sludge inside, bilateral adrenal masses, a hypoechoic mass in the midline at the pancreatic zone. Abdominal computed tomography (CT) was requested for detailed investigation. CT scan showed a hypodense lesion, measuring 105 × 47 mm in size, which was located in the body and tail and infiltrating the splenic vein (Figure 1). There were bilateral adrenal masses, paraceliac, peripancreatic lymph nodes, lung nodules, bilateral muscular lesions in the gluteal muscles and subcutaneous nodules in the right buttock (Figures 1, 2). Intramuscular lesions were hypo to isodense in the precontrast scans and showed peripheral enhancement in the postcontrast series (Figure 3). No centripetal enhancement was seen in the late phase scan.

A CT guided biopsy from the intramuscular mass in the left gluteus medius was performed. Histological and immunochemistry studies showed an undifferentiated tumor in which most of the tumor cells were positive

for cytokeratin AE1/AE3, 19, 7, 5/6 and vimentin. Neuroendocrine markers, S-100 protein, cytokeratin 20, napsin, thyroid transcription factor-1 (TTF-1), prostatic acid phosphatase (PSAP), melanoma antigen (Melan A) were negative (Figure 4). According to the clinical, biological, radiological and histological findings, all the muscular metastasis was most probably originated from an undifferentiated pancreatic adenocarcinoma.

A few days later the patient had a sudden onset abdominal pain, CT scan at that time revealed an intestinal perforation. Unfortunately after surgical operation for the perforated intestine, patient passed away within a few days.

DISCUSSION

In autopsy series, the reported incidence of intramuscular metastasis ranges from 0.8 to 16% [4]. The most common malignancies with metastasis to the soft tissues are lung, kidney and colon carcinoma and the most common histologic type is adenocarcinoma [5]. Soft tissue metastasis from pancreatic carcinoma is extremely

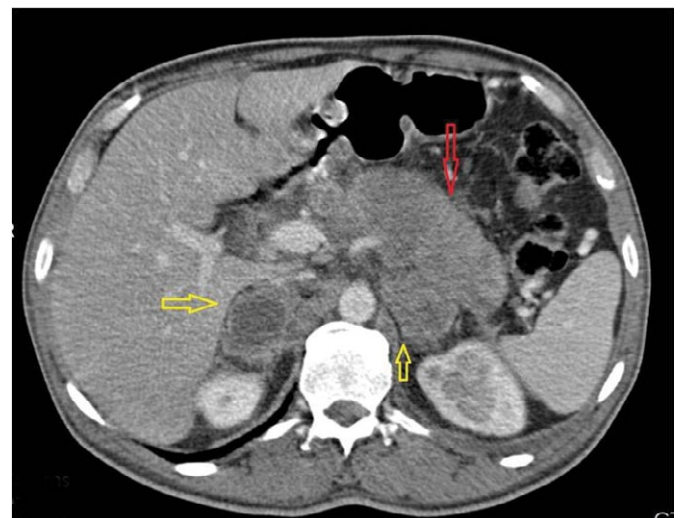


Figure 1. Portal phase axial CT scan shows hypodense solid lesion in the pancreas tail (red arrow) and adrenal metastases (yellow arrows).

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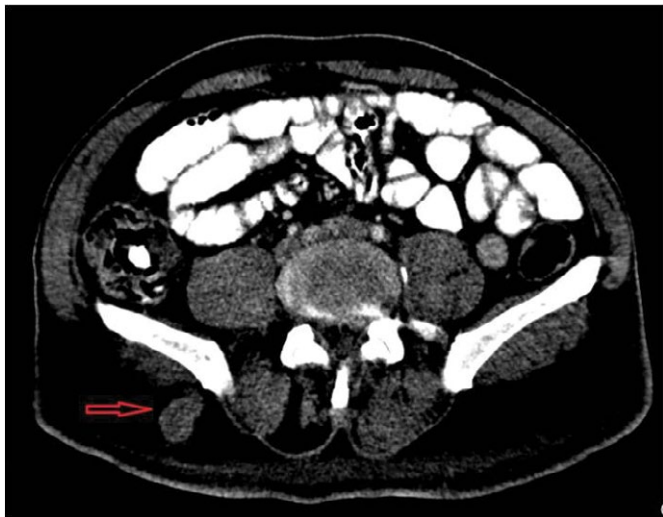


Figure 2. Axial CT scan shows a solid lesion in the subcutaneous fat tissue at the right buttock (red arrow).



Figure 3. (a). Precontrast and (b). contrast enhanced axial CT scan shows peripheral enhancement of the solid lesion in the left gluteus medius muscle.

rare, in a series of 121 cases by Damron *et al.* only one case was reported [6]. Leinung *et al.* in a series of 98 cases and Tuoheti *et al.* in a series of 12 cases described soft tissue metastasis however none of the primary site of origin was pancreas [7, 8]. Mathis *et al.* reported that metastases to the soft tissues usually appeared with other metastases

in patients with advanced disease and the most frequent localization was the lower limbs [9]. Our case also had adrenal gland, lymph node and lung metastasis along with gluteal muscle metastasis.

In spite of the fact that skeletal muscle and subcutaneous tissue represents 50-55% of total body mass, hematogenous metastases to these areas are uncommon. Different theories have been implicated to explain this phenomenon such as lactic acid metabolism, changes in pH, variability of blood flow and tissue pressure influenced by adrenergic receptors, local temperature and presence of protease inhibitors [10].

Most intramuscular lesions are defined on CT imaging, because it is the most commonly used imaging modality in oncologic screening. They appeared as a central hypodense lesions with an enhancing rim [11]. The lesions in our case had similar imaging characteristics.

Soft tissue metastases are frequently a sign for advanced disease, they could be the first clinical sign. Most of the soft tissue metastases are poorly differentiated and it is hard to determine the primary origin with immunohistochemical examination. Therefore for a correct diagnosis, the radiological and clinical findings are necessary [5, 10]. We also had to use a wide panel of immunochemical examination with radiological findings to achieve a correct diagnosis in our case.

The prognosis after the diagnosis of skeletal muscle metastases is poor because of the fact that skeletal muscle

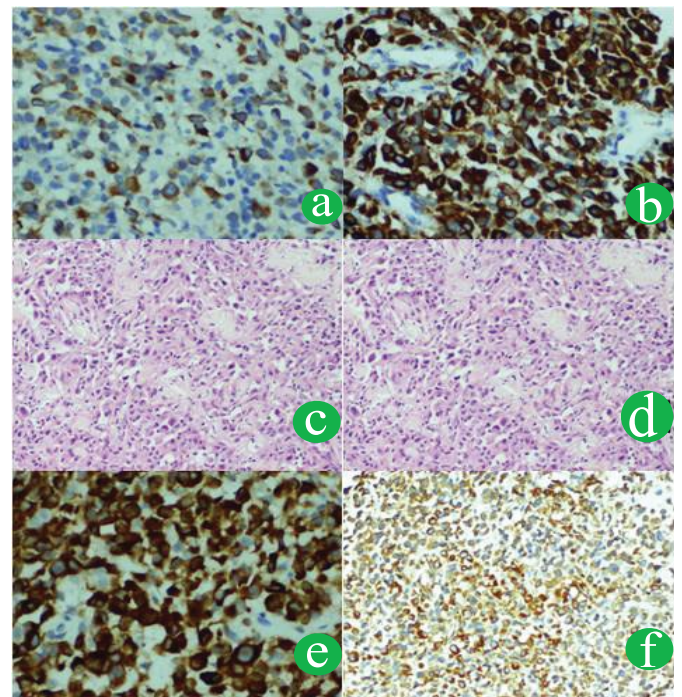


Figure 4. (a, b). Cytokeratin 7, 19 positivity in the cytoplasm of tumor cells ($\times 400$, 3,3'diaminobenzidine). Microscopic view of an undifferentiated tumor. It is composed of small round tumor cells with small round hyperchromatic pleomorphic nuclei. (c, d). The cells are arranged in nests or cords (X200, Hematoxyline&eosin). (e). Pan cytokeratin (AE1/AE3) positivity in the cytoplasm of tumor cells ($\times 400$, 3,3'diaminobenzidine). (f). Vimentin; Cytoplasmic expression of Vimentin in tumor cells ($\times 200$, 3,3'diaminobenzidine).

metastases usually occur late and in the presence of disseminated disease such as this case [6, 11].

Soft tissue metastasis from pancreatic carcinoma is very rare. Immunohistochemical staining and imaging findings should be used together to determine the correct diagnosis.

Conflict of Interest

The authors have no potential conflict of interest.

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