



Axillary Apocrine Carcinoma with Bone Metastasis: First Report with Bone Scan Image

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Abstract

Apocrine carcinoma is a rare malignant neoplasm with differentiation towards apocrine glands. Rare cases of apocrine carcinoma are reported to have bone metastasis, and their bone scan images have never been showed in the literature. We report a case of a 59-year-old man with a painless tumor of the left axilla and first showed his image of ^{99m}Tc-MDP SPECT-CT bone scan. The patient underwent excision of the left axilla with left axillary lymphnode resection twice. Eight years later after his carcinoma was diagnosed, the patient noted intermittent pain in his back, and ^{99m}Tc-MDP SPECT-CT bone scan showed increased radioactivity in his bones. We discuss apocrine carcinoma with bone metastasis and review pertinent literature. We find osteogenic metastasis is a main style of the bone metastasis of apocrine carcinoma and should not be only limited in axial skeleton. The whole-body bone scan exam must be recommended for patients with apocrine carcinoma, even when they have lived more than 5 years after the surgery.

Keywords: Apocrine carcinoma; SPECT-CT; Bone scan

Introduction

Since the advent of the PET/CT, SPECT/CT seems increasingly outdated for patients with cancer. But it still has indications, such as for ill-defined bone pain, especially for tumor patients. ^{99m}Tc-MDP SPECT-CT bone scan was known sensitive for cancer patients with skeletal metastases, such as breast, lung, prostate and gastrointestinal cancer. In fact, SPECT-CT bone scan should be recommended for all kinds of cancer patients with skeletal metastases. Apocrine carcinoma is a rare cutaneous malignant neoplasm which histopathologically manifests itself as ductal carcinoma. The tumor occurs more frequently in the axilla, perineum, eyelids and external auditory canals, where apocrine glands are abundant. Rare cases of apocrine carcinoma are reported to have metastases. However, in this report of apocrine carcinoma, we show the skeletal metastases in axial bones with the ^{99m}Tc-MDP SPECT-CT bone scan.

Case Presentation

In this study, we report a 59-year-old Chinese man with a long history of apocrine carcinoma, and 8 years after the diagnosis, ^{99m}Tc-MDP SPECT-CT bone scan showed increased radioactivity in his axial bones.

This patient used to be an employee who worked in Japan. When being 51 years old, he had found a movable mass without tenderness in his left axilla which had been 2-3cm in diameter. He had attributed this to his busy working; however, the mass progressed gradually. He visited a local hospital and experienced tumor excision in the year of 2006. After surgery, he didn't get further treatment until his return to China in 2011. He visited an oncologist in Shanghai and found swelling lymph nodules in his left axilla by ultrasound. He was then admitted to have removal of axillary lymph nodes. The histology documented surgery's involvement of subclavicular lymph nodes and pectoralis minor with infiltration of carcinoma cells. On gross pathologic review, the mass measured 3.5 cm × 2 cm and appeared granular and pale white to gray-tan in color. Microscopic evaluation (hematoxylin-eosin) revealed low differentiated adenocarcinoma with inclination of apocrine carcinoma showed in Figure 1A, B and C with different magnification. The patient then received an

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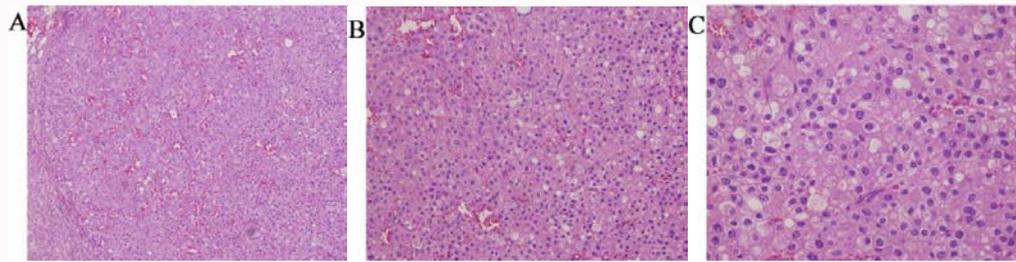


Figure 1: Primary axillary apocrine carcinoma histology. Cells are relatively small with moderately pleomorphic, hyperchromatic nuclei and pale cytoplasm. Intracytoplasmic vacuoles are present ('A, B, C are 100/200/400 magnification respectively).

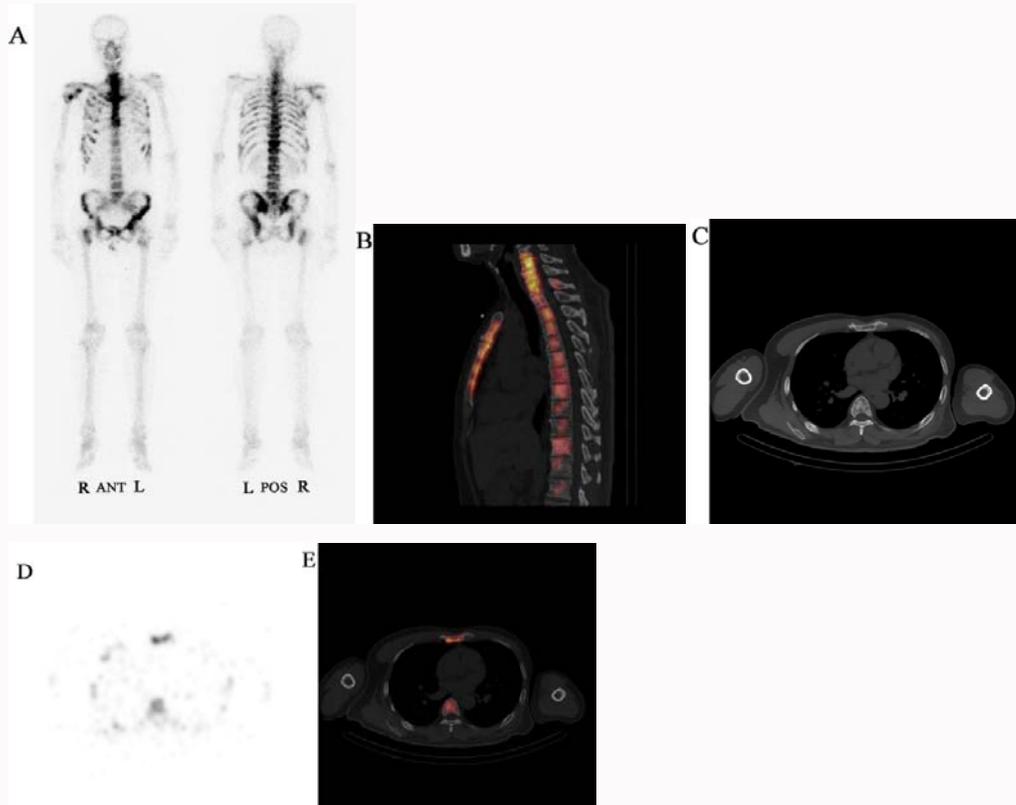


Figure 2: Anterior and posterior whole-body bone scans with ^{99m}Tc methylene diphosphonate of the patient showed high concentration of drugs in both axial skeletons and appendicular skeletons. And in the CT image high density shadow in the skeleton was found where the high radioactivity concentrate in the SPECT image. A is the whole-body scan; B is in sagittal plane; C, D and E are CT, SPECT, SPECT/CT images in axial planes respectively.

adjuvant local radiotherapy at 50 Gy in left mammary and clavicular regions. In November 2014 he presented at our department with the chief complaint of intermittent pain in his back which could persist for 2-3 days before remission.

A SPECT-CT Whole-body bone scan was performed 4 hours after injection of 25 mCi (925MBq) ^{99m}Tc -MDP. The whole-body SPECT image revealed extensive metastatic disease both in his axial skeletons included bilateral ribs, sternum and vertebral, and the appendicular skeletons included right clavicle, right scapula, right humerus head, hip bones and bilateral femurs of the patient (Figure 2A). The SPECT-CT image in the sagittal plane and the axial plane showed that high density shadow in the skeleton in the CT image was found where the high radioactivity concentrate in the SPECT image (Figure 2B, C, D and E).

Discussion

Apocrine carcinoma was first reported by Gates et al. in series

with 5 cases being discovered [1]. In the following years, there are a few reports worldwide to describe the disease in series [2,3]. To our knowledge, there are few reports about the metastasis of apocrine carcinoma. The total amount of metastatic cases worldwide is about 20 [3-7]. Apocrine carcinoma mainly spread through the lymphatic, but hematogenous spread also occurred in 3 cases including liver and brain [6,7]. In our case the patient was found recurrence 5 years after onset and metastasis 3 years afterwards. His metastasis was found in axial skeleton which was aligned with one case reported before, but without more detailed imaging resources [8]. This is the first report with SPECT and CT bone image.

Actually, apocrine carcinoma with bone metastasis is not reported the first time [9,10]. But no author has described and analyzed the bone scan image from the patients with apocrine carcinoma. In this case, the multiple metastatic foci in the skeletons are almost osteogenic metastasis, with the high concentration of radioactivity.

The same character was mentioned in two case reports in China [8,11], without bone scan image, however. Therefore, we have reason to guess osteogenic metastasis is a main style of the bone metastasis of apocrine carcinoma. In addition, in our case, the bone metastasis not only occurred in axial skeletons but also in the appendicular skeletons. The distribution of the bone metastasis is the same as a case report [11], but bone metastasis is also found in long bones in another case [8]. Therefore, the bone metastasis of apocrine carcinoma should not be only limited in axial skeleton.

Generally, patients with apocrine carcinomas are usually more than 50 years of age, with a mean age of 57-61 years [3]. No clear gender, racial or ethnic predilection is observed in the latest research [3]. Clinically, typical lesions of apocrine carcinoma are slow-growing, painless, palpable cystic or solid nodules with normal appearance [4]. Our case was just a movable mass without any skin lesions which made it hard to have any clinical differential diagnosis. Because of its rarity, apocrine carcinoma remains a diagnosis of exclusion. Biopsy is still the gold-standard for diagnosis and several pathological features can help in this process [12].

The treatment of apocrine carcinoma mainly includes surgery, chemotherapy and radiotherapy. Initial surgical treatment is proved to be important; if complete resection is possible, long-term survival can be expected [4,13]. Patients with apocrine carcinoma show different diagnosis which seems no relation with treatment method or clinical course but correlate with degree of tumor differentiation. Those patients with well-differentiated tumor cells did extremely well and could achieve long-term remission with surgery alone. However, patients with moderately or poorly differentiated tumor cells had higher local recurrence rates after resection and were far more likely to have metastasis, just like our case [4,13]. After 8 years later he was firstly diagnosed with apocrine carcinoma, he performed bone scan because of intermittent pain in his back and found bone metastasis. But actually he had already had bone metastasis for some time and there are no bone symptoms. For some patients who had lived more than 5 years, they may have bone metastasis. The whole-body bone scan exams could find bone metastasis earlier and provide guidance for further treatment, and maybe extend the patients' survival time. Therefore, the whole-body bone scan exam must be recommended for patients with apocrine carcinoma, especially with moderately or poorly differentiated apocrine carcinoma, just like what we do for patients with other cancers.

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