

Case Report

Occult renal cell carcinoma with acrometastasis and ipsilateral juxta-articular knee lesions mimicking acute inflammation

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Abstract

Generally, skeletal peripheral metastases below the elbow and the knee are rare. Skeletal metastases to the hand or foot are very rare; but when they do it may be a revealing clinical finding. Purely lytic lesions are commonly seen in metastases from lung, renal, and thyroid tumors, but they are also known to occur in primary myeloma, brown tumor and lymphomas. A 70-year-old man was brought to the emergency department with acute painful swelling involving his right hand and the right knee. Due to significant accompanying soft tissue swellings cellulitis, acute osteomyelitis and gouty arthropathy were included in the initial differential diagnosis. Radiographs showed pure lytic bony lesion with complete disappearance of lower two third of the second metacarpal, trapezium and trapezoid bones of the right hand along with a lytic subarticular lesion of medial condyle of ipsilateral femur. Chest X-ray (CXR) was normal but sonography of the abdomen readily demonstrated a large renal mass, later confirmed at biopsy as renal cell carcinoma (RCC). Clinicians should be cognizant of the strong association between digital acrometastases and renal cell carcinoma in male patients with normal CXR findings. In suspected hand acrometastasis associated with a soft tissue component outside the contours of normal bone, screening the abdomen by sonography should be done prior to bone biopsy and before costly or time-consuming investigations are offered. Metastatic RCC should be included in the differential diagnosis of all unilateral expansile bony lesions of the digit. It is particularly important if such lesion/lesions are accompanied by local inflammation. Screening the abdomen by sonography may be of particular value in such elderly male patient when Chest X-ray shows no abnormality.

Key Words: Acrometastasis, abdominal sonography, peripheral skeletal metastases, renal cell carcinoma

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INTRODUCTION

Metastases from cancers are the most common malignant tumors involving the skeleton.^[1,2] But skeletal peripheral metastases below the elbow and the knee especially to the hands or feet are very rare.^[3] Metastases from lung, renal, and thyroid tumors tend to be entirely lytic. Purely lytic lesions are also known to occur in myeloma, brown tumor and in lymphomas.

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In metastasis of unknown origin the most likely site is the lung or kidney. The origin of digital acrometastases of hand is mostly bronchogenic carcinoma or breast.^[4,5] Hand is the site of metastasis in barely 0.1% of all skeletal metastases.^[5] Subdiaphragmatic neoplasms such as gastrointestinal, visceral, renal, and uterine malignancies rather tend to metastasize to the foot.^[5]

CASE REPORT

A 70-year old man with history of chronic smoking was brought to the emergency department with acute painful swelling involving his right hand and the right knee. There was history of mild fever especially at night. There was no past history of injury, gout, rheumatoid arthritis or tuberculosis. Clubbing of the finger nails were noted ipsilaterally. Movements of the fingers of the involved hand and the knee were painfully restricted. The swelling in the right hand was especially in the first web-space [Figure 1]. In the right knee the swelling was more on the medial femoral condyle. On palpation the swollen areas were grossly tender and doughy. Differential diagnoses considered by the initial physicians attending the case were gouty arthritis, septic arthritis and acute osteomyelitis. Radiographs showed pure lytic bony lesion with complete disappearance of lower two third of the second metacarpal, trapezium and trapezoid bones of the right hand [Figure 2]. Radiograph of the right knee showed pure lytic lesion of medial condyle of femur with subarticular extension [Figure 3]. Chest X-ray showed no abnormal findings. Pain was unresponsive to Non steroidal anti-inflammatory drugs and it was severe at night disturbing his sleep. Intravenous Tramadol was started the next day with partial pain relief. In view of the evolving clinic-radiological findings a new set of differential diagnosis emerged that included metastatic diseases, multiple myeloma and remote possibilities of multi-centric GCT, multi-centric osteosarcoma, brown tumors and disseminated tuberculosis. Blood tests showed anemia, raised sedimentation rate (ESR) and positive C-reactive protein. Sample taken for bacteriology by needle aspiration were negative for sepsis from the inflammatory sites. Skull radiograph did not yield any abnormal findings (expected in myeloma). Sonography of thyroid and parathyroids ruled out any lesions like thyroid primary or parathyroid hyperplasia or adenoma. *Tuberculintest* (Mantoux skin test) widely used for detection of tuberculous infection was negative. Therefore, possibility narrowed down to bone secondary with unknown primary.

Bone metastasis necessitated evaluation for prostate, lung, renal and thyroid primary. Abdominal sonography was done to rule out primary in abdomen



Figure 1: Right hand: Note gross swelling in the first web space and clubbing of the nails

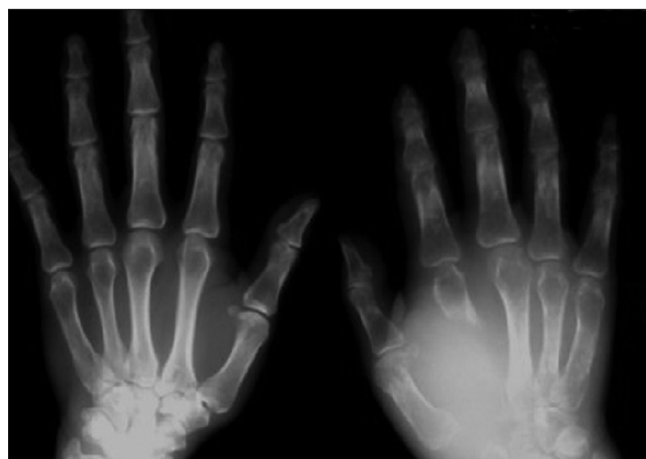


Figure 2: AP Radiograph of hands: Lytic destruction of 2nd metacarpal and distal carpal row on radial side of right hand



Figure 3: AP Radiograph of the right knee: Pure lytic subarticular eccentric destruction. No periosteal reaction

and to look for possible secondaries in liver. Abdominal sonography readily revealed right-sided renal mass

with loco-regional spread. Urine routine microscopy showed few pus cells and RBCs. Therefore primary renal tumor was provisionally diagnosed. Guided needle biopsy subsequently confirmed the renal mass as to be clear cell type of renal cell carcinoma.

Urinary Bence-Jones protein and serum Electrophoresis for M band were negative for myeloma. Bisphosphonate (Osteofos) and nasal calcitonin spray (Calcinase) was started from the next day that provided good pain control within a couple of days. Needle biopsy from the lytic lesions taken later suggested metastatic disease of renal origin. Unfortunately, the patient refused any further treatment or intervention except medications for pain relief, after knowing that he is suffering from a malignant disease despite adequate counselling regarding potential treatment options.

DISCUSSION

The clinical presentation of patients with skeletal metastasis may be variable. Acrometastases are more common in men than in women.^[6] The primary tumors most commonly implicated in order of prevalence are lung, kidney, breast, and gastrointestinal.^[6] Acrometastasis is reported infrequently, with only one out of 1000 bony metastases traveling to the hand.^[7] In the hand the third digit is the most common site and the distal phalanx is the most frequently involved.^[6]

The role of the orthopedic surgeon in evaluating patients with skeletal metastasis is likely to increase, as improvements in treating patients with cancer are prolonging survival. The treating surgeon should follow a logical sequence in evaluating the patient with suspected metastasis to optimize care since such a systematic approach leads to the correct diagnosis in most cases first.^[2]

Acrometastasis is most common from the lungs (37%) and breast (20 percent).^[8] Uterus (10%), kidney and prostate (7% each).^[8] Acrometastasis is rare and accounts for 0.1% of all metastasis and renal cell carcinoma accounts for only 7%-10% of this infrequent site.^[9] It is usually the late manifestation of a disseminated tumor, but may also be the primary manifestation of an occult cancer. Clinically, it may mimic benign tumors or nonneoplastic osteoarthritic conditions, thus resulting in misdiagnosis and improper treatment.^[9] All three histologic subtypes of RCC (clear cell, papillary, and chromophobe subtypes, respectively) have equal tendency for bone metastases; occurring in 7%-11% in all subtypes.^[10]

Our approach in this suspected skeletal pure lytic lesion with hitherto unknown potential primary has

been as follows: (1) a routine work-up, (2) sonography of the abdomen, (3) sonography of thyroid and parathyroid. Such a logical screening method was employed to rule out parathyroid tumors and to rule out primary tumor in thyroid, abdomen, and possible secondaries in liver or spleen before costly and time-consuming investigations are ordered. Ultrasonography of breast may be used similarly in female patient. In approximately 3%-4% of patients diagnosed with osseous metastasis, however, the primary tumor may not be identified even after a biopsy is performed.^[2]

Renal cell carcinoma is characterized by a lack of early warning signs, which in a high proportion of cases are of locally advanced disease or metastasis at diagnosis.^[11,12] RCC metastasizes via the lymphatic or venous routes and the lungs, bones, liver and the brain are the most common sites of metastases.^[12,13] RCC has a high avidity for bone and may release relatively large numbers of bone lesions. But despite this fact acrometastasis is very uncommon in RCC. Scapular metastasis in RCC is relatively common, sometimes giving a clue to the primary site.

In a published study 56 cases of RCC taken up for palliative Surgery for skeletal metastasis the most common sites were proximal femur and pelvis, only three cases in distal femur and none in the digits.^[7] Metastatic renal cell carcinoma of bone is often associated with disabling pain and mechanical failure of the skeleton due to pathological fracture as seen in our case. Although metastasis to bone represents an advanced stage of the underlying disease, it may be associated with relatively prolonged survival in a small minority of such cases.^[7] Radiographic techniques, such as ultrasonography, computerized tomography (CT) and magnetic resonance imaging, may detect asymptomatic renal cell carcinoma more frequently and at a lower stage of disease, when tumors may be resected with curative intent.^[7] Surgical excision is safe and reliable for restoring mechanical bone stability, relieving pain and providing good function in most patients with metastatic renal cell carcinoma who meet the criteria for surgical intervention. Relatively prolonged survival in these cases justifies considering surgical intervention when feasible.^[7] Acrometastasis is most common from the lungs (37%) and breast (20%).^[11] Other sites of origins are uterus (10 percent), kidney and prostate (7% each).^[11] All three histologic subtypes of RCC (clear cell, papillary, and chromophobe subtypes, respectively) have equal tendency for bone metastases; occurring in 7%-11% in all subtypes.^[12]

Soft tissue extension is a feature described especially

(but not exclusively) in metastatic RCC.^[14] This feature may lead to initial clinical provisional diagnosis of inflammatory conditions like sepsis or gouty arthritis. The nonspecific, nonurological clinical, and radiological presentations of these metastatic deposits may mimic other conditions such as osteomyelitis, septic arthritis, gout, pyogenic granuloma, and other skeletal or arthritic diseases. This may result in erroneous diagnosis and delay in instituting the correct therapy. In addition to clinically masquerading as a benign disease, acrometastases may present a diagnostic challenge to the pathologist too.^[14] Interestingly; skeletal peripheral metastases from RCC tend to be lateralized to only one side of the body; commonly to the dominant limb. Therefore, in asymmetrically distributed lytic bony lesions of hand accompanied by inflammation and soft tissue extension (or soft tissue component) outside the contours of normal bone with a normal chest X ray, the attending surgeon should keep in mind the possibility of acrometastasis from RCC. In such cases, screening the abdomen with sonography is a valuable screening test when the bony pain is out of proportion and especially if the patient is male and over fifty years of age. Moreover, metastatic RCC should be included in the differential diagnosis of all unilateral expansile bony lesions of the digit accompanied by inflammation in elderly.

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