Acrometastasis as a rare presentation of diffuse malignancy

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INTRODUCTION

- Metastatic cancer to the bone is a common finding in patients with malignancies.[1]
- Approximately 0.1% of bone metastases occur in the hand and are termed acrometastases.[2]
- Although 10% of acrometastases are the first sign of a previously undiagnosed malignant tumor, this finding most often occurs in late-stage cancer with multi-organ seeding of cancer and often has a life expectancy of six months.[3,4]
- Treatment is often palliative in nature and focuses on ray resection or partial hand amputations to treat persistent pain.[5]
- We present a patient with a history of stage III ductal carcinoma of the left breast presenting to the emergency department for left index finger pain and swelling as a product of a metastatic bone lesion.

CASE PROFILE

▪A 70-year-old woman presented to the ED complaining of left index finger pain and swelling primarily over the proximal (PIP) and distal (DIP) interphalangeal joints for the past two months. Her medical history is significant for stage III ductal carcinoma (ER +, HER2/NEU +, PR -) of the left breast status post left-sided mastectomy, chemotherapy, and radiation approximately four years before this presentation. Current symptoms began spontaneously without a known nidus of infection or traumatic injury to that extremity. The patient had uniform swelling of the left index finger on the exam with significant pain over the PIP joint and mild pain over the DIP joint. There were no open wounds, lacerations, erythema, or warmth of the finger.

▪The initial radiographs showed a mottled lytic appearance of the middle phalanx of the second digit with soft tissue swelling (figure 1). Although MRI was recommended, the patient's insurance did not cover the procedure, and she declined. Approximately two months after the initial encounter, the patient presented with worsening pain, and a new radiograph showed a large lytic lesion over the same area with progressive osseous destruction of the medial cortex and a new nondisplaced pathologic fracture (figure 2). Lab results were unremarkable except for an elevated sedimentation rate (81 mm/hr).

▪The patient was treated by ray amputation of the left index finger (figure 3, 4). Following amputation, the patient experienced right arm pain while undergoing additional imaging, which was a pathologic fracture of the right midshaft ulna. A subsequent PET scan indicated diffuse metastatic disease in the right lower lung, mediastinal and hilar lymph nodes, left adrenal gland, and a pathologic fracture of the right fifth rib. Palbociclib and Faslodex were recommended by oncology for the treatment of metastatic disease.

▪The patient underwent physical rehabilitation to improve function after left index finger amputation and right arm weakness due to the midshaft ulnar fracture. Following the metastatic findings, the patient elected to relocate to her country of origin to spend time with family and follow up with palliative care locally.

PRE- AND POST-OPERATIVE RADIOGRAPHIC FINDINGS

Figure 1. Initial PA and lateral radiographs of the left hand
Initial Radiographs.

Figure 2. Lesion progression approximately two months after initial radiographs.

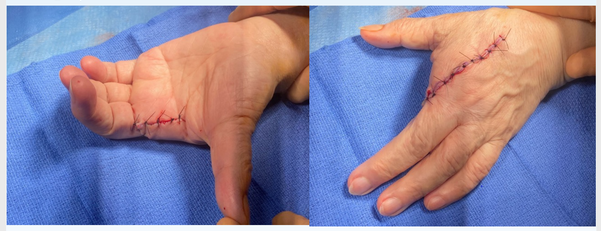

Figure 3. Intraoperative photos of Ray resection of the left index finger.

Figure 4. Postoperative oblique view radiograph of the left hand following successful ray amputation.

WORKUP

▪Acrometastatic lesions may present similarly to inflammatory pathologies such as:
- Osteomyelitis
- Gout
- Rheumatoid arthritis
- Tuberculous dactylitis
- Pyogenic granuloma
- Tenosynovitis

▪Steps following radiograph confirmation of a metastatic lesion:
- Biopsy lesion to confirm malignant origin
- CT, MRI, PET scan to identify primary tumor
- Bone scan for additional assessment of skeletal system
- Conservative treatment may consist of splinting and analgesic drugs
- Final treatment includes amputation to prevent further spread of the lesion and improve quality of life
- Radiotherapy may be considered for pain relief and local disease control

PATHOPHYSIOLOGY

▪Exact pathophysiology of metastasis to hands or feet is unknown
▪Stomeo et al. suggest tumor cells spread hematogenously
- Lung cancer most common primary – direct access to the systemic arterial circulation
- Breast cancer cells pass through capillary beds of the pulmonary and hepatic systems making them rarer

▪Healey et al. suggest acrometastasis occur more commonly in the dominant hand due to receiving more blood flow

▪Joll et al. and Tolo et al. posit trauma-induced acrometastasis by local prostaglandin release that may promote migration and adherence of cancer cells to bone

CONCLUSION

- Acrometastases most often occur in severe malignancy but may be one of the earliest pathologic findings on clinical presentation.
- The prognosis for acrometastases is determined by the progression and management of diffuse disease.
- The true incidence of acrometastases may be higher than reported given the vague and often similar presentation to more common pathologies.

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