Acrometastasis to Two Phalanges of a Single Phalanx and Tibia

A Case Report

Abstract
Acrometastasis or metastasis distal to elbow and/or knee is a very rare event. A 31 y/o female, a known case of breast cancer for 3 years presented with a swollen 4th right finger. Radiographs and then biopsy showed separate metastases to middle and distal phalanges, an extremely rare event. She was managed with ray amputation. Four months later she developed a second metastasis, this time to her left tibia, again a rare site for metastasis, that was managed by closed intramedullary nailing. Sadly, she died of pulmonary metastasis, 9 months after her hand event. Acrometastasis is a rare finding and predicts a short survival.

Keywords: Neoplasm Metastasis, Hand, Tibia, finger

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Introduction
Metastases to hand is very rare, accounting for only 0.1% of all metastatic lesions[1]. This may occur on either wrist or hand bones[2] and generally indicates a bad prognosis, suggesting that the life of patient will be about six months after diagnosis[3]. Acrometastasis (distal metastasis to the elbow and knee) is usually a sign of manifest advanced cancer[4]. Bone is the third most frequent site of metastasis, after lung and liver[5,6]. Primary cancer in 80% of these cases is lung, kidney, breast, thyroid or prostate[7]. In most metastatic cases from breast, lung, or prostate, this is a sign of scattered disease[4,8]. Three most frequent sites of bone metastasis include axial skeleton, spinal cord, pelvis and the upper arm[5]. Metastatic distal to elbow and knee, especially to hand, is rare and might be due to the low red bone marrow in the region[9]. In fact, only one percent of cases metastasis occurs in the hands and legs[1,10]. We are reporting a case of breast cancer with two different metastases to two phalanges of a finger and to the tibia. Unfortunately, the patient died in the center due to lung metastasis.

Case Report
A 31-year-old female with known breast cancer for more than three years referred to the center due to pain and swelling of the two phalanges of the fourth finger of the right hand (Figure 1). She had mastectomy and chemotherapy/radiation, and there was no sign of disease recurrence. The disease stage was reported low upon diagnosis with no tissue invasion. However, she had referred to no specialists since the end of the treatment course. Finger radiography showed nearly complete destruction of the distal phalange and a lytic lesion in the middle phalange (Figure 2). She refused to undergo any other diagnostic test and chose biopsy. Two separate samples from the mentioned phalanges confirmed metastasis to these sites. Ray amputation was recommended and performed due to severe pain (Figure 3).
Four months later, she referred to the clinic with severe pain in the right leg. This time, radiography showed a lytic lesion in the right tibia (Figure 4). The lesion was considered as metastasis and no biopsy was performed. She agreed with a bone scan, which showed that Tibia was the only bone involved (Figure 5). She was referred to an oncologist with a rod inside the channel as closed therapy. Unfortunately, the patient died nine months later after the diagnosis of hand metastasis and due to several metastases in her body. During her last two months, she suffered from dyspnea and pleural effusion. We obtained a written informed consent from the husband of the deceased to report her case anonymously.

**Discussion**

Despite its rare occurrence, hand metastasis is a completely known phenomenon, first detected in an elderly female patient with breast cancer and several metastatic involvements of the wrist bone in 1960(11). It has been reported that the right hand has been more the target of metastasis probably because it is more prone to trauma or because of more blood flow in this area(12). Our patient was presented with metastasis in the right hand as well.

To date, more than 380 cases of hand metastasis have been reported, which is on the rise(1,2) and might be due to increased life expectancy and a greater number of reports in this regard. In a review research, Afshar et al. reported that 74% of the 224 reported cases had a single hand metastasis, the most prevalent of which was distal phalanx. The rest had several hand metastases(2). While numerous cases of with several hand metastases have been reported(11,13-15), to the best of our knowledge, the simultaneous involvement of two phalanges of one finger is extremely rare(16-19). In this respect, there is a possibility of incomplete reporting since simultaneous metastasis is not approvable in most cases. For example, radiography is not presented in one case(17) and topical tumor invasion was probably shown as metastasis in two cases(18,19).
Our case was treated with Ray amputation, which is the treatment of choice for the majority of patients with this condition\(^2\). Tibia is a rare metastatic target for breast cancer. In fact, acrometastasis, which is distal metastasis to the knee and elbow, only occurs in seven percent of all bone metastases. However, the tibia is the most common type with 2.6-5% incidence rate\(^20\). Our patient had three distinct metastases, each one at a rare site.

Unfortunately, the reported case had a short life and died nine months after hand metastasis diagnosis. A new review research has shown that acrometastasis is still a bad prognosis sign and the life expectancy of these patients is 7±7 months\(^4\). It has been also suggested that although age in patients with hand and wrist metastasis is increased, the mean life expectancy of these patients has not changed from 7±7 months\(^2\).

Due to the patient's unwillingness to carry out supplementary studies, we did not perform finger MRI and the bone scan was not carried out in the first stage, which is one of the important limitations of our report. In addition, despite the fact that the bone scan was normal, except in tibia, we cannot be sure that other bones were not involved in the last few months.

**Conclusion**

Acrometastasis, specifically hand metastasis, is an extremely rare phenomenon. Despite the many advances in treating malignancies, this condition still represents a very bad prognosis and a short life expectancy for the patient. On the other hand, collecting and analyzing the group information of these patients could be a proper objective for future studies.

**References**


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**220**