Metastatic Esophageal Adenocarcinoma of the Carpus

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Abstract

We report on a rare case of metastatic esophageal adenocarcinoma to the wrist developing years after diagnosis and treatment of the primary lesion. Awareness of the potential for developing these lesions should be raised, particularly in the absence of systemic symptoms.

Metastatic disease in the hand and wrist is a very uncommon condition. Only 0.1% of metastatic disease to the bones involves the hands.[1] In 1906, Handley[2] was the first to describe metastatic breast carcinoma to the distal phalanges. In a review of metastatic disease, Kerin[1] found that acrometastases arose from the lung in 42% of cases, from the kidney in 11% of cases, and from the breast in 11% of cases. Within the hand, the terminal phalanges were most frequently involved, accounting for 77 (47%) of 163 metastatic lesions.[1] The carpus is infrequently involved with metastatic disease. In a review of Mayo Clinic experience, Amadio and Lombardi[3] found that only 3 of 22 documented cases of acrometastases involved the carpus. Metastatic disease is not routinely considered in the differential diagnosis for hand and wrist pathology, particularly without ongoing management of a primary lesion. We reviewed the literature and found no previous reports of metastatic esophageal adenocarcinoma of the carpus.

Our patient provided written informed consent for us to publish data concerning her case.

Case Report

An 80-year-old right-hand–dominant woman presented to an emergency department with a 1-month history of severe pain and swelling in the left wrist. She denied trauma to the wrist. She was given a diagnosis of wrist cellulitis and arthritis of the scaphotrapezial joint and a treatment regimen of oral antibiotics. She noted initial improvement in the erythema with antibiotic treatment, but the wrist pain and swelling progressed. She followed up with her primary physician, and repeat radiographs of the wrist showed a destructive lesion involving the scaphoid with erosion into the trapezium (Figure 1).

The patient was referred to an orthopedic surgeon, who aspirated the wrist to rule out infection. All cultures were negative, and the patient was referred to the practice of Dr. Wurapa. Magnetic resonance imaging showed a 2.4×3.2×3.4-cm mass that involved the scaphoid, trapezium, and trapezoid bones, with marrow changes extend-

Figure 1. (A) Anteroposterior and (B) lateral radiographs of wrist.

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Figure 2. T_1-weighted magnetic resonance imaging of wrist.

Figure 3. Clinical photograph of wrist.

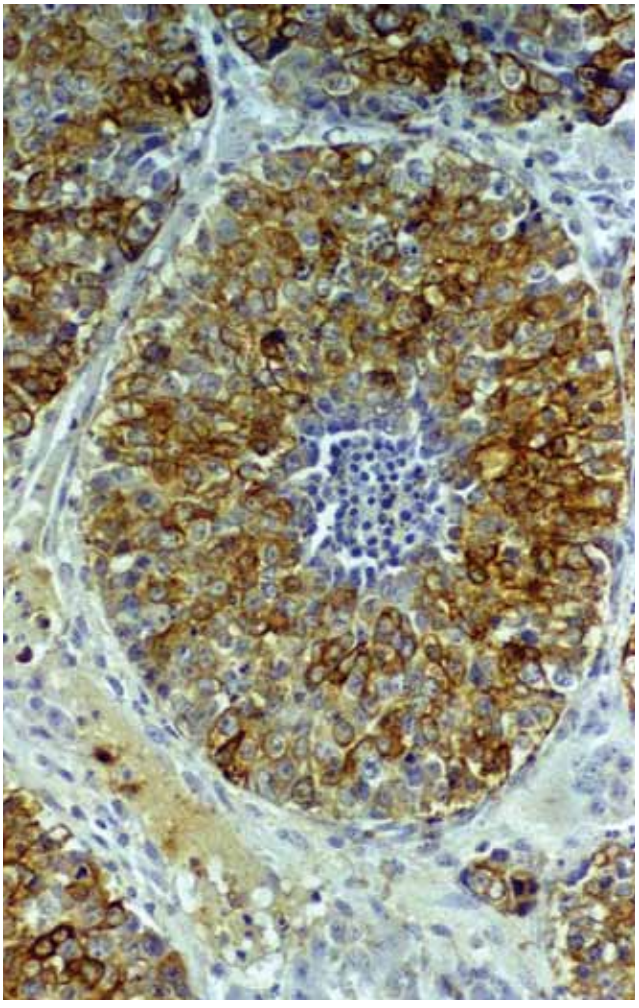

Figure 4. Keratin immunohistochemical stain shows positive (brown) carcinoma cells.

ing into the capitate and lunate (Figure 2). On questioning, the patient did not report a previous history of cancer. Physical examination revealed limited wrist and digital motion secondary to pain. The patient denied a previous history of malignancy and reported no constitutional symptoms. The swelling was mainly localized to the dorsoradial wrist (Figure 3). The skin was intact, without focal lesions. There was no evidence of proximal adenopathy. The patient was neurovascularly intact distally.

The patient was scheduled for incisional biopsy of the lesion. During surgery, a short longitudinal incision was made over the third dorsal compartment. The specimen was taken from both the soft-tissue extension and involved carpal bone. Bacterial and fungal cultures were negative. Intraoperative frozen section revealed a malignant adenocarcinomatous lesion. Permanent pathology revealed a poorly differentiated non–small cell carcinoma consistent with metastatic esophageal adenocarcinoma (Figure 4). Upon further researching her medical records, a biopsy of Barrett esophagitis indicated adenocarcinoma 3 years earlier. The patient had undergone a laparotomy to excise the lesion but had declined palliative radiation therapy. She had been free from clinical sequelae for more than 2.5 years before presenting with left wrist symptoms.

Bone scan and computed tomography of the chest, abdomen, and pelvis showed multiple small nodules in both lungs with distal esophageal constriction. After discussions with the patient and her family, the decision was made to proceed with a below-elbow amputation, with the understanding that this was a palliative and not a curative treatment. The patient also received an esophageal stent and a percutaneous endoscopic gastrostomy (PEG) tube to facilitate nutrition intake. She died from complications related to obstruction from the primary esophageal lesion and metastatic disease 7 months after her diagnosis.

Discussion

There have been fewer than 200 reports of acrometastases to the hand since the first case was described by Handley in 1906.[2-4] In 1939, Coley and Higinbotham[5] reviewed 1211 bony tumors and found that only 47 involved the hands and feet. Of those 47, only 2 were of metastatic origin. Osseous metastases may arise in up to 30% of cancer patients; however, only 0.007% to 0.3% of patients develop acrometastases.[6] It has been suggested that these

numbers may be misleading and underrepresented in the literature.[3] In their extensive review of Mayo Clinic experience, Amadio and Lombardi[3] reported that 22 metastatic lesions to the hand were treated between 1972 and 1983, that only 3 of these lesions involved the carpus, and that there was only 1 case of colon cancer metastasizing to the lunate. The most common primary tumor metastasizing to the hand is lung cancer (40%), followed by kidney (11%) and breast (11%) lesions.[1,3]

Esophageal cancer is an aggressive malignancy, typically presenting with a poor prognosis. Epithelial tumors of the esophagus consist of squamous cell carcinoma and adenocarcinoma. These account for 95% of all esophageal carcinomas. In 2007, approximately 15,560 new cases of esophageal cancer were diagnosed in the United States, and 13,940 deaths occurred.[7] The 5-year survival rate is now 12% to 17%, and the disease is 3 to 4 times more common among men than women.[7] The squamous cell carcinoma subtype is more common in African Americans and the adenocarcinoma subtype more common in Caucasians. Treatments include surgery, chemotherapy, and radiation therapy, either alone or in combination.

Hand and wrist metastases often present with severe pain. Local erythema and edema often lead to misdiagnosis and improper treatment. Lytic lesions must be biopsied and cultured with strict adherence to oncologic surgical principles.[8]

Acrometastases are often considered a preterminal event, as the majority of patients with metastatic lesions to the hand and wrist die within 6 months.[9] In distal phalangeal lesions, amputation usually allows the fastest return to function and the quickest resolution of pain.[8] Although the prognosis with acrometastases is usually poor, prolonged survival is possible.[3] Metastatic lesions to the hand and wrist are rare but must enter into the differential diagnosis when a patient with a history of malignancy presents with a destructive carpal lesion. The differential diagnosis becomes even more challenging in the absence of relevant history or systemic symptoms.

Authors' Disclosure Statement and Acknowledgment

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References

1. Kerin R. The hand in metastatic disease. *J Hand Surg Am*. 1987;12(1):77-83.
2. Handley WS. *Cancer of the Breast and Its Operative Treatment*. London, England: John Murray; 1906.
3. Amadio PC, Lombardi RM. Metastatic tumors of the hand. *J Hand Surg Am*. 1987;12(2):311-316.
4. Tolo ET, Peabody MA, Cooney WP, Wenger DE. Renal cell carcinoma with metastases to the triquetrum: case report. *J Hand Surg Am*. 2002;27(5):876-881.
5. Coley BL, Higinbotham NL. Tumors primary in bones of hand and feet. *Surgery*. 1939;5:112.
6. Healey JH, Turnbull AD, Miedema B, Lane JM. Acrometastases: a study of twenty-nine patients with osseous involvement of the hands and feet. *J Bone Joint Surg Am*. 1986;68(5):743-746.
7. American Cancer Society. *Cancer Facts and Figures 2007*. Atlanta, GA: American Cancer Society; 2007. Available at: http://www.cancer.org. Accessed February 17, 2009.
8. Kann SE, Jacquemin J, Stern PJ. Simulators of hand infections. *Instr Course Lect*. 1997;46:69-82.
9. Carroll RE. Tumors of the hand skeleton. In: Jupiter JB, ed. *Flynn's Hand Surgery*. 4th ed. Baltimore, MD: Williams & Wilkins; 1991:979-989.