
METASTATIC BREAST CANCER IN THE FIRST METACARPAL BONE OF THE NON-DOMINANT HAND: A CASE REPORT.

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ABSTRACT

This report describes the radiologic and histologic findings in a 50-year-old woman who presented with an osteolytic lesion of the first metacarpal bone of the non-dominant hand as the result of metastatic breast cancer. The patient is alive and symptoms free at 3 months after curettage with bone graft, adjuvant chemotherapy and radiation therapy (1-year course of treatment).

INTRODUCTION

Metastatic tumors of the hand or foot are rare. The most frequently encountered neoplasms metastasizing to the metacarpal bones originate in the bronchus, kidney, esophagus, colon and rectum, breast, or prostate gland.¹⁻³ They usually occur as pre-terminal events and often are part of a widespread dissemination of metastases. Their incidence is only 0.0021-0.09 percent of all patients with cancer,⁴ while bony metastases present in approximately 25% of all death from malignancy. Failure to recognize these lesions has led to a delayed diagnosis or an inappropriate treatment or both.

We report a case of breast cancer with a metastasis in the first metacarpal bone of the non-dominant hand treated with curettage, bone graft, adjuvant chemotherapy and radiation therapy.

CASE REPORT

A 50-year-old woman who is right-hand

dominant was diagnosed as invasive ductal carcinoma of her right breast (T2N1M0) on August 1994. Her treatment included a modified radical mastectomy right side and an adjuvant chemotherapy (CMF 6 circles). Until July 1997, she developed swelling and chronic pain on her left wrist. After 2-month of medical treatment of joint pain, a plain film showed a geographic osteolytic destruction in the base of the first metacarpal bone of her left hand, ill-defined border, breaking through cortex, soft tissue swelling, without periosteal reaction (figure 1). Her bone scan revealed multiple bony uptakes. Only curettage with bone graft was performed on September 1997 with the aim of tissue biopsy. After a pathologist report of a metastatic ductal carcinoma (figure 2), the patient refused an amputation of her thumb. She had been further treated with the combination of radiation therapy (2,000 cGy) and chemotherapy (CMF 12 circles) since October 1997. She is still alive and symptoms free at 3 months (December 1998) after 1-year course of treatment.

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Fig. 1. The plain film of left hand showed geographic osteolytic destruction in the base of first metacarpal bone (type IC), with breaking through the cortex. No periosteal reaction was seen.

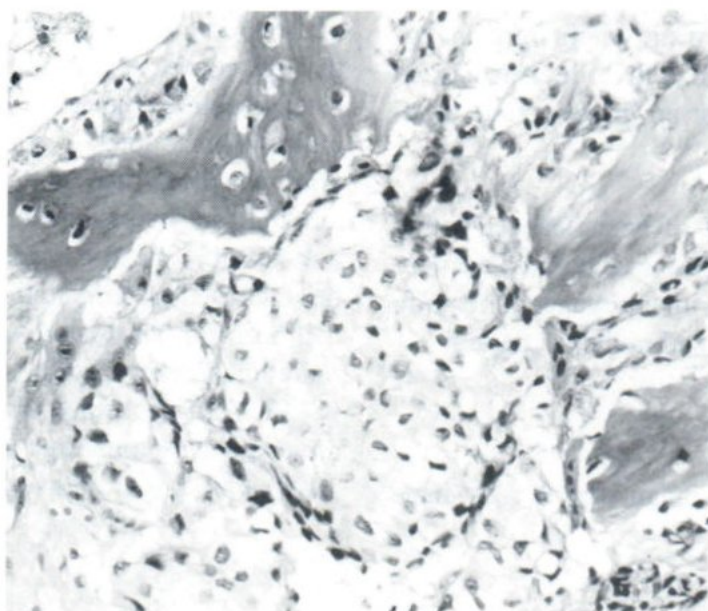


Fig. 2. Well-defined nests of metastatic ductal carcinoma of classical type lie between proliferating bone trabeculae. (x 200)

DISCUSSIONS

The end stages of many malignant neoplasms are associated almost inevitably with metastases and the skeleton is very commonly affected. The most skeletal metastases are hematogenous in origin. Any primary tumor may metastasize to bones, but in woman the most important carcinoma is breast cancer, from which secondary deposits develop in about two-thirds of the cases.

The radiographic appearance of metastatic disease varies from lytic, blastic, or mixed lesions typically in the marrow space. Osteolytic metastases are the most frequent pattern encountered, especially in breast and lung primaries.⁵

As mentioned, the acrometastases (metastatic lesions in the hand or foot) are rare. The clinical findings commonly included pain, swelling, and erythema. There are 2 points of her presentation to be considered: first, this lesion was the first evidence of an occult primary neoplasm; and second, it occurred in the non-dominant hand. Healey, et al¹ found that only 14 percent of all acrometastases presented as the first evidence of metastasis and metastases to the dominant hand were twice as common as to the non-dominant hand (maybe due to more blood flow in dominant hand).

Breast cancer is one of the most common primary tumors in women but its metastasis shows an unusual affinity for bone. The lesions are usually osteolytic and commonly multiple. About 10% of metastases from breast cancer produce osteoblastic lesions and in another 10% the lesions are mixed. Sclerosis may occur in lytic lesions following successful hormone or radiation therapy.⁶

Three patterns of lytic destruction have been described: geographic, type I; moth-eaten,

type II; and permeative, type III. The geographic osteolytic destruction (type I) was divided into 3 types; type IA, well-defined border with sclerosis; type IB, well-defined border without sclerosis around the periphery of the lesion; and type IC, ill-defined border. This case showed to be type IC lesion that showed greater biologic activity and more likely that the lesion was malignant.⁷ The pathological section is well-defined nests of metastatic ductal carcinoma of classical type that lie between proliferating bone trabeculae (figure 2).

The surgical treatment might be inadequate; at least amputation of the first metacarpal bone and thumb was recommended.⁸ However, the combination of radiation therapy and chemotherapy appeared to be quite well in this case. No more lesions, no complication, and symptoms free occurred along 1-year course and 3 months after. The median survival time of hand metastasis was 6.2 months.¹

Finally, if her first physicians recognized this condition, she could be treated appropriately 2 months earlier.

CONCLUSIONS

Metastatic breast cancer in the hand is a rare entity. The presentations of this case are also less common. The combination of radiation therapy and chemotherapy appeared quite well even inadequate resection. This condition should be considered earlier in such a case of joint pain or swelling with a previous history of malignancy.

REFERENCES

1. Healey JH, Turnbull ADM, Miedema B, et al. Acrometastases. *J Bone Joint Surg.* 1986;68:743-6.

2. Kerin R. Metastatic tumors of the hand: A review of the literature. *J Bone Joint Surg*, 1983;65:1331-5.
3. Libson E, Bloom RA, Husband JE, Stoker DJ. Metastatic tumors of bones of the hand and foot: A comparative review and report of 43 additional cases. *Skeletal Radiol*, 1987;16:387-92.
4. Chung TS. Metastatic malignancy to the bones of the hand. *J Surg Oncol*, 1983;24:99-102.
5. Thrall JH, Ellis BI. Skeletal metastases. *Radiol Clin North Am*, 1987;25:1155-70.
6. Watt I. Tumours and tumour-like conditions of bone (1). In: Sutton D, ed. *A textbook of radiology and imaging*. 5th Ed. London: Churchill Livingstone, 1992:128-9.
7. Moser RP, Jadewell JE. An approach to primary bone tumors. *Radiol Clin North Am*, 1987;25:1049-94.
8. Kobus RJ, Leinberry C, Kirkpatrick WH. Metastatic Renal Carcinoma in the hand: Treatment with preoperative irradiation and ray resection. *Orthop Rev*, 1992;21:983-4, 990-5.
9. Bouvier M, Lejeune E, Bonvoisin B, Biron P. Distal bone metastases of the upper limb. (Abstract) *Sem Hop*, 1982;58:2736-9.
10. Drewes J, Sailer R, Schmitt GA. Cancer metastases of the hand. (Abstract) *Hand chirurgie*, 1981;13:296-304.