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Review on Breast Cancer Patients Bone Lesions and Bone Disorder

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Abstract

Breast cancer metastases most often occur in the bone. There are mimickers of metastatic bone disease, and some of them have already been defined. They may cause patient anxiety, ineffective or delayed therapy, and unnecessary biopsies. The development of breast cancer in a patient with a history of osteopetrosis, a sclerotic bone disease, is the subject of this article. Her Osteopetrosis was mistaken for metastatic bone disease three times on imaging studies after she had breast cancer treatment because the radiologist didn't have a complete clinical history before interpreting the tests. There are a number of distinct and generalized bone conditions that have the potential to resemble bone metastasis in breast cancer. Brown fat, osteopoikilosis, vertebral osteomyelitis, and myositis ossificans are examples of discrete conditions.

Keywords: Breast cancer; Osteopetrosis; Myositis

Introduction

Mastocytosis and, currently, osteopetrosis are examples of generalized conditions. Metastatic disease to bone may be mistaken for other sclerotic bone disorders. The most typical examples with distinctive radiographic features are listed. When interpreting new imaging studies, a patient's past medical history, including sclerosing bone disorders and previous imaging findings can help reduce unnecessary confusion [1]. It is recommended that patients with sclerosing bone disease inform ordering and interpreting physicians of any potential misinterpretation. A worrying mammogram revealed a woman, 40, who had a family history of breast cancer, fragility fractures, osteopetrosis (OPT) presumed autosomal dominant type II, and spondylolisthesis. A grade 3 invasive, hormone receptor-positive and HER2-neu-amplified ductal carcinoma was discovered through a core biopsy. Prior to treatment, she did not have staging scans [2]. She had a mastectomy with lymph node dissection, which revealed a Stage IIA tumor that measured 0.6 centimeters in diameter and was positive in one of eleven lymph nodes. She received chemotherapy as an adjuvant that included doxorubicin and cyclophosphamide, paclitaxel, trastuzumab, and tamoxifen. Despite the fact that BRCA testing came back negative, she underwent bilateral oophorectomies and contralateral mastectomy as primary prophylaxis due to her family history of the disease [3].

Results

Since her cancer diagnosis eight years ago, she has not had any recurrences. Multiple times, her OPT was mistaken for metastatic disease. She had chronic left ankle pain from a stress fracture a year after being diagnosed, and an MRI revealed non-specific marrow changes indicative of a metastatic lesion. Tc-99 m bone output was steady with Pick instead of osteoblastic sickness. She had a bone biopsy, and the results confirmed that there was no evidence of metastatic disease [4]. She presented to an outside facility with back pain three years after being diagnosed, and a CT abdomen/pelvis showed "diffuse sclerosis of the visualized bones, nonspecific but cannot rule out sclerotic metastases." A FDG-PET scan revealed physiologic uptake throughout the axial and proximal appendicular skeleton and a resemblance to the known OPT of diffuse bony sclerosis.

She went to another ED outside of the hospital six years after being diagnosed with a rib fracture. "Diffuse osseous metastatic disease no evidence of fracture" was found on chest radiography. With no other signs or recurrence, a second FDG PET scan revealed osseous structures that were diffusely sclerotic and hyper metabolic, indicating degeneration rather than metastasis. Alkaline phosphatase levels remained normal in each case [5].

Discussion

Regardless of their medical history, patients undergo imaging studies for a variety of reasons, which may yield incidental findings. It is best to interpret these images within the context of previous radiographic and clinical history. A whole-body Tc-99 m bone scan or sodium fluoride PET/CT scan for localized bone pain or enhanced alkaline phosphatase are recommended by the NCCN for the evaluation of a bone lesion in a patient who has a history of breast cancer (Network, N.C.C. 2020). If a prior FDG PET/CT reveals bone metastasis on both the PET and CT components, a tc-bone scan and specialized PET scan are unnecessary [6-9]. OPT, a sclerosing bone disorder that results in radio-dense or diffusely sclerotic bone, served as the clinical background for this instance. Osteoclast-mediated bone resorption inhibits physiological structural remodeling in response to mechanical stresses in OPT, resulting in increased "brittleness" of the bone and fractures OPT comes in two main varieties. Autosomal recessive Select is an illness of life as a youngster happening in 1 for each 250,000 live births [10].

Conclusion

A bi-allelic mutation in the TCIRG1 gene, which encodes for the 3 subunit of the vacuolar proton pump and is frequently fatal in infancy, is responsible for approximately half of these cases. One in 20,000 live births has autosomal dominant OPT, also known as Albers-Schneider disease, which is typically brought on by mutations in the chloride channel gene CICN7. Mutations in CAII, OSTM1, SNX10, PLEKHM1, TNFSF11, ClC29A2, and IKBKG are the causes of rarer forms of OPT. On imaging, autosomal dominant OPT of-ten presents with a fracture

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in adolescence or adulthood and distinct osteosclerosis. LDH, the brain creatine kinase isoenzyme (BB-CK), and elevated tartrate-resistant acid phosphatase are examples of abnormal laboratory findings. Serum calcium can be low in severe cases, leading to higher levels of parathyroid hormone and 1,25-hydroxyvitamin D. Given the hematopoietic origin of osteoclasts, allogeneic stem cell transplant is a treatment option, but it is associated with significant morbidity and mortality. Assisting with calcium and phosphate homeostasis with calcitriol, cholecalciferol, and calcium as needed are additional management strategies.

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