

Case series of osteoblastic metastasis as a hidden culprit of high bone mineral density

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Introduction: High bone mineral density (BMD) with elevation of alkaline phosphatase (ALP) usually implicates benign metabolic bone disease. Here we present rare 3 cases of gastric cancer with osteoblastic metastasis with high BMD. **Case:** The first case was a 69-year-old man with early gastric cancer who underwent subtotal gastrectomy. About 7 years later, his ALP and PTH was elevated, and BMD was increased. Positron Emission Tomography (PET) and bone scan showed diffuse uptake on whole spine and pelvis which was suspicious for multiple bone metastasis (Figure 1). However, bone biopsy revealed marrow fibrosis without tumor involvement. After 10 months, he was presented with anemia and pleural effusion which turned out to be metastasis involving pleura and bone marrow from gastric cancer. The second case was a 55-year-old woman with advanced gastric cancer who underwent total gastrectomy. After 7 years, she had elevated ALP, increased BMD, and hypocalcemia. In PET and bone single photon emission computed tomography, multiple osteoblastic and osteolytic lesions were found. With high suspicion of gastric cancer recurrence as bone metastasis, she received chemotherapy. After the treatment, both clinical symptoms and laboratory findings – high tumor marker and ALP, and hypocalcemia – were improved. The third case of a 63-year-old woman had no history of previous gastric cancer but had rheumatoid arthritis on chronic use of immunosuppressant agents. The agents were stopped due to sudden elevation of ALP and high BMD. After 2 months, she complained of severe anterior chest wall pain. Computed tomography of the chest, magnetic resonance image and PET scan revealed multiple osteoblastic bone metastasis. After endoscopic biopsy at stomach, she was diagnosed of poorly differentiated gastric cancer. **Discussion:** In the presented cases, elevation of ALP, hypocalcemia, and high BMD were caused by abnormally elevated bone formation due to osteoblastic metastasis. Clinicians should consider osteoblastic metastasis in patients with cancer history since the prognosis of osteoblastic metastasis is very poor despite its low prevalence.

