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On the Cover

What's the diagnosis?

A dialysis dependent female presented to the emergency department with acute back pain and lower extremity weakness. Due to lack of insurance she underwent dialysis 1-2 times a week and received insufficient treatment of her bone disease. She had persistent hyperphosphatemia, hypocalcemia and hyperparathyroidism. On physical exam she had a palpable mass of the lower rib cage and tenderness over the thoracic spine. Laboratories were remarkable for serum calcium of 10.3 mg/dL (normal 8.5-10.2 mg/dL) and serum PTH of 2476 pg/mL (normal 10-65 pg/mL). MRI demonstrated lytic masses causing cord compression at T3 and spinal canal stenosis at T12.

She underwent urgent neurosurgical resection at T3 and pathology confirmed brown tumor with giant cells and hemosiderin. One week later she had a subtotal parathyroidectomy (3 of 4 glands removed). Pathology showed enlarged, hypertrophied glands. MRI months later showed regression of the T12 tumor. Her PTH has remained at goal and calcium and phosphorus are at target on supplementation.

Left Image: brown tumors causing spinal cord compression at T3, spinal canal stenosis at T12

Middle Image: tan-brown soft tissue fragments mixed with spindle cells and proliferation of giant cells

Right Image: post-operative changes at T3 and regression of T12 tumor after parathyroidectomy

Brown tumors can be localized to any skeletal bone, commonly the maxilla/mandible. Occurrence in the vertebral column is unusual; especially with neurological manifestations. The pathophysiology leading to brown tumors is complex and medical management consists of treating the underlying secondary hyperparathyroidism. When medical management fails, parathyroidectomy is necessary.

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