

## IMAGES IN RHEUMATOLOGY

## Severe tertiary hyperparathyroidism as a rare mimicker of sacroiliitis

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A 42-year-old female patient was referred for rheumatology evaluation due to suspected sacroiliitis incidentally detected on a pelvic computerized tomography (CT). On the appointment, she reported sporadic mechanical low back pain over the past year. Her medical history was notable for chronic kidney disease (CKD) diagnosed four years earlier in the post-partum of her second pregnancy, secondary to segmental and focal hyalinosis, and she had been on peritoneal dialysis since then. As a complication of CKD, the patient developed tertiary hyperparathyroidism, suggested by persistently normal-high serum calcium, normal serum phosphate and parathyroid scintigraphy demonstrating increased uptake in the inferior parathyroid glands, which was further complicated by the formation of a dorsal brown tumor (Figure 1) and by the occurrence of uremic calciphylaxis. A few months

before rheumatologic evaluation, she underwent total parathyroidectomy and brown tumor resection. Pelvic CT images (Figure 2) were reviewed with the radiology team, revealing prominent gross erosions of the iliac articular surfaces of the sacroiliac joints (Figure 2, arrow heads in lower panel) surrounded by a sclerotic margin (Figure 2, arrows in upper panel). Given the absence of inflammatory low back pain and the patient's history of severe hyperparathyroidism, the sacroiliac changes were interpreted as most likely secondary to metabolic bone disease rather than inflammatory spondyloarthropathy.

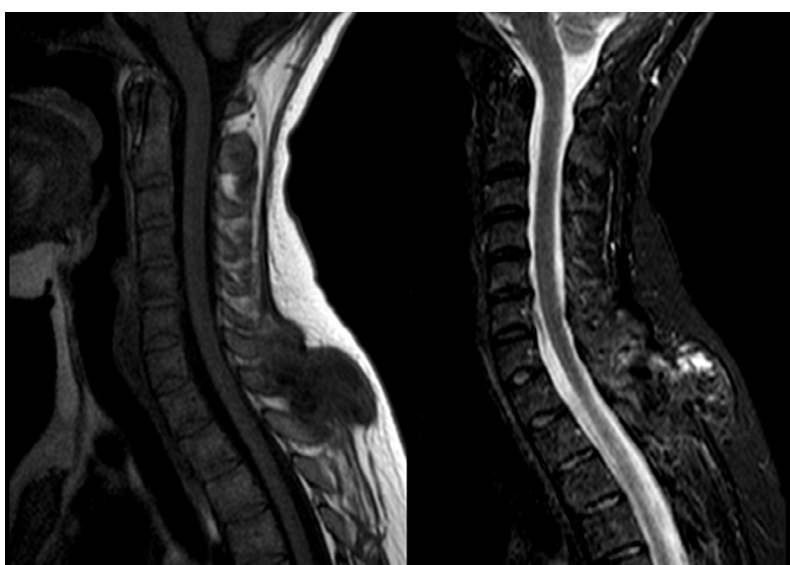
In hyperparathyroidism, elevated parathyroid hormone (PTH) levels stimulate osteoclastic bone resorption, particularly in subchondral regions<sup>1</sup>. As a result, CT findings in hyperparathyroidism may include widening of joint spaces and irregularity of the articular surfaces<sup>2</sup>. Inflammatory sacroiliitis in long-standing axial spondyloarthritis typically involves both the iliac and sacral sides, characterized by erosions, space narrowing, and ultimately, ankylosis. In contrast, the subchondral bone reabsorption/erosions in hyperparathyroidism are usually limited to the iliac side, like in

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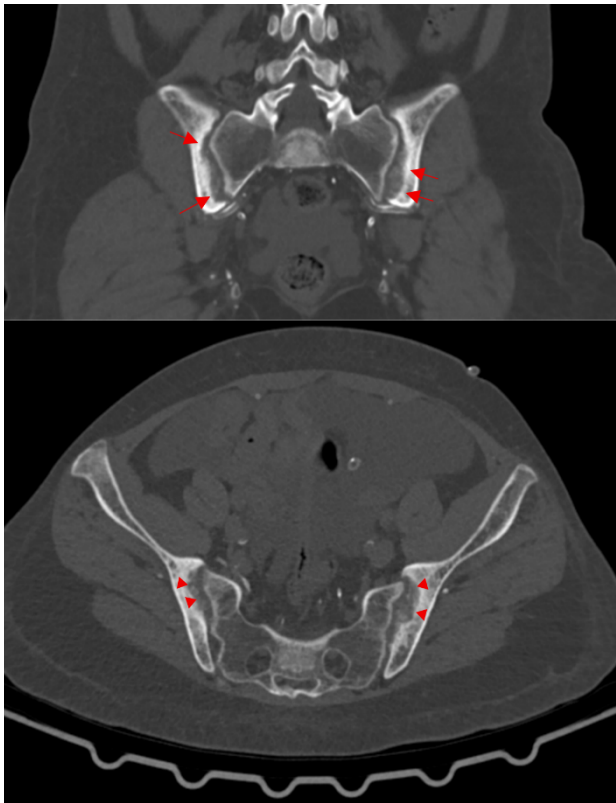
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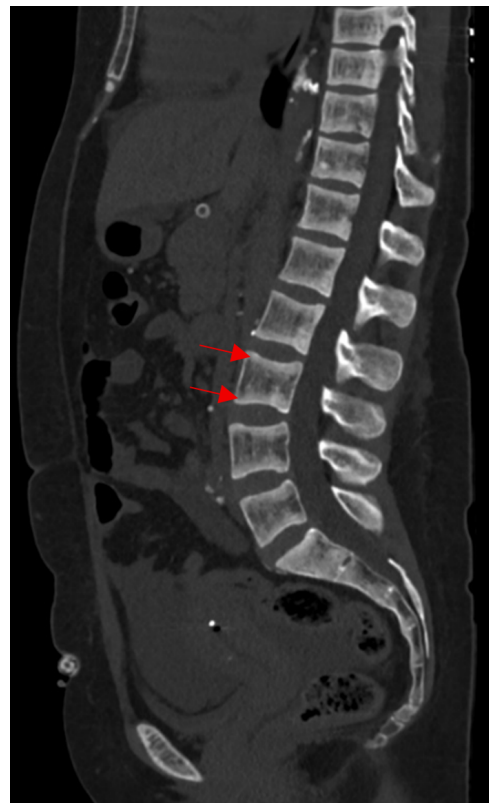
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**Figure 1.** Cervical brown tumor - Magnetic resonance imaging (MRI) of the cervical and thoracic spine showing a soft tissue mass in the posterior paravertebral region, extending between the levels of C7 and T1, apparently arising from the apex of the T1 spinous process, measuring 42 × 29 mm. The lesion exhibits signal intensity similar to skeletal muscle on T1-weighted images, and hyperintensity on STIR sequences, with internal areas of cystic nature.



**Figure 2.** Sacroiliac joint CT imaging in coronal (upper panel) and axial (lower panel) views, showing large bilateral erosions on the iliac side (arrow heads in lower panel), surrounded by a sclerotic margin (arrows in upper panel).



**Figure 3.** Sagittal CT of lumbar spine showing sclerotic bands along the superior and inferior vertebral endplates (arrows), with an intervening band of central lucency, resulting in the characteristic striped 'rugger-jersey' appearance.

this patient, a pattern more suggestive of metabolic disease<sup>2,3</sup>. Despite these differences, the differential diagnosis may be challenging. This patient presented with a thoracic brown tumor and 'rugger-jersey' spine (Figure 3), which are also characteristic osseous changes of hyperparathyroidism, supporting the establishment of the final diagnosis<sup>2</sup>. This case highlights the importance of integrating clinical presentation, laboratory results, and imaging findings to accurately differentiate sacroiliac changes caused by metabolic bone disease from those caused by inflammatory sacroiliitis.

## REFERENCES

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