Vertebral Osteoid Osteoma/Osteoblastoma: An Unusual Combination of Tissue Edema and Atrophy

Shroff, M. M. · Blaser, S. I. · Wood, B. · Hedden, D. · Hiew, C. · Chuang, N. A.
Hospital for Sick Children
Toronto, ON, CANADA.

Purpose
1) Unusual imaging findings of soft tissue swelling and increased fatty replacement of paraspinal musculature is present in association with spinal osteoid osteoma and osteoblastoma on MR imaging and is an extremely useful sign which suggests the diagnosis. 2) These soft tissue changes correlate well with clinical findings of pain, response of pain to aspirin, and scoliosis.

Materials & Methods
This is a case analytical study, in which sequential patients with surgically proved diagnoses were identified via a report text word-search program. Case records, CT and/or MR studies were available in 14 patients (seven males and seven females, age range of 12 to 17 years) from the last 8 years. Imaging features were reviewed in detail with documentation of presence or absence of soft tissue reactive changes.

Results
Eleven out of 14 patients showed a combination of soft tissue inflammation along with fatty replacement of adjacent paraspinal muscles. In two patients there were no soft tissue changes whereas one patient showed only soft tissue edema. Soft tissue edema with osteoid osteomas/osteoblastomas have been well documented in the appendicular skeleton due to increased production (up to 70 times the normal) of prostaglandin (PGE2) and prostacyclin (PGE1). This inflammatory response has long been known to respond well to nonsteroidal prostaglandin inhibitors. Soft tissue changes with bulky fatty replacement in association with vertebral osteoblastomas and osteoid osteomas has not been described and the frequency of such soft tissue changes has not been established. Previous case reports have described only soft tissue edema which was reported to be confusing and often leading to a misdiagnosis.

Conclusion
In our experience, most vertebral osteoid osteomas and osteoblastomas are associated with soft tissue changes, particularly an unusual combination of adjacent soft tissue edema and bulky fatty replacement of adjacent paraspinal muscles. Unchecked inflammation in association with vertebral lesions leads to pain provoked muscle spasm and scoliosis, clinical features which correlate well with soft tissue changes seen on MR imaging/CT.

References
2. Lefton DR, Torrisi JM, Haller JO. Vertebral osteoid osteoma masquerading as a malignant bone or soft tissue tumor on MRI. *Pediatr Radiol* 2001;31:72-75