

Case Study of the Month: June 2010

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Diagnosis: Osteoid Osteoma Right Tibia

History of Present Illness: The patient is a pleasant 19 year-old male with who was referred to the pediatric orthopaedic clinic from his primary physician with an intermittent right leg pain which he rate a 7-9/10. He mostly complains of pain at night. Tylenol or Motrin usually relieves this pain in the appropriate dosing as indicated by the package insert. He infrequently complains of pain after strenuous activity. He reports no trauma. He is otherwise healthy with no significant past medical history.

Physical Exam

On physical examination, pt is a well-developed, well-nourished 19-year-old male in no acute distress. Height is 158.4 cm and weight is 65kg. Temperature is 36 degrees Celsius. Examination of her head and neck was unremarkable. He has full range of motion of her cervical spine, shoulders, elbows, wrists, fingers, hips, knees, ankles, and subtalar joints with the exception of the left lower extremity. He is able to perform a full toe and heel walk and deep knee bend without difficulty. Neurological and Neurovascular exams are within normal limits. He can perform a full heel and toe walk and recover from a deep knee bend without difficulty. He walks with a normal gait with no antalgic component. No pain with palpation in right tibia/fibula areas.

Radiographs:

Plain X-rays:

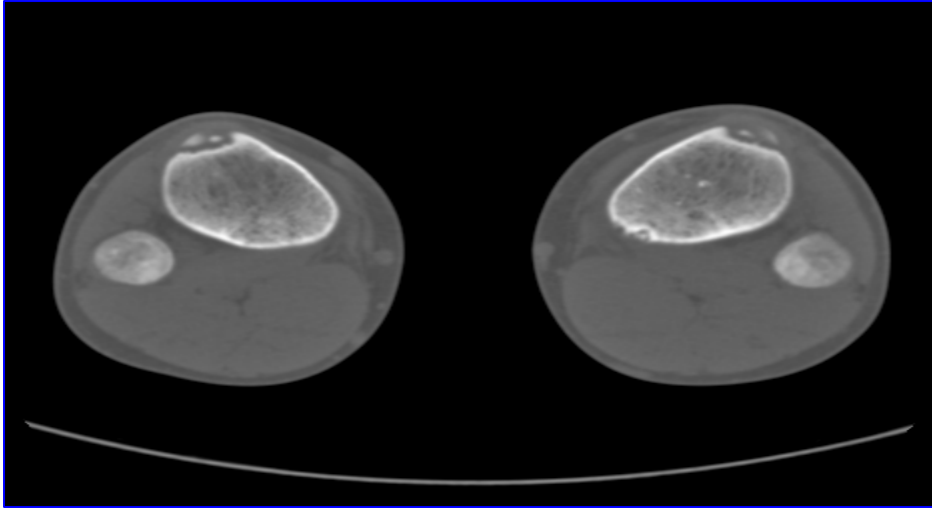
Frontal and lateral views of the left tibia/fibula were obtained. There is no evidence of fracture or misalignment. No radiopaque foreign bodies are identified. There is a localized area of periosteal bulging of the metaphysis of the proximal lateral tibia that measures 1.7 x 3.8 cm is seen only on the frontal view. There is associated adjacent periosteal thickening.



CT Scan

There is a small lucent cortically based lesion in the proximal lateral metaphysis with a central bony nidus. The cortex does not completely surround the posterior margin of the lesion and is not definitely thickened. There is a small amount of smooth periosteal thickening along the posterior cortex of the right tibial diaphysis. No discrete fracture line is identified. No evidence of bony destruction is identified. The

remainders of the visualized right and left tibias appear normal and symmetric.



Impression/Plan:

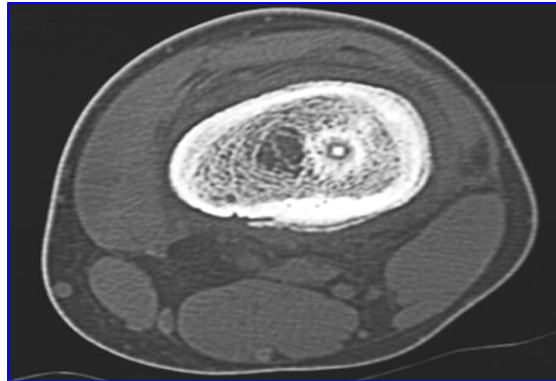
19 y/o male with history of right proximal tibia/knee pain, pain is mostly at night, relieved by salicylates. No trauma, otherwise healthy child. Diagnosis very suspicious for Osteoid Osteoma. Plan was to take pt to the OR for an C-Arm fluoroscopic guided biopsy and removal of central possible nidus (as indicated by x-ray and CT). Explained risks and benefits of surgery. Pt was taken to OR and had uneventful surgical intervention. Diagnosis right proximal tibial osteoid osteoma. The final pathologic report from was consistent with cortical bone and remnants of nidus. Clinically he is free of pain. He is very happy with the result of the surgery. He was advised to continue his physical therapy and to use his crutches. He is allowed to full weight bear only with the crutches. We would like to see him back in 8 weeks with new AP and lateral x-rays of the right tibia. He was advised to feel free to contact our clinic to schedule an immediate appointment if any problems occur during this interim.

Brief Discussion

Pediatric musculoskeletal tumors are uncommon, and when they occur, usually benign. They are often overlooked as the cause of the patient's pain and diagnosis is often delayed. Bone tumors can be classified according to their tissue of origin. An osteoid Osteoma is a bone-forming tumor. They usually affect patients between the ages of 5-20 years. The male to female ratio is 2:1. 70% + osteoid osteomas are located in long bones most commonly in the femur and tibia (as in this patient). Osteoid osteomas present with pain that is characteristically worse at night. This pain is often relieved with a dose of Acetaminophen or Ibuprofen. If left alone the lesion may cause growth disturbance, leg length discrepancy, or bowing of the affected bone.

Osteoid osteomas often involve the metaphyseal and diaphyseal regions of long bones. In most cases the lesion is intracortical and may appear on a conventional radiograph as a very small (less than 1 cm in diameter), elliptical to round radiolucent area within the cortex, termed a *nidus*. This *nidus* is typically surrounded by a dense region of sclerotic

bone that usually extends for several centimeters beyond the *CENTRAL nidus*. The nidus is best demonstrated with CT scan. Radiographically, the differential diagnosis includes Osteoblastoma, Brodie's abscess, and stress fracture.



On gross examination, osteoid osteoma is a small round or oval, reddish-brown tumor. Histological examination reveals a distinct demarcation between the nidus and the surrounding bony reaction.

Treatment is usually based on symptoms. These lesions tend to "burn out" with time, however most patients do not opt for this treatment plan because it leaves the patient in pain being treated with medication for multiple years. Treatment has progressed with technology, the gold standard of treatment used to be complete surgical removal of the nidus with en bloc excision. Now, with the advent of intraoperative O-arm CT fluoroscopy, the surgery can be done with minimally tissue disruption. Surgery usually brings immediate and complete relief of symptoms.

