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Case Report

Magnetic Resonance Imaging Findings in Osgood Schlatter Disease: A Case Report

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Abstract

Osgood–Schlatter disease is a tibial tuberosity traction apophysitis caused by recurrent quadriceps femoris muscle tension. It is the most common cause of knee discomfort in children aged 10-15. It is often benign and self-limiting. The stress on the patellar tendon at its point of insertion is the primary cause of this ailment. It is a self-limiting disorder that affects a lot of teenagers. Although our case is similar to the cases reported in the literature, we aimed to present typical magnetic resonance imaging findings.

A 17-year-old male adolescent patient was referred to our clinic because of pain and swelling in the left knee. The patient had knee pain lasting for 10 days. The level of swelling and tenderness was observed in the physical examination. Magnetic resonance imaging examination was performed after a suspicious cortical irregularity was observed on bidirectional knee radiography. In the magnetic resonance imaging examination, we diagnosed the patient with irregular thickening of the tuberositas tibiae and intense edema around it. Non-steroidal anti-inflammatory drugs and rest were recommended to the patient.

Osgood–Schlatter disease is a clinical condition that should be differentiated from many diseases such as avulsion fracture due to the difference in treatment methods.

Keywords: adolescent, knee pain, magnetic resonance imaging, Osgood–Schlatter disease, tendinopathy

INTRODUCTION

Osgood and Schlatter initially described Osgood–Schlatter disease (OSD) in 1903. The patellar tendon's insertion on the skeletally immature tibial tubercle causes OSD, which is a traction phenomenon caused by repetitive quadriceps contraction. In youngsters aged 10-15, it is the most common cause of knee discomfort.[1] It is a disease that affects children. Affected children typically have a history of pain below the patella at the insertion of the patellar tendon, which is exacerbated by sports or other activities such as running or jumping but relieved by rest.[2]

Because of the lack of a specific etiology and thus definition, some physicians may have difficulty distinguishing OSD from tibial tubercle fractures.[3] In this example, patients presented to the emergency department with complaints of knee pain had an OSD that may be mistaken for a fracture.

CASE PRESENTATION

A 17-year-old male patient, who has been a basketball player for 5 years, applied to the orthopedics clinic with the complaint of left knee pain. It was learned that the patient's pain had been increasing for 10 days. Physical examination revealed swelling and tenderness at the tuberositas tibiae level. Other examinations and laboratory values were normal. We were consulted for a magnetic resonance imaging (MRI) study due to the cortical irregularity seen on the radiograph in the proximal tibia. In the MRI examination, fluid intensity in the suprapatellar bursa and intense edematous signal changes in T2 sequences were observed at the tuberositas tibiae level in the proximal tibia (Figure 1, 2). The patient was recommended non-steroidal anti-inflammatory drug therapy and rest. In the first follow-up after 3 months, there was a significant regression in his pain, except for intense physical activity, and in the second follow-up at 6 months, the pain completely disappeared.

DISCUSSION

Osgood–Schlatter disease is a benign, self-limiting condition that commonly affects adolescents who participate in sports. Even though OSD is a common occurrence, its consequences are rarely seen because it is a self-limiting disorder. In research by Krause et al[2], 90% of patients treated with conservative therapy had all of their symptoms resolved within a year of commencement. When the tibial tubercle apophysis ossifies, it normally resolves by the time the patient reaches the age of 18. However, in about 10% of individuals, despite all conservative efforts, the symptoms persist until maturity.[4]

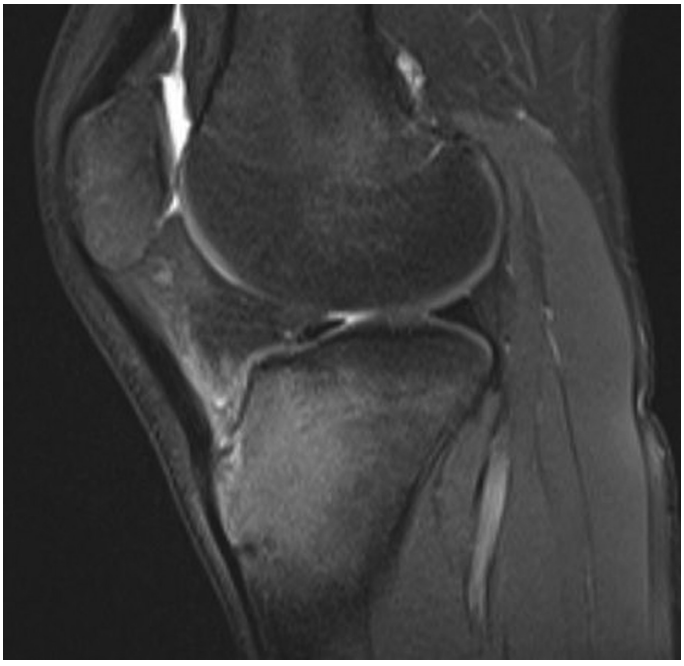

Figure 1. In the sagittal T2 image, fluid extending to the suprapatellar plane and bone edema in the tuberositas tibiae were observed.

As in our patient, OSD is more common in boys than girls and usually presents with knee involvement.[5] This is related to the ossification of the tibia. Anamnesis and physical examination are very important to explain the etiology. Patients often complain of pain that increases with exercise. In our case, we saw these complaints in the basketball player.

Radiological findings may be normal, but in most cases, irregularity in the tibial tubercle, patellar tendon thickening, soft tissue swelling around the patellar ligament, and infrapatellar fat pad obliteration can be seen in the lateral radiograph in most cases. In MRI examination, edematous changes can be observed in T2 sequences and irregularities in bone structure can be observed in T1 sequences. Magnetic resonance imaging findings were the same in our case.

Differential diagnosis should include trauma, inflammatory arthropathies such as septic arthritis, rheumatoid arthritis and Reiter's syndrome, malignancy, patellar subluxation, patellar tendonitis, osteochondritis dissecans, and meniscal diseases. In our patient, we avoided these diagnoses by means of laboratory values, clinical features, and radiological findings and diagnosed OSD. It is usually a self-limiting disease, although it may take several years for the disease to resolve completely. Patients benefit from medical treatment and activity restriction. The place of surgery is very limited. In our case, the pain subsided after 3 months and disappeared after 6 months.

MAIN POINTS

- Osgood–Schlatter disease (OSD) is a tibial tuberosity traction apophysitis caused by repetitive quadriceps femoris muscle tension in adolescents who play sports.
- Although OSD is a common event, its consequences are infrequent as it is a self-limited disorder.
- History and physical examination are very important to explain the etiology. Patients often complain of pain that increases with exercise.
- It may be difficult to distinguish OSD from tibial tubercle fractures by radiography, and at this point, the need to confirm with further examination arises.
- In OSD, edema changes in T2 sequences and irregularities in bone structure can be observed in T1 sequences in magnetic resonance imaging examination.

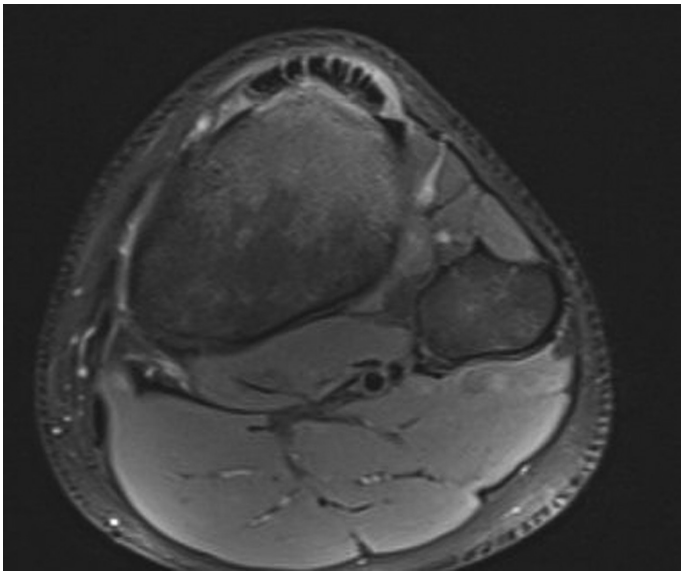

Figure 2. Bone edema in tuberositas tibiae and increased cortical thickness in tuberositas tibiae in coronal T2 image.

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REFERENCES

1. Circi E, Atalay Y, Beyzadeoglu T. Treatment of Osgood–Schlatter disease: review of the literature. *Musculoskelet Surg*. 2017;101(3):195-200. [CrossRef]
2. Narayana Gowda BS, Mohan Kumar J. Simultaneous bilateral tibial tubercle avulsion fracture in a case of pre-existing Osgood-Schlatter disease (OSD). *J Orthop Case Rep*. 2012;2(1):24-27.
3. Tulic G, Sopta J, Bumbasirevic M, Todorovic A, Vucetic C. Simultaneous bilateral avulsion fracture of the tibial tubercle in adolescent: a case report. *J Pediatr Orthop B*. 2010;19(1):118-121. [CrossRef]
4. Rathleff MS, Winiarski L, Krommes K, et al. Activity modification and knee strengthening for Osgood-Schlatter disease: a prospective cohort study. *Orthop J Sports Med*. 2020;8(4):2325967120911106. [CrossRef]
5. Gholve PA, Scher DM, Khakharia S, Widmann RF, Green DW. Osgood Schlatter syndrome. *Curr Opin Pediatr*. 2007;19(1):44-50. [CrossRef]