Osgood-Schlatter Disease and Differential Diagnosis from Tibial Tubercle Avulsion Fractures: A Case Report

Tibial Tuberkle Avülzion Kırıklarında Osgood-Schlatter Hastalığı ve Ayırıcı Tanı: Olgu Sunumu

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Abstract: Osgood-Schlatter disease (OSD) is generally benign, self limited and it is the most frequent cause of knee pain in children aged 10 to 15 years. Affected children usually present with a history of pain below the patella at the insertion of the patellar tendon which is usually aggravated by sporting or other activity. Despite its frequent occurance, late sequelae are rarely observed. Some physicians may find it difficult to differentiate OSD sequelae from tibial tubercle fractures. In this case we report a 13-year-old male adolescent with OSD which can be confused with fractures in patients admitted to the emergency department with complaints of knee pain. Osgood-Schlatter disease can be confused with tuberositas tibia fractures in adults. So, physicians should take OSD into consideration in the differential diagnosis for knee pain.
Keywords: osgood-schlatter disease, knee pain, adolescent

Algın A. (2018). Osgood-Schlatter Disease and Differential Diagnosis from Tibial Tubercle Avulsion Fractures: A Case Report, *Osmangazi Journal of Medicine* 40(1):75-78 **Doi:** 10.20515/otd.340106

Öz: Osgood-Schlatter hastalığı OSD genellikle iyi huyludur, kendiliğinden sınırlıdır ve 10-15 yaş arasındaki çocuklarda diz ağrısının en sık nedenidir. Etkilenen çocuklar genelde spor veya diğer aktiviteler tarafından şiddetlenen patellar tendonun yerleştirilmesi sırasında patella'nın altında ağrı öyküsü ile başvururlar. Sık ortaya çıkmasına rağmen, geç sekellere nadiren rastlanır. Bazı hekimler, OSD sekellerini tibia tüberkülü kırıklarından ayırt etmekte zorlanabilirler. Bu olgu sunumunda diz ağrısı yakınması, OSD hastalığı olan 13 yaşındaki bir erkek ergen, acil servise başvuran hastalarda kırıklarla karışabilir. OSD hastalığı, yetişkinlerde tüberositas tibia kırıklarıyla karıştırılabilir. Doktorlar OSD hastalığını diz ağrısı ayırıcı tanıda dikkate almalıdır.
Anahtar Kelimeler: osgood-schlatter hastalığı, diz ağrısı, ergenlik

Algın A. (2018). Tibial Tuberkle Avülzion Kırıklarında Osgood-Schlatter Hastalığı ve Ayırıcı Tanı: Olgu Sunumu, *Osmangazi Tıp Dergisi* 40(1):75-78 **Doi:** 10.20515/otd.340106

Geliş Tarihi / Received 27.09.2017
Kabul Tarihi / Accepted: 14.08.2017

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1. Introduction

Osgood-Schlatter disease (OSD) was first reported in 1903 by Osgood (1) and Schlatter(2). OSD is a traction phenomenon resulting from repetetive quadriceps contraction through the patellar tendon at its insertion upon the skelatally immature tibial tubercle. It is the most frequent cause of knee pain in children aged 10 to 15 years. It is a childhood illness. Affected children usually present with a history of pain below the patella at the insertion of the patellar tendon which is usually agravated by sporting or other activity such as running or jumping but is ameliorated by rest.(3,4). Because of a lack of a precise etiology and therefore definition, some physicians may find differentiating OSD from fractures of the tibial tubercle to be difficult.

In this case we report an OSD which can be confused with fractures in patients admitted to the emergency department with complaints of knee pain.

2.Case Presentation

A 13-year-old male adolescent presented to emergency department with complaints of pain and swelling on his left knee, which developed after sports activity (basketball). He had been suffering from recurrent left knee pain for two years. In the physical examination, it was found that there was localized swelling and tenderness with palpation on the area of the tibial tuberosity over the front of the left knee but no rush. There was no limitation of movement around the knee joints. Patient could ambulate, albeit with pain. The labaratory tests and other system examinations were normal. Plain radiograph and magnetic resonance imaging of the knee (Figure 1,2) showed tibial tubercle fragmantation and sclerosis around ununited free ossicle.

Although the presence of fracture was considered based on the graph, the presenting history and physical examination of patient and existence of sclerosis around the ununited free ossicle, when examined carefully, he was diagnosed with Osgood-Schlatter disease. The patient was recommended to use topical/oral non-steroidal anti-inflammatory drug (ibuprofen), to administer cold compression and to restrict his knee movements.

3. Discussion

The Osgood-Schlatter disease is generally benign, self limited and it appears frequently in adolescents who make some type of sporting activity. Inspite of its frequent incidence, its sequelae are rarely observed because of OSD is a self-limiting condition. In a study by Krause et al, 90% of patients treated with conservative care were relieved of all of their symptoms approximetly 1 year after onset of symptoms (5). It is usually resolves by the time the patient is aged 18 years, when the tibial tubercle apophysies ossifies. In approximately 10% of patients, however, the symptoms continue unabated into adulthood despite all conservative measures (6).

The etiology of the disease is controversial; however, theories suggest that this condition is a result of repeated knee extensor mechanism contraction that causes partial microavulsions of the chondrofibro-osseous tibial tubercle.

OSD is diagnosed through clinical and radiological means in childhood. The onset of OSD is usually gradual, with patients commonly complaining of pain in the tibial tubercle after repetitive activities. Typically, running or jumping activities that significantly stress the patellar tendon insertion upon the tibial tubercle aggravate the patient's symptoms. Plain radiographs show irregularity of apophysis with separation from the tibial tuberosity in early stages of OSD and fragmentation in the later stages6. As in our patient a persistent bony ossicle may be visible in a few cases after fusion of the tibial epiphysis (Figure 1).

Figure 1. *Plain radiograph of the left knee showing irregularities on the tuberositias tibia and ununited free ossicle*

Figure 1. *Magnetic resonance imaging showing sclerosis around the ununited free ossicle*.

Also magnetic resonance imaging (MRI) may assist in diagnosis of an atypical presentation. MR imaging of the knee showed tibial tubercle fragmantation and sclerosis around ununited free ossicle. The MR imaging of the knee finding of our patient was terminal stage. Hirano et al.(7) studied MRI scans of twenty-two boys with diagnosis of OSD were followed longitudinally for 1 year 6 months and MRI was performed every 6 months. They proposed five stages of the disease based on MRI scan appearances: in the normal stage the MRI scan is normal. The early stage did not reveal any MRI evidence of inflammation or avulsed portion of the secondary ossification centre. The progressive stage revealed the presence of partial cartilaginous avulsion from the secondary ossification centre. The terminal stage was characterized by the existence of separated ossicles. The healing stage was defined as osseous healing of the tibial tuberosity without separated ossicles.

Tibial tubercle fracture usually occurs in boys between the ages of 12 and 17 years. The mechanism of injury is violent contraction of the quadriceps or forceful flexion of the knee when the quadriceps is contracted. Patientspresent with complaint of pain, local

swelling, knee effusion and an inability to actively extend the knee6.

A sudden onset of pain with no antecedent symptoms in the region of the tibial tubercle should alert the physician to assess for a possible acute tibial tubercle avulsion rather than OSD. Because of a lack of a precise etiology and therefore definition, some physicians may find differentiating OSD from fractures of the tibial tubercle to be difficult. Especially OSD can be mistaken with Ogden type 1 and type 2 fracture. Ogden type 1 fracture is a fracture of the secondary ossification center near the insertion of the patellar tendon. Ogden type 2 fracture is a fracture propagates to proximal to the junction with the primary ossification center. In general if the patient is unable to ambulate, an acute avulsion fracture of the tibial tubercle is more likely. OSD patients usually has local pain at anterior of proximal tibia but typically can ambulate.

In conclusion, OSD can be confused with tuberositas tibia fractures in children. So, physicians should take OSD into consideration in the differantial diagnosis for knee pains and its sequelae in children.

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