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Adult Knee Pain – The Diagnostic Dilemma

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Abstract

Knee pain is one of the frequent reasons adult patients seek care in primary care clinics. The cause of knee pain varies, from overuse syndrome to inflammatory diseases. The Osgood-Schlatter Disease (OSD) is one of the overuse syndromes, a condition of proximal tibial apophysitis commonly seen among physically active boys, particularly young athletes aged 10-14 years, during the highest growth spurt. The common presenting symptoms are intermittent or continuous knee pain while walking or playing the sport that involves jumping or running. This condition is self-limiting, resolves within 6-18 months after the growth plates close, and responds well with conservative treatment. However, few patients might have long term sequelae that persist into adulthood. The case report presents a case of recurring knee pain in a 35-year-old man upon his re-engagement with active sports. Clinical assessment and radiological investigation confirm his condition to be consistent with OSD. The diagnosis of OSD in this patient may be another rare case of the recurrence of the childhood condition in a skeletally mature adult.

Keywords
Osgood-Schlatter Disease, adult, knee pain.

Introduction

Case presentation

The case presented is the re-emergence of childhood knee pain in an adult in his mid-thirties.

A 35-year-old man came to the primary care clinic complaining of intermittent bilateral knee pain. The pain was mild in intensity and did not require any analgesia. He recalled that he had similar symptoms as a teenager, and the pain was usually exacerbated by playing squash and relieved by a period of rest. The knee pain was non-radiating, specifically located at the anterior part of his knees and inferior to the patella. It is usually brought up by knee flexion and worsened by jumping and climbing stairs. He described the pain as

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very painful during his squash training and improved with resting and simple measures such as putting ice at the affected site. As the symptoms repeatedly affected his squash training, he withdrew himself from the training and completely avoided competitive sports since 16 years old. The symptoms improved significantly, and he remembered he was pain-free while studying in college.

Nevertheless, in terms of physical activity, the patient only chose low-intensity exercise such as brisk walking and slow-jogging while still avoiding competitive sport. In his early thirties, he accepted a role as a squash coach and started training secondary school teenagers in squash and played squash and badminton again. He claimed that his knee pain returned gradually and became painful if he jumped and climbed stairs and even worse while playing sports. He denied any pain or swelling of other joints, no knee injury, and no other systemic symptoms. He can ambulate without difficulties and does not require any orthoses or walking aid. However, the pain was troubling him, and he had stopped playing sports again. He also realized he was gaining weight as he had become less active physically.

There was a protrusion of the tibial tuberosity, mild tenderness over the bilateral knee's tibial tuberosity, which is worse at the right knee. (Figure 2) The knee joint exhibited a full range of motion. His knee x rays show well cortical bony densities seen at the region of the tibial tuberosity and no other abnormalities. No cortical irregularity or bony erosion. No fracture or dislocation. No osteoarthritic changes. No lytic or sclerotic lesions. (Figure 1).

Figure 1: (a) Lateral view of right knee joint x-ray (b) AP view of right knee joint x-ray (c) AP view of bilateral knee joints x-ray.

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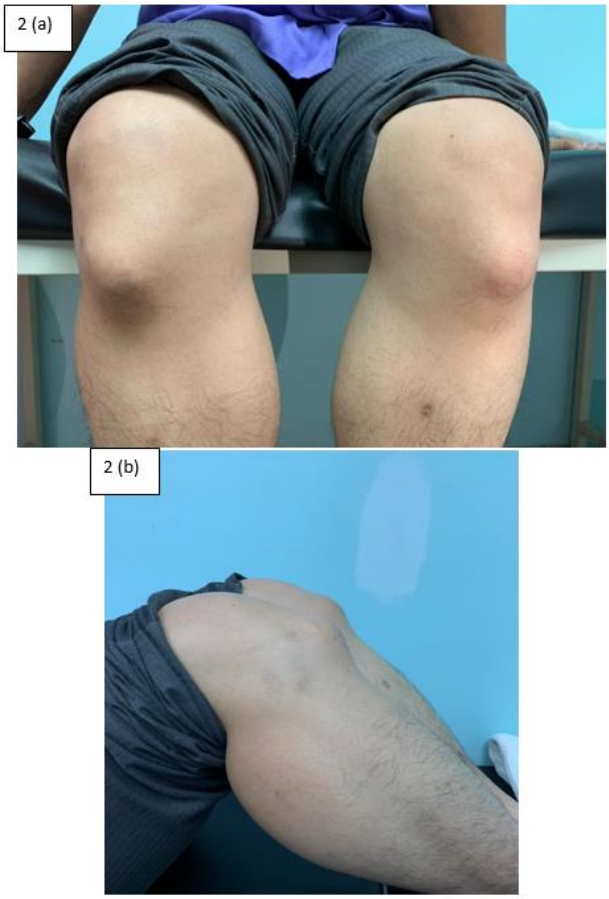

Figure 2: (a) The anterior and (b) lateral views of the patient's knees.

Discussion

Knee pain is a common presenting complaint in primary care clinics among adult patients. Common causes include degenerative diseases like osteoarthritis, overuse syndromes like patellofemoral pain syndrome (PFPS), Sinding Larsen Johansson syndrome (SLJ), Osgood-Schlatter disease (OSD), anserine bursitis, as well as inflammatory diseases like crystal-induced arthropathy and septic arthritis [1]. In the majority of the cases, detailed history and comprehensive physical examination are adequate to arrive at the diagnosis, although imaging studies are helpful in some instances.

In this case, inflammatory diseases are less probable as he did not report any suggestive symptoms such as fever, pain, and swelling. He also has no previous history of metabolic derangement, a precursor for gouty arthritis. Clinical examination also excluded this possibility as the range of motion of his knees was full, and the temperature was normal. The red flags for his knee pain were not clinically evident, and the symptoms do not seem to relate to any history of trauma before the onset. Nevertheless, the unique history was the re-emergence of his childhood symptoms where he was an active teenage athlete. However, the pain forced him to surrender from competitive sports, suggesting that his knee condition is related to overuse syndrome, which developed during his teenage years and reappears now as he engages in sports activities.

There are three common causes of knee pain attributed to overuse syndrome, which are Osgood Schlatter Disease (OSD), Sinding Larsen Johannson syndrome (SLJ), and Patellofemoral pain syndrome (PFPS). These syndromes typically manifest as anterior knee pain, occurring at the time of highest growth spurt, usually 10-14 years old, and caused by constant engagement in high impact activities such as jumping, running,

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climbing stairs [2]. Young athletes who have just started their sports activities are mainly affected. Although the symptoms are identical across these syndromes, the pathology is distinctive from each other. Both OSD and SLJ are caused by traction injury; however, in SLJ, it explicitly involves the lower pole of the patella [2]. Whereas in OSD, the specific location of the pathology is the tibial tuberosity, where traction apophysitis occurs due to repetitive strain on the secondary ossification center of tibial tuberosity during the epiphyseal maturation stage resulting in fragmentation of the tibial tubercle [3]. On the other hand, in PFPS, although pathological changes of the patellofemoral joint's cartilage are not evident, patellar maltracking due to functional malalignment or dynamic valgus is believed to be the underlying cause of this syndrome [4].

There are differentiating features of these syndromes in physical examination. In SLJ, the lower pole of the patella is typically tender on palpation [2]. Patients with PFPS generally exhibit painful anterior knee, which intensifies upon knee flexion during weight-bearing activities such as squatting [4]. In OSD, mild swelling of the knee, tenderness of the tibial tubercle, and thickened patellar tendon may be observed [3]. In our case, his lower pole was not tender, and there was no pain during squatting. However, the tender, hard protrusions at his bilateral tibial tuberosities suggest OSD.

Radiological imaging is essential to confirm the diagnosis of OSD. A *plain x-ray* is the standard first imaging modality requested as it is cheaper and readily available in the primary care setting. In chronic OSD, persistent bony ossicles will be visible after fusion of the tibial epiphysis [5], whereas abnormal calcification of ossification centers by x-ray of fragmentation of inferior patella may be visible in SLJ [2]. In this case, his X-ray finding showed well cortical bony densities at the region of the tibial tuberosity in the absence of fracture, osteoarthritic changes, and sclerotic features, which is consistent with OSD. His inferior patella was also normal, ruling out SLJ. The final clinical diagnosis of this patient is OSD, as supported by the X-ray, which shows unexpected abnormalities of the tibial tuberosity of both knees.

Although most childhood OSD gradually resolves completely with conservative management and sports activities cessation for up to 18 months [3], available literature indicates that the symptoms could last until adulthood. Few authors reported OSD cases diagnosed older than 18 years old. Cakmak and colleague reported a case of a 21 years old man presenting with left knee swelling for a decade, associated with significant restrictions of movement, which require surgery [6]. Murphy also reported a case of a 30-year-old woman who presented with OSD symptoms which gradually increased over six months and received conservative treatment [7]. Although she was able to manage her symptoms, she still had residual pain and periodic flares over tibial tuberosity with squatting [7]. Another study among OSD patients who attended the orthopedic clinic in University Hospital revealed that few patients were symptomatic up to 90 months from diagnosis [8]. Furthermore, half of the adult patients with OSD required surgery, and more than 80% still had pain at follow-up [8]. To our knowledge, the patient, in this case, was the oldest patient diagnosed with OSD. This body of evidence proved that OSD does not exclusively occur among adolescents and young adults.

Primary care physicians can initiate the treatment of recurrent OSD. Although there were reports of unresolved OSD persisted into adulthood, most cases of OSD are responsive to conservative treatments [6]. Recurrence of symptoms is managed with proper rehabilitation after pain gradually improves [9]. The primary aim is to control the pain, reduce the swelling around the tibial tuberosity, reduce the load on the tibial tubercle, and lessen the tension applied on the quadriceps [10]. Magnetic resonance imaging (MRI) is indicated if conservative treatment fails to evaluate ongoing inflammation and thorough radiological assessment of the patella tendon insertion site [9].

This patient has knee pain of mild intensity that worsens during active physical activities. Therefore, he received intensive rehabilitation with modified physical activity that involves quadricep strengthening

exercises and to reduce aggravating activities. Pain management strategies include ice application after exercises with mild analgesia as needed. However, surgical intervention is recommended for patients with chronic and disturbing pain that affects their quality of life [9]. Several authors advocated arthroscopic approaches in treating OSD in adults. Arthroscopic and bursoscopic approaches were reported to have the advantages of preserving the patella tendon integrity, minimal scar, and avoidance of potential unwanted functional and cosmetic complications [9] but should be handled only by experts [11]. These advantages can also be achieved via minimally invasive open surgery [12].

Conclusion

OSD is one of the causes of knee pain in childhood. Albeit the described natural history of being self-limiting, it has been reported to also recur during adulthood. This case may provide further understanding of the childhood condition and its long-term sequelae. However, managing the condition in an adult may require intensive intervention and rehabilitation for long-term health despite the unclear natural history of OSD. Therefore, the clinician may need to look for a suitable plan for the OSD patients to be physically active without suffering more pain.

Consent

Written consent obtained from the patient for the publication of this manuscript.

What is new in this case report compared to the previous literature? (100 words)

1. This is a case of missed diagnosis of OSD during adolescent which has resolved completely with conservative treatment. However, it recurs during adulthood despite a pain-free period of almost 15 years upon re-engagement with active sports.
2. Despite the cessation of physical activity during adolescent and had long pain-free period, patient still developed pathological changes that can be detected by x ray in adulthood.
3. In this case, intensive rehabilitation and referral to orthopaedic surgeon for possible surgical intervention is appropriate if the condition does not improve to allow opportunity for the patient to engage in active physical activity, safely.

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