

CASE REPORT

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OSGOOD SCHLATTER DISEASE: A RARE CONDITION IN YOUNG ATHLETES – A CASE STUDY

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ABSTRACT

Background: Osgood Schlatter disease (OSD) now classified as an apophysitis of the anterior aspect of the tibial tuberosity (ATT) is a common condition in an active youth athletes and is associated with growth spurts. The symptoms of Osgood Schlatter Disease mimics different condition and thus it has to be diagnosed rationally. Clinical features include mild to severe and intermittent or continuous pain, tenderness, swelling and limp while walking. Radiological features include enlarged and fragmented tibial tubercle. Treatment of Protection, Rest, Ice, Compression and Elevation (PRICE) protocol is generally given in the initial stages followed by the complete rehabilitation of athlete into sports.

Methods: I present the case of a patient, fifteen year old boy presenting the symptoms of pain, tenderness, swelling and limp while walking. He was referred by Orthopedician and he was on diclofenac medications. His detailed evaluation was carried out and was diagnosed on the basis of history, clinical findings and radiographic investigations as Osgood Schlatter Disease.

Treatment: A three phase rehabilitation treatment plan was developed which was typically aimed at return of athlete as early as he can to the sports circuit. In Acute phase, Ice and rest was given; In Recovery phase, strengthening of surrounding musculature was given; In Maintenance phase, changes were made to athlete's playing style with the help of Coach.

Conclusion: Initial assessment, PRICE Protocol and making changes in playing style of the athlete helps in treating Osgood Schlatter Disease. The causative factor has to be looked upon while treating this condition.

Keywords: Osgood Schlatter disease, Young athletes, PRICE protocol, Patellar tendon, Tibial tuberosity, Sports.

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INTRODUCTION

Osgood-Schlatter disease (OSD) was first described by Robert Osgood and Carl Schlatter as painful overuse condition of the tibial tuberosity in 1903.¹ It is now classified as an apophysitis of the anterior aspect of the tibial tuberosity (ATT).² It is a common condition in an active youth population.^{3,4} The disease is associated with growth spurts, and may be bilateral in up to 30% of cases.⁵ Boys are commonly affected than girls; in girls the condition appears at an early age around 11-13 years while in boys tend to appear 1-2 years later.⁶ The prevalence is of 21% in group of athletic adolescents while it is 4.5% in same age group of non-athletic adolescents.⁶ Sports where jumps (basketball, long jump), running (athletics), repeated contractions of knee extension apparatus (soccer, kick-box, dancing, skiing) are predominant, are considered to be important external risk-factor which could cause occurrence of Osgood-Schlatter disease.⁷

The pathogenesis of this growth related condition is still debated.² The initial hypothesis described the repetitive traction of the patellar tendon on the distal insertion as the main area of secondary ossification centre fragmentation and transitory necrosis.^{8,9} The fragmentation of the ossification centre has been questioned as a definitive sign of OSD and has been seen as a normal development of the anterior tibial tubercle (ATT).¹⁰ Fragmentation of the ATT is found in symptomatic as well as asymptomatic knees and therefore cannot be used to discriminate between the normal and abnormal pathology.¹⁰ Osgood-Schlatter disease is said to be resulted from sub maximal, tensile, repetitive stresses acting on immature junction of patellar ligament, tibial tubercle and tibia; causing mild avulsion injuries followed by attempts at osseous repair.

Subsequent to these studies, Ducher et al developed a maturation staging of the ATT using ultrasonography. Three developmental stages are described, principally in asymptomatic subjects. In Ducher's classification,¹⁰

Stage	Features
1	Delineated as a cartilage attachment, initially without, and subsequently with ossicles.
2	Demonstrates insertional cartilage.
3	Is a mature attachment.

Relatively recently, it has been suggested that the presence of neo vessels in and or around a symptomatic tendon, as demonstrated by a Doppler-positive ultrasound, could be a hallmark

feature of a pathological tendon.² It is unknown if such changes are present in the presumed pathological tendon insertion seen in OSD, nor the relation of Doppler-positive changes to pain on clinical examination. It is proposed that examining both symptomatic and asymptomatic knees of OSD sufferers to ascertain the maturation status, as described by Ducher et al and the presence of neo-vessels as indicated by Doppler ultrasound could shed light on the pathogenesis and provide clinical insight into the management of this troubling and common condition.

Factors which increase the likelihood of Osgood-Schlatter disease may include tight quadriceps (front thigh) muscle and tight hamstrings (back thigh) muscles. The clinical symptoms range from aching and soreness to swelling, severe pain and limping. The onset is gradual with mild intermittent pain, but in acute phase the pain may become severe and continuous.^{1,2,10,11,12} The pain is exacerbated by physical activity that involves running, jumping and kneeling.¹² On examination the findings are generally pain, tenderness and local swelling over the patellar tendon and tibial tuberosity.¹² There is a three stage classification of Osgood Schlatter disease by Eric J. Wall,¹³

Stage	Pain-Intensity of Physical Activity
1	Pain withdraws after physical activity within 24 hours
2	Pain occurs only during after physical activity, but it is not restricting and does not disappear within 24 hours.
3	Permanent pain which limits not only physical but also everyday activities.

Diagnosis is made after clinical examination. The main feature of the clinical examination is painful and enlarged tibial tubercle with the surrounding soft tissue swelling, and painful and restricted mobility.⁷ Before definitive diagnosis of OSD, other possible diseases must be considered in differential diagnosis for pain in front of the knee like Osteochondritis dissecans (OCD), Tibial tubercle avulsion fracture and Sinding-Larson-Johansson syndrome (SLJS).¹⁴ Laboratory test are not required for diagnosis of OSD unless there is suspected inflammatory or other disease aetiology.¹⁵ Knee x-ray examination snapshot shows enlarged and fragmented tibial tubercle.¹⁵ In most medical centres clinical examination of OSD diagnosis is considered to be sufficient and even routine ultrasound examination is not recommended. However, many authors believe that ultrasound examination should be first option. Ultrasound examination is fast, simple and economic method and reliable as x-ray. CT and MRI examination

should be performed only in some atypical or non-clear cases.⁷ Treatment for Osgood-Schlatter disease consists of reduced physical activity, analgesia and physical therapy.¹ Symptoms are typically self-limited, and patients can be instructed to gradually return to activity once the pain improves.¹ Complete recovery is expected when the tibial growth plate closes, although some patients who have recurrent symptoms into adulthood may require surgical treatment.¹⁶

CASE STUDY

A 15-year old boy came to our Physiotherapy department complaining of left knee pain since 3 days which was progressively increasing with activities. The patient was a tennis player and there was no history about any trauma or knee pain. There were no systemic symptoms like fever etc. The patient gave the history of knee pain at first, when he landed on his left knee to play a forehand drive about 3 days back; he was a left hand player. Initially, there was less and tolerable pain so he continued playing but later in the day the pain worsened. Later, walking got painful so he went to a orthopedician, who advised Physical Therapy and gave medications. The patient is on Diclofenac since two days, with no decrease in pain symptoms. When he came to the department, the first sign was a limp in walking. Moreover, there was no complete knee extension while walking, the patient kept knee around 10°-20° of flexion. On palpation, there was warmth around the anterior aspect of knee below patella. There was a Grade 3 tenderness (i.e. the patient complains of pain and withdraws the part) over the patellar tendon and upper anterior tibia near tibial tuberosity. There was a localized soft fluctuating swelling around the patellar tendon and tibial tuberosity. Examination revealed no decrease in Range of Motion (ROM) and Strength but movements were painful. Lateral view knee radiograph showed mild avulsion of tibial tuberosity.

Treatment was divided into Acute, Recovery and Maintenance period. In the acute period (3 weeks), the treatment consisted of PRICE protocol.^{15,17} The patient was asked to avoid the sporting activities and vigorous activities, Rest, Icing for about 20 minutes, Immobilization for about 3 weeks and Elevation of the part was done. In the recovery period (2 weeks), the strengthening of quadriceps and hamstrings was incorporated with other exercises of hip and ankle with the infrapatellar strap.¹⁵ Strapping reduces the force that is transmitted through the tendon to the Tibial Tuberosity. This 'off-loading' reduces the strain on the tendon which helps to relieve the symptoms of

OSD. The maintenance period (after 5 weeks) was aimed towards the return of athlete to the sport. With the help of coach, we found out that while going into the forehand drive, the patient used to weight bear on one knee for some time and after the drive the patient used to give a thrust to the left knee to run for the second rally shot, this can be predicted as one of the causative factor for OSD. So, the coach made adjustments with the tactics and plans for the shots to be played during the play which aids in avoiding the repetitive injury, as running is an integral part of tennis. Further, infrapatellar strap was continued with proper warm up and strengthening of the corresponding musculature was recommended to avoid repetitive strains over the left knee.

DISCUSSION

Osgood-Schlatter Disease is the condition which occurs due to repetitive tensile-compressive stress and strain over the patellar tendon leading to fragmentation of ossification centre around tibial tuberosity. The clinical symptoms, examination and radiographic investigations are one of the important features to diagnose this condition. Treatment includes a multidisciplinary approach of Orthopedician, Physical Therapist, Trainers and Coach. Houghton, Cassas and many other authors believe that the most important in the diagnosis of OSD is to take a detailed personal and sport history, medical history, to perform a clinical examination, and sometimes take targeted x-ray examination. By analyzing the correlation between the positive findings of clinical examination of examinees and OSD, it can be concluded that the clinical examination is a key in the diagnosis of this disease, and it is especially significant in recognizing the severe stages.⁷

The treatment of Osgood-Schlatter disease is symptomatic which includes administration of NSAID's and Physical Therapy. The treatment approach should also aim at reintroduction of player into the sports arena. And with the help of other members of rehabilitation, the technique and exact cause of the disease should be recognized. Children and adolescents may be particularly at risk for sports-related overuse injuries as a result of improper technique, poorly fitting protective equipment, training errors, and muscle weakness and imbalance.⁷ Other team members like trainer, coach etc. can be of help in avoidance of further reoccurrence of this injury. Athletes with OSD should reduce exercise duration, frequency, and intensity for a limited period of time, sufficient to resolve or tolerate pain. When pain becomes tolerable it should be considered gradual increases

in exercise levels, depending to symptoms, adjusting levels, and repeating this process as required. While the initial treatment serves favourable for PRICE protocol.

It is very important to educate the young athletes regarding important muscles for the particular sport, correct technique and balanced posture from the beginning, to avoid such conditions.

CONCLUSION

Clinical Presentations, History, Examination and Radiography are one of the important tools for diagnosis of this disease. The initial treatment with PRICE protocol is effective following up with the rehabilitation of athlete back into sports with the help of other members.

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