Osgood-Schlatter Disease

Osgood-Schlatter disease is a self-limiting disorder of the knee, found during adolescence.

Pathogenesis

Osgood-Schlatter disease is common in active adolescents, possibly caused by multiple small avulsion fractures from contractions of the quadriceps muscles at their insertion into the proximal tibial apophysis (ossification centre). This condition usually occurs during the adolescent growth spurt before the tibial tuberosity has finished ossification. The strength of quadriceps, in children regularly practising sports that involve running and jumping, may exceed the ability of the tibial tuberosity to resist that force. As the avulsed fragments heal and grow, the tibial tubercle may enlarge. The extent will depend on the severity and frequency of injury.

Epidemiology

- Osgood-Schlatter disease is one of the common causes of knee pain in active adolescents who play sports.
- The common age for boys is between 12 and 15 years and for girls, between 8 and 12 years.
- Knee pain is common in athletes. Both knees are affected in up to 30% of people with the condition.
- It is more common in boys than in girls.
- It is seen in children who participate in sports such as football, basketball, gymnastics and volleyball.

Presentation

Symptoms

- Patients typically present with the gradual onset of pain and swelling below the knee
- Pain is usually relieved by rest and made worse by activities that extend the knee against resistance, particularly running or jumping.

Signs

- Examination reveals tenderness and swelling at the tibial tuberosity.
- Pain is provoked by knee extension against resistance or by hyperflexing the knee with the person lying prone.
- Hip examination is important because some childhood hip conditions (eg, slipped capital femoral epiphysis) can refer pain to the knee.

Investigations

X-rays can be helpful in the diagnosis and treatment of this condition. They are not always necessary if diagnosis is obvious clinically.

Radiographic changes may show the irregularity of apophysis, with separation from the tibial tuberosity in early stages and fragmentation in the later stages.

Differential diagnosis of knee pain

Knee pain that is severe, persists at night or at rest, or is associated with bone pain at other sites, should be investigated urgently or the child should be referred. A bone tumour should be suspected.

Knee pain associated with systemic symptoms

- Septic arthritis.
- Juvenile idiopathic arthritis.

Knee pain associated with an abnormal examination of the hip

- Perthes’ disease.
- Slipped proximal femoral epiphysis.
- Transient synovitis.

Knee pain associated with injury

- Meniscal injuries.
- Collateral and cruciate ligament injuries.
- Stress fractures of the patella.
Knee pain not associated with trauma or systemic symptoms

- Tibial tuberosity fracture.
- Prepatellar and infrapatellar bursitis.
- Osteochondritis dissecans.
- Sinding-Larsen Johansson disease.
- Patellofemoral pain syndrome.

Management

General measures

- Most patients respond to conservative treatment consisting of rest from painful activities and application of ice.
- Advice about exercise should be tailored to the level of pain experienced by the patient, i.e., if they are able to continue with minimal discomfort, advise them to continue and return if they deteriorate. If symptoms are disturbing normal routine, a change may be needed in duration, frequency, or intensity of exercise.
- Physiotherapy can be helpful by stretching, strengthening, and reducing muscle imbalance of the quadriceps, hamstrings, calf muscles, and iliotibial band.[3]
- If patients cannot tolerate a modified programme, a period of rest should be advised. Once symptoms have decreased to an acceptable level, advise introducing low-impact quadriceps exercises before gradually increasing the intensity of exercise. If symptoms recur, patients should stop exercises or reduce their intensity. Gradually re-establish exercise or increase exercise intensity on the basis of symptoms.
- Referral to a physiotherapist may be necessary to manage rehabilitation, particularly if recovery is slow.
- If pain persists into adulthood a referral to secondary care for assessment is recommended.

Pharmacological

- Simple analgesia such as paracetamol or ibuprofen, as needed, for pain.
- Corticosteroid injection is not recommended.
- One study has shown that injection of the patellar tendon enthesis/tibial apophysis with 12.5% dextrose was safe and well tolerated in adolescents with recalcitrant Osgood-Schlatter disease.[4] This treatment resulted in more rapid and frequent achievement of unaltered sport and asymptomatic sport.

Surgical

- Surgery is rarely required.
- Some patients who have recurrent symptoms into adulthood may require surgical treatment.
- There may be an ossicle under the distal patellar tendon as a consequence of the disease.
- Subperiosteal dissection of the osseous fragment is usually undertaken.[5]
- Surgical treatment usually gives excellent results in these unresolved cases.

Prognosis

Osgood-Schlatter disease usually is self-limiting. Most patients are able to return to activity after 2-3 weeks, but symptoms may continue for up to one year.[6] Patients can be reassured that the syndrome can be effectively self-managed, but will often not fully resolve until the end of the growth spurt.

However, some complications can occur:

- Mid discomfort with kneeling.
- Residual bony deformity.
- Painful ossicles in the distal patellar tendon.

Further reading & references

- Osgood-Schlatter's disease; NICE CKS, January 2010 (UK access only)

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