Legg-Calve-Perthes Disease

Legg-Calve-Perthes disease refers to the idiopathic avascular necrosis of the femoral head. It occurs most commonly in boys between the ages of five to seven. Symptoms are generally self-limited to less than 18 months, and involve a painless limp with decreased range of motion in the hip, intermittent anterior thigh pain, ipsilateral knee pain, and upper thigh atrophy. X-rays are used for diagnosis and may show compression and deformity of the femoral head. Treatment involves conservative measures such as limiting physical activity, NSAIDs, and bracing, as well as surgery in severe cases.



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Pathophysiology

Idiopathic Avascular Necrosis of Femoral Head
Idiot-hat Vascular Necrosis-crow at Femoral Head
Legg-Calves-Perthes disease refers to idiopathic avascular necrosis of the femoral head that results from decreased blood supply to the hip. Other causes of avascular necrosis include slipped capital femoral epiphysis, sickle cell crisis, steroid use or trauma.

Boys 5-7 Years of Age
Boy with (5) Hand and (7) Lucky Slot
LCPD most commonly presents in children between the ages of five and seven. It occurs more commonly in males.

Symptoms < 18 Months
Less-than-sign with (1) Wand and (8) Ball and Month-moon
Symptoms are self-limited and typically last for less than 18 months. Over this time, necrosed bone is remodeled with healthy bone and the blood supply returns.

Signs & Symptoms

Painless Limp
No Pain-bolt-sign Lamp
In most cases, painless limp is the presenting symptom for patients with LCPD. LCPD is a common cause of limping in children four to ten years old.

Limited Range of Motion
Range of Motion Limited
Patients may experience decreased range of motion in the hip, especially with abduction and internal rotation, and pain with passive range of motion.

Intermittent Anterior Thigh Pain
In-mitten Anteater Thigh Pain-bolt
The onset of symptoms in LCPD is typically insidious. Many patients will not be able to recall an event that precipitated the pain. Patients may experience anterior thigh pain that is intermittent in nature.

Insidious Pain in Knee
Insidious Pain-bolt in Knee
Hip pain is often referred to the knee; therefore, patients may also present with an insidious onset of pain in the ipsilateral knee.

Atrophy of Upper Thigh
@-trophy on Upper Thigh
Because the blood supply to the hip is compromised in this condition, the muscles of the thigh may atrophy, as the cells cannot extract sufficient oxygen to generate ATP and produce essential cellular products.

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Diagnosis

AP and Frog Leg Lateral X-ray

AP and Frog Leg Lateral X-ray

Diagnosis and staging of LCPD involves anterior/posterior or frog leg lateral X-rays. In the early stage of LCPD, X-rays may demonstrate asymmetric femoral epiphyses. In the fragmentation stage, compression and deformity of the femoral head is visible. In the reparative stage, the femoral heads begin to re-ossify. In the final healing stage, X-ray findings vary based on severity of the disease.

Compression and Deformity of Femoral Head

Compressed & Deformed Femoral Head

In the fragmentation stage, compression and deformity of the femoral head is visible on X-rays. In the reparative stage, the femoral heads begin to re-ossify. In the final healing stage, X-ray findings vary based on severity of the disease.

Treatment

Bed Rest

Bed

Many patients are managed conservatively and are advised to avoid weight-bearing activities or use crutches. However, physical therapy exercises may be used to increase range of motion.

NSAIDs

N-sad

Anti-inflammatory medications, such as NSAIDs, are recommended for control of pain and inflammation.

Containment with Brace or Cast

Cast

Hip bracing or casting in abduction with a Petrie cast may be used to contain the femur within the acetabulum if the patient is developing a severe deformity, has extensive disease or a decreased range of motion.

Surgery

Surgeon

Surgery is recommended for children above age eight, when greater than 50% of the femur is damaged, and when patients fail conservative therapy. An osteotomy, the most common type of corrective surgery for LCPD, helps to realign the femoral head within the acetabulum and increase range of motion.

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