

# An uncommon cause for hip pain and limping

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## ABSTRACT

Slipped capital femoral epiphysis (SCFE) is characterized by displacement of the capital femoral epiphysis from the femoral neck. An 18-year-old male presented with left hip pain and a limping gait, following a trivial trauma. Radiological examination revealed bilateral SCFE. Clinically and biochemically, he had features of hypopituitarism. His prolactin levels were high and magnetic resonance imaging (MRI) scan showed a pituitary macroadenoma, suggesting a diagnosis of macroprolactinoma causing hypopituitarism and presenting as SCFE. He was started on dopamine agonist cabergoline as well as thyroxine and glucocorticoid replacement treatment. He was also scheduled for an orthopedic surgical procedure for his SCFE.

**Keywords:** Hypopituitarism, macroprolactinoma, slipped capital femoral epiphysis

## Introduction

Slipped capital femoral epiphysis (SCFE) is characterized by displacement of the capital femoral epiphysis from the femoral neck. It usually manifests as hip pain as well as a limp, in adolescents and young adults. It is bilateral in about 30% of the cases.<sup>[1]</sup> It is commonly seen in obese children, and a genetic predisposition is also described. Endocrine conditions like hypopituitarism, growth hormone deficiency, and hypothyroidism have been shown to be the risk factors for this condition.<sup>[2]</sup>

## Case Report

An 18-year-old male presented with history of pain and restriction of movement in the left hip for 3 years following a trivial trauma. He also gave a history of failure to gain height compared to his peers since the age of 10 years, and did not attain secondary sexual characteristics. There was no headache or visual disturbance. On examination, his height was 148 cm with a mid-parental height of 166 cm and a body mass index (BMI) of 20.2 kg/m<sup>2</sup>. He had pallor and dry skin, and had no facial, axillary, and genital hair with bilateral testicular volume of 4 mL (normal: 15-25 mL). The visual field examination was normal. There was a limb length discrepancy with painful restriction of the left hip movements, especially internal rotation.

The patient's biochemical parameters are shown in Table 1.

His x-ray of the pelvis [Figure 1] showed bilateral SCFE and magnetic resonance imaging (MRI) of the pituitary gland [Figure 2] showed pituitary macroadenoma with right cavernous sinus extension. A diagnosis of bilateral SCFE, secondary to the macroprolactinoma-induced panhypopituitarism, was done. The patient was started on 0.5 mg of dopamine agonist cabergoline twice weekly for macroprolactinoma, and was also started on glucocorticoid and thyroxine replacement for hypopituitarism. He has been scheduled for a review after 3 months for reassessment of his hormonal profile and response to cabergoline with regard to reduction in the tumor size by repeat MRI imaging. A surgical intervention for his bilateral SCFE has also been planned for a later date by the orthopedics department.

## Discussion

Hip pain is not a common symptomatic presentation in adolescence or among young adults. Common causes of hip pain in this age group include trauma, inflammatory or infective arthritis, tumors, SCFE, and avascular necrosis (AVN) of the head of the femur. Degenerative disease of the hip joint, which is another cause for hip pain, is not common in the first three decades of life.<sup>[3]</sup> Relevant history with a good clinical examination and further evaluation with blood and imaging investigations will be helpful in arriving at a diagnosis in most of the cases. The factors like history of trauma, type of onset (insidious or acute), inflammatory nature of the disease evidenced by fever

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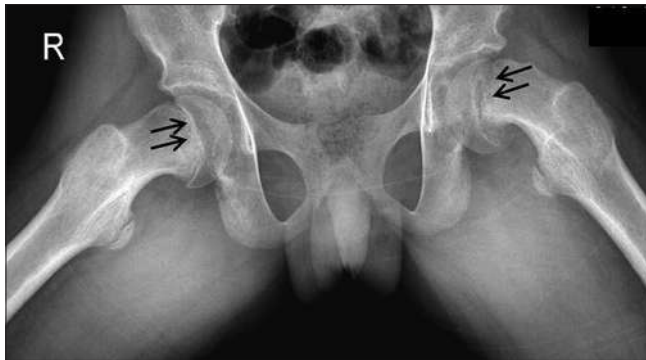
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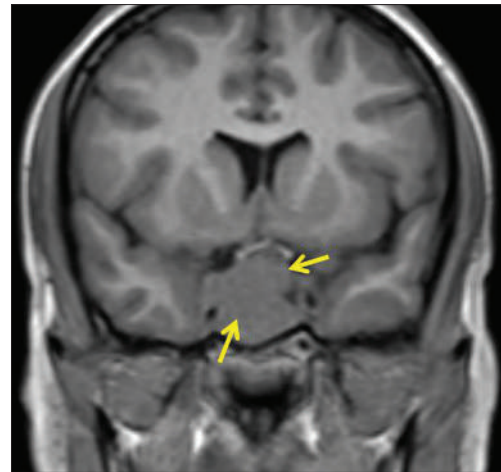
**Figure 1:** X-ray of hip showing bilateral slipped capital femoral epiphysis

**Table 1: Biochemical parameters**

Parameters	Values	Units	Normal range
Thyroid stimulating hormone	0.6	mIU/mL	0.3-4.5
Thyroxine (T <sub>4</sub> ) T4	5.7	ug/dL	4.5-12.5
Free T <sub>4</sub>	0.41	ng/dL	0.8-2
Testosterone	<20	ng/dL	270-1030
Luteinizing hormone	0.264	mIU/mL	0.7-11.1
Follicle-stimulating hormone	0.908	mIU/mL	0.87-6
Prolactin	6222.9	ng/mL	5-20
Serum cortisol [8AM]	0.5	ug/dL	7-25
Insulin-like growth factor 1	81.8	ng/mL	114-493

and involvement of other joints, diurnal nature (morning or night), site of pain (unilateral or bilateral), inability to carry weight, and the presence of other systemic signs (e.g., anemia and polyserositis) usually guide the physician to arrive at a diagnosis and plan an appropriate investigation and treatment. Morning stiffness and symmetrical (bilaterality) involvement of the hip may point toward an inflammatory etiology. The relatively short history, high grade fever, and painful restriction of all movements of the affected hip are highly diagnostic of an infective etiology. Groin pain, sudden exacerbation of pain on carrying weight, and worsening of pain at night usually favor a clinical diagnosis of AVN. Patients with tumors of the hip may not be able to carry weight on the affected hip and there may be a palpable mass on examination.<sup>[4]</sup>

Altered gait pattern and hip pain are the usual presenting symptoms of SCFE. SCFE is most commonly seen in adolescence and early adulthood and it usually affects boys more than girls. Bilateral involvement is described in about one-third of these subjects, and many of them have endocrine conditions like hypothyroidism, hypogonadism, panhypopituitarism, and growth hormone deficiency.<sup>[2]</sup> Obesity is also a strong risk factor for developing SCFE. Other risk factors include renal failure, radiation therapy, and genetic disorders like Down syndrome.<sup>[2]</sup> The pathogenesis of this condition is mostly multifactorial, which includes mechanical factors like obesity and abnormal structural



**Figure 2:** MRI of the brain showing a pituitary macroadenoma with right cavernous sinus extension

morphology of the proximal femur and the acetabulum.<sup>[5]</sup> Management of this condition involves operative stabilization. The AVN is a known complication associated with the treatment of this condition, especially in patients with unstable SCFE.<sup>[6]</sup> A high index of suspicion is needed to diagnose this condition in adolescents and young adults when they present with hip pain and a limping gait.<sup>[7]</sup> Most of these patients require endocrine assessment to rule out hormonal deficiencies.<sup>[1]</sup>

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