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Clinical Case

Unusual Association: Bilateral Upper Femoral Epiphysiolysis and Valgum Knee in a Chronic Hemodyal Patient

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Abstract

Superior Femoral Epiphysiolysis (SFE) or coxa vara is a condition of interest in older children and adolescents. It results in the slippage of the upper femoral extremity on its metaphysis. Its association with valgus knee and primary Hyperparathyroidism (HPTP) with renal osteodystrophy are rarely described. We report an observation.

Keywords: Hyperparathyroidism; Chronic renal failure

Case Presentation

A 16 year old patient, followed in nephrology for chronic renal failure at the stage of haemodialysis. The patient consults for pelvic-crural pain of progressive onset with limping when walking. The physical examination revealed a pale skin and mucous membrane. The osteoarticular examination shows an external rotation attitude of the lower limbs and a limitation of the internal rotation of the hips, a bilateral valgum knee and a shortening of the right lower limb. The radiograph shows bilateral epiphysiolysis of the femoral heads, condylar hypoplasia, and bilateral valgus knee (Figures 1 and 2). The biology shows hypocalcaemia at 2 mmol/l with a normal phosphorus level, hyperphosphatasemia and a high parathyroid hormone level of 1100 pg/ml. Ultrasound of the parathyroids was normal. The diagnosis of hyperparathyroidism secondary to renal osteodystrophy was accepted. The patient had never been supplemented with vitamin D or calcium. He underwent a parathyroidectomy, bilateral screwing of the femoral head, epiphysiodesis of the two lower femoral extremities and of both extremities (Figure 3 and 4).

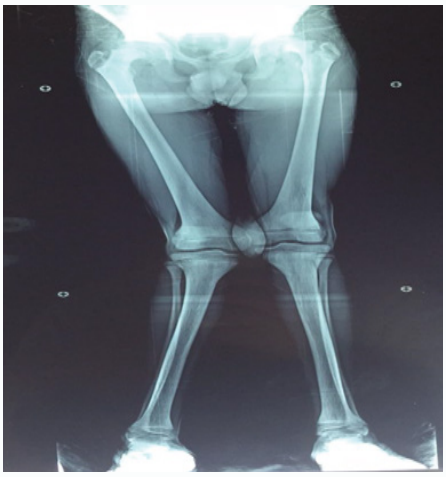

Figure 1: Bilateral epiphysiolysis of the femoral heads.

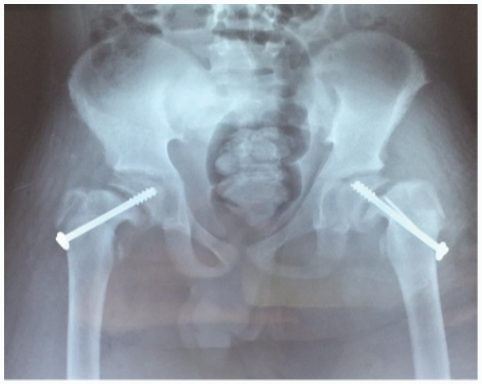

Figure 2: Condylar hypoplasia, and bilateral valgus knee.

Discussion

The current incidence of EFS is estimated at 2/100,000 [1], there is a slight predominance of the condition in boys 58.8% compared to 42.4% in girls. The age of onset is 12 years in girls and 13 years and 6 months in boys. Epiphysiolysis is unilateral in 77.7% of cases. In the case of bilateral involvement, the lesions occur successively in 61% of cases. The average time to onset for the second side is 18 months [1]. Primary Hyperparathyroidism (HPTP) is rare in young people and exceptional in children. The association of HPTP and EFS is even rarer.

The pathophysiological mechanism of the association of HPTP and EFS is poorly understood. In the cases of HPTP with EFS reported in the literature [2], the fusion of the cervical-head cartilage was delayed, which predisposed to epiphyseal slippage. This delay in cartilage fusion can be explained by two hypothetical mechanisms:

PTH stimulates growth of the pelvic conjugation cartilage leading

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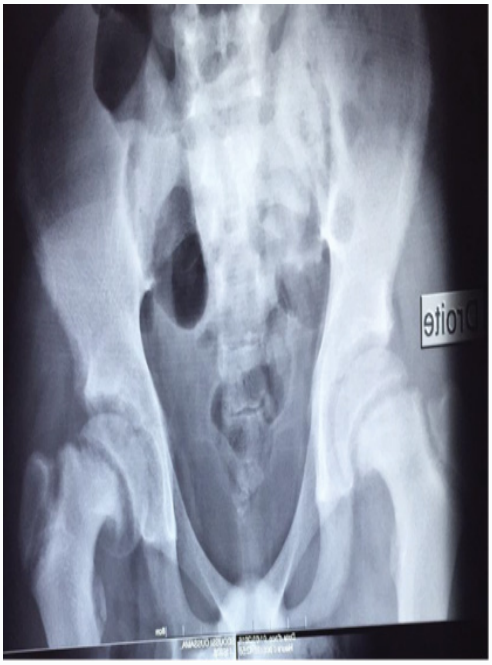

Figure 3: Bilateral screwing of the femoral head.

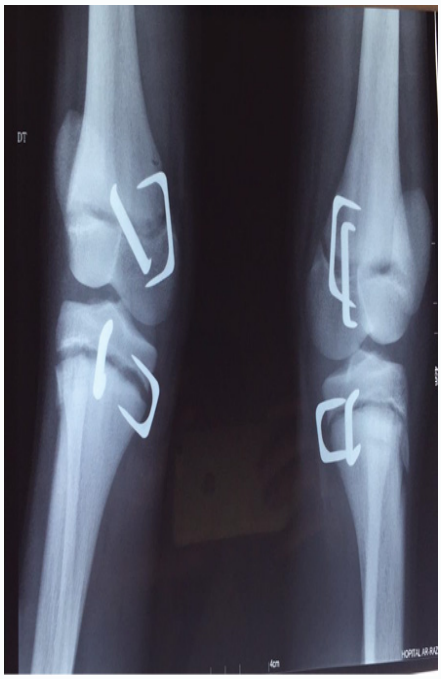

Figure 4: Epiphysiodesis of the two lower femoral extremities and of both extremities.

to pelvic conjugation cartilage hypertrophy; PTH inhibits epiphyseal cartilage calcification by inhibiting chondrocytes in culture [3]. The risk of EFS is increased in children with Chronic Renal Failure (CKD) complicated by renal osteodystrophy [4] and secondary Hyperparathyroidism (HPTS).

The therapeutic approach for HPTP associated with EFS is parathyroidectomy. In the two cases reported by Chiroff et al. and Bone et al. [1,2], parathyroidectomy alone cured the EFS. However, additional treatment with fixation of the upper femoral epiphysis by osteosynthesis appears useful.

Conclusion

In renal osteodystrophy, the occurrence of upper femoral epiphysiolysis associated with a valgum knee would be explained by the direct action of excessively secreted parathyroid hormone (secondary hyperparathyroidism) on the epiphyseal cartilage.

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