SLIPPED CAPITAL FEMORAL EPIPHYSIS IN PRIMARY JUVENILE HYPOTHYROIDISM

J. GUIRAL[1], R. FISAC[2], A. MARTIN-HERRAEZ[3], J. GARCIA-VELAZQUEZ[4]

We report a case of a patient with a unilateral slipped upper femoral epiphysis and primary juvenile hypothyroidism. A satisfactory outcome was observed two years after surgery.

Keywords : hip ; slipped epiphysis ; hypothyroidism.
Mots-clés : hanche ; épiphysiolyse ; hypothyroïdisme.

CASE REPORT

A 14-year-old girl came to the orthopedic service because of pain in the right hip, lasting approximately 10 months, that had recently increased in severity. She denied any history of hip injury. The pregnancy and delivery were both normal. The growth and development were slow. The patient reported disturbing skin dryness, but denied constipation, cold intolerance, easy fatigability or lethargy. There was no family history of thyroid disease or short stature.

Examination showed a short and lean adolescent : her height was 147 cm and her weight 42 kg (below the third percentile for her age). Her development of secondary sexual characteristics was Tanner stage S3/P3 and her bone age, calculated by the TW2 method, was 11 years 7 months (6). She had dry skin, and delayed relaxation phase of deep tendon reflexes. Her thyroid gland was not palpable. There was no evidence of intellectual deterioration. The range of motion of the hips was normal, but the patient walked with a slight limp.

Radiographs of the pelvis showed a grade 1 slip of the right femoral epiphysis (fig. 1). Radiographs of the pituitary fossa were normal.

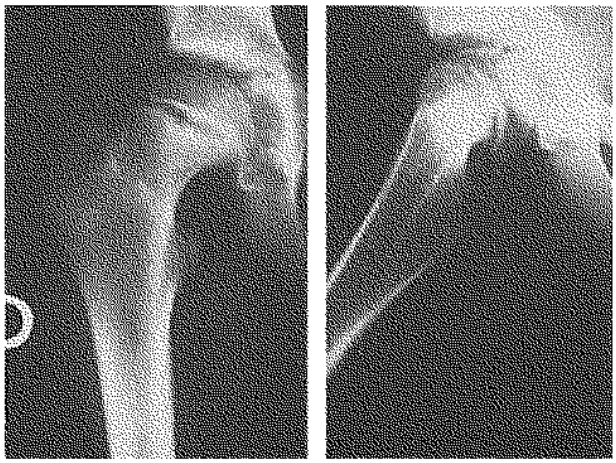

Fig. 1. — Preoperative radiographs of the right hip showing a grade-I slipped capital femoral epiphysis.

The laboratory findings were : erythrocyte count 2.90×10^6 mcl (normal : 4.2-5.4), hemoglobin 9.1 g/dl (normal : 12-16), hematocrit 26.5% (normal : 37-47), ESR 90 mm/h, TSH 395 mcIU/ml (normal : 0.32-5), T4 undetectable (normal : 9-23), thyroperoxidase $>$ 3000 IU/ml (normal : $<$ 154) and antithyroglobulin antibodies $>$ 9000 IU/ml (normal : $<$ 360).

Hashimoto's thyroiditis with hypothyroidism was diagnosed and replacement therapy started.

[1] Department of Orthopedic Surgery.
[2] Department of Hematology.
[3] Department of Internal Medicine.
[4] Department of Pediatrics, General Hospital, Segovia, Spain.
Correspondence and reprints : J. Guiral.

Fifty mcg/day of levothyroxine sodium was initially given, and then gradually increased to 100 mcg/day.

The right hip epiphysis was stabilized in situ with three Moore pins (fig. 2), before normalization of serum thyroxin and thyroid-stimulating hormone levels. Postoperatively, the patient was allowed toetouch walking with crutches for 8 weeks and then progressed to partial weightbearing. Full weightbearing was begun 3 months after surgery. One year later the radiographs showed complete epiphyseal closure, with the pins removed. Two years postoperatively the patient walked without any pain or limp and had a full range of movement in both hips.

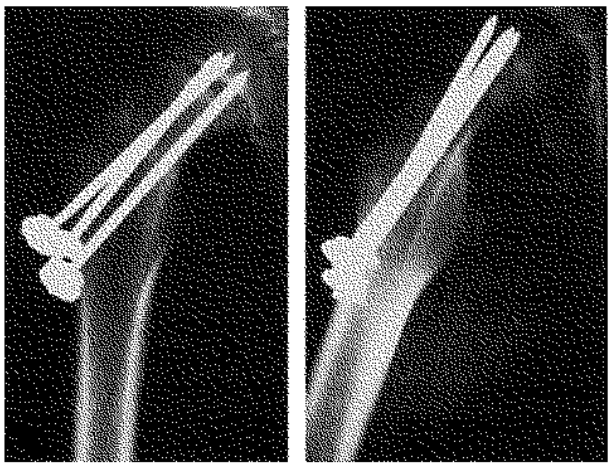

Fig. 2. — Postoperative radiographs showing the position of transfixing Moore pins in the slipped capital femoral epiphysis.

DISCUSSION

The etiology and pathogenesis of slipped capital femoral epiphysis remains undefined. Hypothyroidism causes delayed maturation of the epiphyseal growth plate, making the proximal femoral epiphysis susceptible to slipping (1, 4, 7). In 1985, Puri *et al.* (5) reported 9 cases of slipped capital femoral epiphysis associated with juvenile hypothyroidism and they reviewed 18 cases previously reported in the literature. Since then, as far as we know, only one further case has been reported (3). Fifteen of the 28 reported patients had biochemically confirmed Hashimoto's thyroiditis. Like some other reported cases (3, 5), our patient presented hip symptoms before hypothyroidism was diagnosed. Some authors think that no surgical procedure should be undertaken until normal serum thyroid hormone levels are reached (2). In our patient, no complications related to the surgical procedure were observed, although it was performed before a euthyroid state could be attained. Prophylactic pinning of the normal hip may be unnecessary if careful monitoring of the hips is performed during the growth spurt. This case emphasizes the need to consider the likelihood of thyroid disease in any patient with slipped capital femoral epiphyses.

Acknowledgement

We appreciate the manuscript review provided by Dr. Diego Reverte.

REFERENCES

1. Crawford A. H., MacEwen G. D., Fonte D. Slipped capital femoral epiphysis co-existent with hypothyroidism. Clin. Orthop., 1977, 122, 135-140.
2. Hirano T., Stamelas S., Harris V., Dumbovic N. Association of primary hypothyroidism and slipped capital femoral epiphysis. J. Pediatr., 1978, 262-264.
3. Lindsay A. N., Voorhess M. L., Young L. W. Slipped capital femoral epiphysis in hypothyroidism. Am. J. Dis. Child., 1984, 138, 1149-1150.
4. Moorefield W. G., Urbaniak J. R., Ogden W. S., Frank L. Acquired hypothyroidism and slipped capital femoral epiphysis. J. Bone Joint Surg., 1976, 58-A, 705-708.
5. Puri R., Smith C. S., Malhotra D., Williams A. J., Owen R., Harris F. Slipped upper femoral epiphysis and primary juvenile hypothyroidism. J. Bone Joint Surg., 1985, 67-B, 14-20.
6. Tanner J. M., Whitehouse R. H., Cameron N., Marshall W. A., Healy M. J. R., Goldstein H. Valoración de la maduración esquelética y predicción de la talla adulta (Método TW 2). E. Ancora S. A., Barcelona, 1988, 2a, 1-23.
7. Zubrow A. B., Lane J. M., Parks J. S. Slipped capital femoral epiphysis occurring during treatment for hypothyroidism. J. Bone Joint Surg., 1978, 60-A, 256-258.

SAMENVATTING

J. GUIRAL, R. FISAC, A. MARTIN-HERRAEZ, J. GARCIA-VELZAQUEZ. Proximale femorale epifysiolyse in een geval van primaire, juveniele hypothyroïdie.

De auteurs rapporteren een geval van unilaterale proximale, femorale epifysiolyse, geassocieerd aan een juveniele, primaire hypothyroïdie. Een gunstig resultaat werd genoteerd 2 jaar na heelkunde.

RÉSUMÉ

J. GUIRAL, R. FISAC, A. MARTIN-HERRAEZ, J. GARCIA-VELZAQUEZ. Epiphysiolyse fémorale supérieure dans un cas d'hypothyroïdie juvénile primaire.

Les auteurs rapportent un cas d'épiphysiolyse fémorale supérieure associée à une hypothyroïdie primaire. Une evolution favorable fut observée deux ans après traitement chirurgical et correction de l'hypothyroïdie.