FROM THE MARTINA HANSEN'S HOSPITAL, BÆRUM, NORWAY
(CHIEF PHYSICIAN: J. HALD, M.D.)

EPIPHYSEOLYSIS CAPITIS FEMORIS IN TWO GENERATIONS[1])

CASUISTIC REPORT

BY

H. THRAP-MEYER

Oslo

Whether the occurrence of a slipping epiphysis of the head of the femur in father and son be more than accidental, I shall not venture to say, of course. But, as long as we still have to discuss the etiological possibilities in each individual instance of this lesion, and usually stop at a greater or smaller etiological probability—in other words, as long as we are unable in the individual case with certainty to point out the decisive factor in the appearance of the lesion — we have to consider the question under a new angle also when we meet with such an observation as will be reported here.

In the literature available to me I have not found any mention of the possibility that slipping epiphysis of the head of the femur may occur in several members of the same family or, as in the present instance, in a father and his son. Even though I have heard that familial cases are said to have been observed by others, they are at any rate so rare as to deserve attention.

In this instance, the *father* was examined twice: in January 1937 and in June 1939.

Case 1. When his son was to be admitted to this hospital for suspected tuberculosis of the hip, he accompanied the boy to the ward; and he was just about leaving the ward when I noticed that he was limping. I therefore had him examined, with the following result:

[1]) Presented in abstract at the meeting of Nordisk Kirurgisk Forening at Oslo 1939, in the discussion: "Epiphyseolysis capitis femoris".

(Fig. 1.) He was 50 years old. He stated he had been perfectly well til he reached the age of 10—11 years, when he began to limp on his right leg, after a so-called "whipping jump" (a children's game), that is, a strain to which boys of that age are exposed every day. As he was practically free from pain, he did not seek any doctor about the limp, which has persisted in various degrees to this day.

Fig. 1.
Senior.

At the age of 18, one day he fell on his left side and "broke" the left hip, he says. The doctor was called, and the young man was given a plaster cast, with which he was confined to bed for about 8 weeks. After this, the left leg was found to have become somewhat shorter than before, so that the limp of the right leg afterwards has been less pronounced. Indeed his condition was actually so good that, three years later, he was found fit for military service, and served his time with the artillery.

Later there has been variable pain and reduction of the mobility in both hips.

At the examination, on January 23, 1937, he was roentgenographed the first time in his life.

On physical examination the left leg was found to be 2½ cm. shorter than the right. The mobility in the hips was as follows:

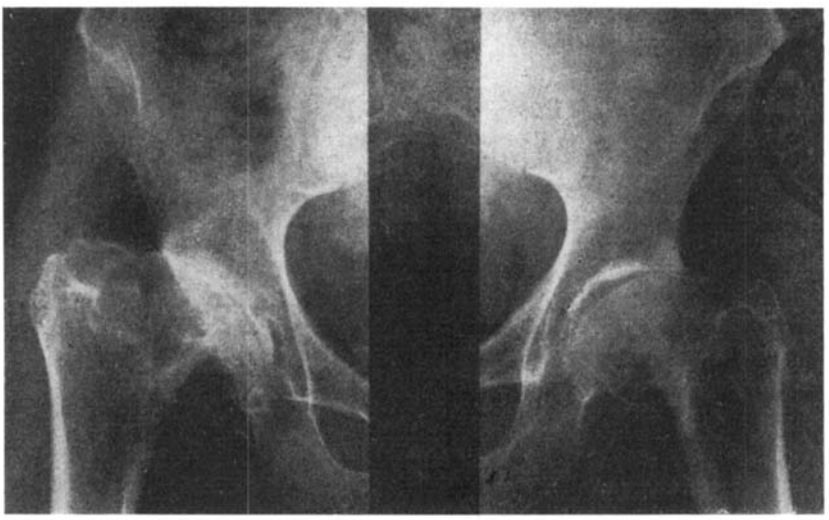

Fig. 2.
Senior. XB. Juni. 1939.

	Left	*Right*	
Flexion	90°	45°	
Extension	free	free	
Abduction	10°	15°	
Adduction	20°	10°	
Pronation	30°	0	Permanent position
Supination	0	0	in 80° supination.

Roentgenography of the hips showed on both sides, but more distinct on the right, a short and plumb collum femoris and marked deformity of the head. (Fig. 2.)

Correlated with the case history and clinical findings the lesion may be taken with a fair degree of certainty to be a bilateral slipped epiphysis of the head of the femur with secondary arthritic changes.

Reexamination on June 8, 1939, showed no particular roentgenographic changes in the hips, but a considerable clinical aggravation involving especially the abduction and adduction, which were further decreased in both hips, and the capacity for rotation that now was lost altogether. A considerable degree of arthritis deformans of the left knee, with pain and swelling, contributed further to lower the working capacity of the man.

Here it will suffice to present the roentgenograms of the hips from the reexamination (June 8, 1939), as photographically they are better

than the pictures from January 1937, and roentgenologically the two sets of pictures are practically identical.

With a view to the etiological possibilities it will be appropriate to cite the case history of the *son* somewhat more extensively.

Fig. 3.
Junior.

Case 2. He was born November 21, 1920, and thus he was 16 years old when he entered this hospital, on January 23, 1937. He has gone through the usual diseases of childhood, but he has otherwise been well and strong until September 1936, when, while straining at carrying a sack of flour weighing 70 kg., he had an attack of pain in the right hip, and he began to limp on the right leg. The limp has since persisted rather constantly, and for the last couple of months before admission to the hospital he has noticed too that the mobility in the right hip was somewhat reduced. It was this impairment that made him seek medical advice, and his physician induced him to enter the hospital, suspected of tuberculosis.

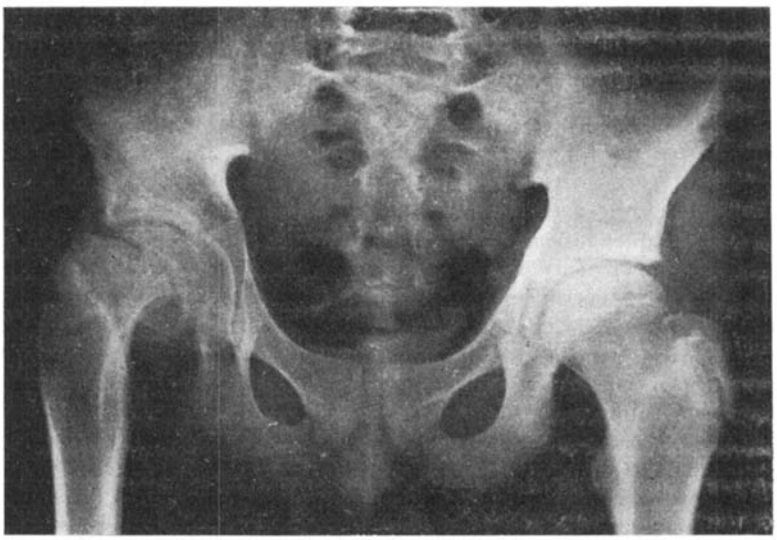

Fig. 4.
Junior. XB. Januar 1937.

On admission, January 23, 1937, it says in his record:

The patient is 16 years old, tall for his age and rather slender of build, looking well proportioned. (Fig. 3.) He has no pain when he keeps at rest. His facial expression is somewhat moping, on account of abundant adenoids. Tonsils somewhat large and congested. Submaxillary and cervical lymph glands palpable. Auscultation of the heart and lungs: No definite abnormality. Abdomen: Normal findings.

Right lower extremity: The limb is kept fully extended in the hip, and supinated 20°.

Flexion: 30°.

Abduction: 15°.

Adduction: Crossing the leg over the other knee.

Pronation: 0.

Supination: From the resting position, additional 8°.

No measurable difference in length between the two extremities, but the circumference of the right thigh is 3½ cm. less than that of the left, and the circumference of the right leg is 1 cm. less than the left.

No pain on passive motions, nor on active motions without weight-carrying. The greater trochanter is protruding, but there is no tenderness on its palpation. Nor is there any discomfort in the hip-joint on palpation or pain on pressure up against the joint.

These findings in themselves made the diagnosis tuberculosis rather

improbable, and this view was further corroborated by the outcome of the tuberculin tests. The Pirquet test was performed twice, the Mantoux test once (with 1 mg. tuberculin). On all three tests the reaction was negative.

Roentgenography, January 25, showed a typical picture of slipped epiphysis of the head of the right femur, with an upward displacement of 15 mm. (Fig. 4.)

On February 2, under spinal anæsthesia, an attempt was made at reposition, on extension table. It was not practicable, however, to dislodge the epiphysis from its wedging into the head. It was decided, therefore, to perform an operative reposition under ether anæsthesia through a Smith-Petersen incision. As the contracture of the medial wall of the capsule could not be loosened, the reposition was not quite so successful as had been hoped. Plaster cast was applied in 35° abduction and maximal pronation in the hip.

A few days after the operation the patient had melæna. Subsequently he had several attacks of hæmaturia associated with renal colick. Intravenous pyelography furnished no definite evidence of calculus formation.

During his stay in the hospital, adenotomy was performed, without any complications.

The repeated attacks of hæmaturia and a bed-sore on the foot delayed the treatment, and the patient did not get up till the latter part of July.

On discharge, the examination showed: The right hip is lacking 10° in full extension.

Flexion: 45°.

Abduction: 30°.

Adduction: Crossing the leg over the other knee.

The limb lies 20° supinated in the hip, and it can be supinated additional 45°, and pronated a few degrees.

Length of the extremities from the anterior superior iliac spine to the internal malleolus on the right side, 94 cm.; on the left, 95 cm. At the level of the knee-joint there is also a shortening of 1 cm. on the right side. The circumference of the right thigh is 1 cm. less than that of the left thigh.

Reexamination, on June 8, 1939, about 1¾ years after his discharge from the hospital, and 2½ years after the operation: The patient states that during the interval he has been free from pain, in spite of heavy work in the forrest and field. The gait is steady, without any definitely demonstrable limp. Trendelenburg negative.

The right hip usually stays in 25° flexion, but can be extended additional 10°, and this gives thus a flexion contracture of 15°. Flexion capacity: 80°. The limb is abducted 10—12°, from which position it can be abducted and adducted a few degrees. It can be pronated 5°, and

suppinated 10°. The muscular and supporting power is good in both lower limbs. Roentgenography in ordinary and Lauensteins position are showed in Fig. 5 and 6.

Summing up this case history, it may be said that the patient under the given treatment—or, possibly, in spite of the treatment—has obtained

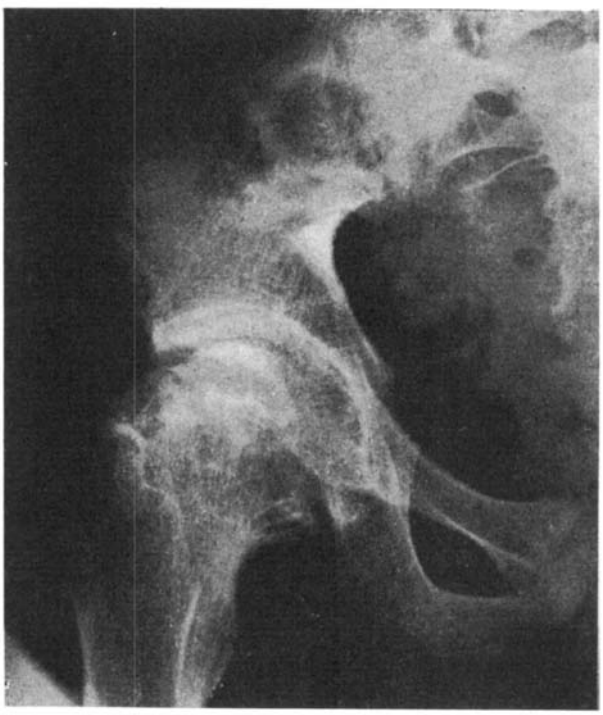

Fig. 5.
Junior. XB. Juni 1939.

a considerable increase in the capacity for flexion, some improvement of the rotation power and freedom from pain. But his capacity for abduction and adduction has been reduced considerably.

Both the patient had his father are very satisfied with the result; but it is to be hoped perhaps more than believed that this young man in future will be free from secondary arthritic changes and possible discomfort of this nature.

Among possible etiological factors, an endocrine disturbance is to be mentioned firstly. Neither the father nor the son present

any sign of endocrine dysfunction. In particular, there is no suggestion of any hypo- or hyperfunction of the hypophysis. Further, roentgenography of the sella turcica in the son shows normal conditions.

In the endocrine interaction of various hormones, however,

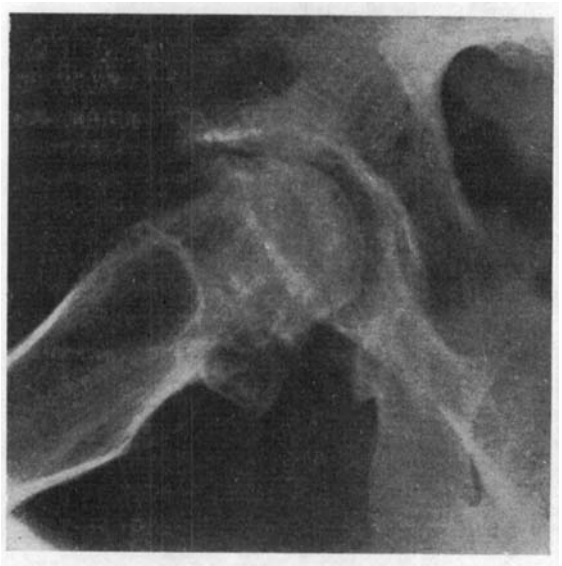

Fig. 6.
Junior. XB. Juni 1939.
Right hip. Lauensteins position.

considerable variations may take place without noticeable manifestations in the appearance of the individual. It is not warrantable, therefore, from the absence of clinical symptoms to conclude that the hormonal aspects of the organism are well-balanced in every respect. But it will be justified, I think, to say that endocrine disturbance in cases like this is somewhat hypothetical.

The next possibility to be considered is avitaminosis. It is true that the son had melæna a few days after the operation and, later, repeated attacks of hæmaturia, but these hæmorrhages may naturally be attributable to the operative injury,

which was considerable, or perhaps to nephrolithiasis even though no formation of renal calculi has been demonstrated. At any rate, after the examinations and tests performed the diet of the son has been so adequate as to vitamins that avitaminosis, or hypovitaminosis, may be excluded. Thus the young man states himself that, among other things, he eats daily five potatoes, always with the peeling too as long as they are relatively new. If a person under such conditions would be apt to develop symptoms of vitamin C deficiency in any form whatever, it would be time we ruled out potatoes from our list of more important sources of vitamin C. Nor has there been any suggestion of renal rickest as mentioned by Waldenström.

There then remains the question about a hereditary disposition.

Both the father and the son acquire the disease after relatively insignificant traumatic injuries, in the second decade of life. They are of the same type of physical build and, as far as I have been able to find out, they have grown up under fairly similar conditions—namely, the toilsome existence of the poor. Otherwise the family history (covering also distant relatives) is negative as to hereditary disease or deformity.

One instance is no instance, it may be claimed, and I shall take care not to make any etiological assertion in this connection. Still, it seems to me that the occurrence of the same disease in father and son is such a striking coincidence that in this case it invites to think of a possible hereditary disposition as an etiological factor—at any rate as a theoretical possibility. With our present defective knowledge of the laws of heredity as well as the true cause of slipping epiphysis we might hardly be justified in refuting this possibility as inconceivable.

In conclusion I wish to thank Dr. Hald for permission to report these cases and for his obliging reexamination of the patients in the hospital.

SUMMARY

Cases of epiphyseolysis capitis femoris in father and son are reported.

The author discusses the possibility of hereditary disposition.

RÉSUMÉ

Compte rendu de cas d'épiphyseolysis capitis femoris chez un père et un fils.

L'auteur discute l'éventualité de la prédisposition héréditaire.

ZUSAMMENFASSUNG

Es wird über Fälle von Epiphysenlösung des caput femoris bei Vater und Sohn berichtet.

Verfasser erörtert die Möglichkeit einer erblichen Disposition.