Multiple endocrine dysfunctions in a patient with secondary hemochromatosis

Dysfonctions endocriniennes multiples chez un patient ayant une hémochromatose secondaire

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Introduction:

Hemochromatosis is a disorder caused by an excess of iron deposition in the parenchymal cells that leads to organ dysfunction. It may be divided into primary hemochromatosis and secondary hemochromatosis. The latter can arise in many disorders such as thalassemia or myelodisplastic syndrome, especially if patients have received a multiple blood transfusions [1]. In these patients, the absence of an effective chelation therapy leads to iron overload and gradually accumulation in various tissues, rising morbidity and mortality. Major organs affected by this surplus iron include the heart, lung, liver, and endocrine glands [2]. The prevalence of endocrine dysfunctions varies enormously within studies but they seem to be common in transfusion-associated hemochromatosis [3].

Herein we report the case of a patient with β-thalassemia major who developed diabetes mellitus, hypopituitarism and primary hypoparathyroidism due to secondary hemochromatosis.

Observation:

A 27-year-old male patient was diagnosed at the age of four years with hemochromatosis secondary to multiple transfusions for β-thalassemia major. He was very poorly compliant with his iron chelation therapy.

At the age of 19 years, he developed diabetes mellitus and hypopituitarism with hypogonadotropic hypogonadism [Total testosterone level =0.62 nmo/l (normal ranges: 7.87-35.74) Follicle-stimulating hormone (FSH) level= 0.10 mIU/ml (normal ranges: 1.37-21.63), Luteinizing hormone (LH) <0.09 mIU/ml (normal ranges: 1.14-8.75) with a normal prolactin level] and corticotropin deficiency [Basal cortisol level= 60 nmol/l (normal ranges: 101.2-535.7) with a suppressed level of adrenocorticotropic hormone (ACTH) <10 pg/ml]. Magnetic resonance imaging (MRI) scan showed hemosiderin deposits in anterior pituitary gland. The patient received insulin, hydrocortisone and testosterone enanthate. One year later, he was diagnosed as having iron-overload cardiomyopathy and hepatic cirrhosis.

At the age of 27 years, the patient presented with weakness and recurrent hypoglycemia secondary to the interruption of hydrocortisone replacement therapy. No hypocalcemia symptoms were reported.

On physical examination, he had a body weight of 56 kg, a body height of 1.80 m, a body mass index of 17.2 kg/m^2, a blood pressure of 90/60 mmHg and a pulse rate of 75/ mn. Trousseau and Chvostek signs were negative. The abdomen was enlarged with presence of hepatomegaly.

Routine laboratory tests indicated hypocalcemia (corrected calcemia of 2.05 mmol/l; normal ranges: 2.2-2.6 mmol/l) with hyperphosphatemia (1.91 mmol/l; normal ranges: 0.8-1.45 mmol/l). Parathormone (PTH) level was under the normal range (13.3 pg/ml, normal ranges: 26.5-96.5) consisting with the diagnosis of hypoparathyroidism.

Further hormone investigations revealed central hypothyroidism with a thyroid stimulating hormone (TSH) level of 3.94 µIU/ml (nr: 0.35-4.94 µIU/ml) and Free thyroxine (FT4) level of 0.66 ng/dl (nr: 0.7-1.48 ng/dl).

MRI scan showed hypoplastic anterior pituitary lobe with significant decreased signal intensity on T1 and T2 weighted images [Figure 1]. The bone mineral density showed osteoporosis.

The patient was treated with levothyroxine and 1 α hydroxyvitamin D3.

Commentaries

Patients with secondary hemochromatosis due to repeated transfusions may develop multiple endocrine failures among which diabetes mellitus is the most frequent encountered complication. Its main mechanisms include the loss of insulin secretory capacity and insulin resistance secondary to liver damage.

Hypogonadotropic hypogonadism represents also a frequent endocrine abnormality in hemochromatosis which is mainly secondary to selective deposition of iron on the gonadotropin-producing cells. The detection of pituitary iron overload on GRE T2*-weighted images is consistent with the hypothesis of hypogonadotropic pituitary insufficiency due to iron-induced cellular damage [4].

Insufficiencies of the other pituitary hormones are

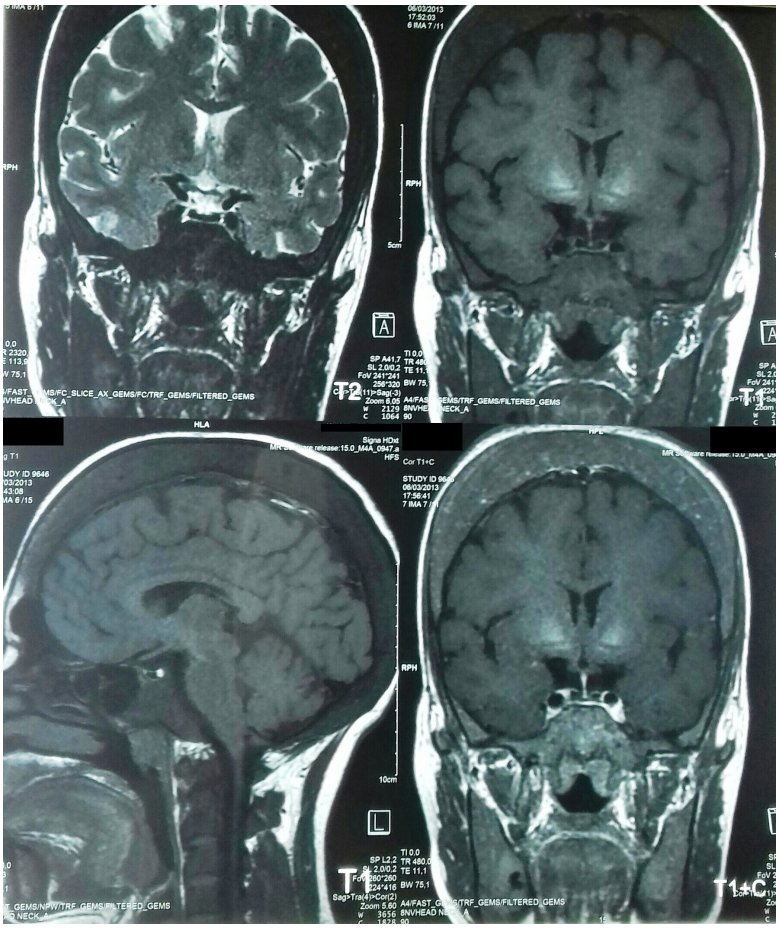

Figure 1: Pituitary MRI scan showed hypoplastic anterior pituitary lobe with markedly decreased signal intensity on T1 and T2 weighted images.

infrequent [5]. Moreover, iron overload can also cause functional failures in the adrenal, parathyroid, and thyroid glands. These dysfunctions are less common than diabetes or gonadotropin deficiency [6].

In patients with multiple endocrine dysfunctions, the diagnosis of hemochromatosis should be considered as a differential diagnosis of autoimmune polyglandular syndrome.

Although therapeutic phlebotomy is the only broadly accepted treatment for hemochromatosis, some studies have demonstrated the usefulness of aggressive iron-chelation therapy in long-term reversing and preventing clinical glandular dysfunctions [7]. Still, this recovery is most likely restricted to patients who have glandular iron without concomitant apoptosis and volume loss [7].

Endocrine dysfunctions are associated with a high morbidity and mortality especially in patients with hepatic and cardiac complications. Therefore, a regular use of chelation therapy and a follow up with repeated screening examinations are necessary in patients with multiple transfusions.

REFERENCES

1. Beutler E, Hoffbrand AV, Cook JD. Iron deficiency and overload. Hematology Am Soc Hematol Educ Program 2003: 40-61.
2. Rotaru I, Gaman A, Gaman G. Secondary haemochromatosis in a patient with thalassemia intermedia. Curr Health Sci J 2014; 40: 67-70.
3. Kim MK, Lee JW, Baek KH, Song KH, Kwon HS, Oh KW et al. Endocrinopathies in transfusion-associated iron overload.

Clin Endocrinol (Oxf) 2013;78(2 suppl):271-7.
4. Sparacia G, Midiri M, D'Angelo P, Lagalla R. Magnetic resonance imaging of the pituitary gland in patients with secondary hypogonadism due to transfusional hemochromatosis. MAGMA 1999;8(2 suppl):87-90.
5. Pedersen-Bjergaard U, Thorsteinsson B, Kirkegaard BC. Pituitary function in hemochromatosis. Ugeskr Laeger 1996; 158: 1818-22.
6. Himoto Y, Kanzaki S, Nomura H, Araki T, Takahashi Y, Seino Y. Hypothyroidism and hypoparathyroidism in an 11 year old boy with hemochromatosis secondary to aplastic anemia. Acta Paediatr Jpn 1995; 37: 534-6.
7. Farmaki K, Tzoumari I, Pappa C, Chouliaras G, Berdoukas V. Normalisation of total body iron load with very intensive combined chelation reverses cardiac and endocrine complications of thalassaemia major. Br J Haematol 2010;148:466–75

Osteochondrolipoma of the knee: a case report

Ostéochondrolipome du genou. A propos d'un cas

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Introduction

Lipomas are the most common soft tissue tumors and may include in addition to mature fat cells various other mesenchymal elements. The World Health Organization describes 14 types of benign tumors including mature adipose tissue such as myxolipoma, fibrolipoma, angiolipoma... . Osteolipoma or ossifying lipoma is a rare subtype [1]. The coexistence within a fat mass of bone and chondral components is even more exceptional. This entity has several names: osteochondrolipoma, lipoma with bone and chondral metaplasia reflecting its uncertain origin.

Histologically, it is composed of mature adipocytes associated with mature bone trabeculae, mature hyaline cartilage and osteoid substance [3]

This tumor has been most often described in the region of the head and neck and around the oral cavity [3]. However, some isolated cases located to the limbs have been reported [2,3].

We report a case of osteochondrolipoma of the knee specifying the clinical, radiological and therapeutic aspects of this rare tumor.

Observation

A 59-year-old woman with no medical history presented for a painless swelling of the anterolateral side of the right knee, evolving for 3 years, gradually increasing in volume. He reports a direct knee trauma that occurred 4 years ago. This tumefaction evolved without a deterioration of the general status.

Clinical examination showed a superficial oval mass of the anteromedial surface of the right knee, well limited, 8 cm long axis, soft, painless to palpation, not adherent to superficial and deep planes and without local inflammatory signs. The range of motion of the knee was normal.

X-Rays revealed rounded and arcuate calcifications of the juxta-articular soft tissues on the antero-medial side (Fig.1). The CT scan confirmed the presence of a heterogeneous fat mass containing peripheral calcification areas (Fig.2).

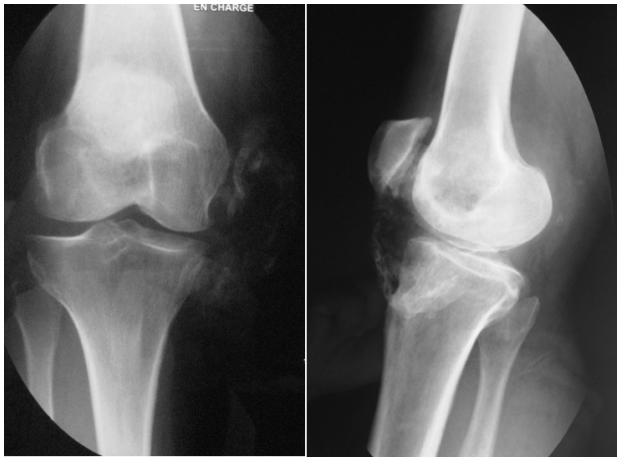

Figure 1: Standard knee radiographs showing rounded and arciform calcifications of the soft tissue of the antero-internal aspect of the knee.

MRI revealed a well-defined anteromedial juxta-articular

mass of the right knee, at the contact of the medial collateral ligament and medially to the hamstring tendons, measuring 8x3 cm. This mass was of fatty signal hyper T1 signal fading on the fat saturation sequences, hyper T2 signal and enhancing shortly after Gadolinium injection.

In peripheral, it contains millimeter-sized nodular formations in iso signal intensity to the bone in T1 and T2 weighted images suggesting bone metaplasia. There was no abnormal morphology or signal of the bony structures of the knee

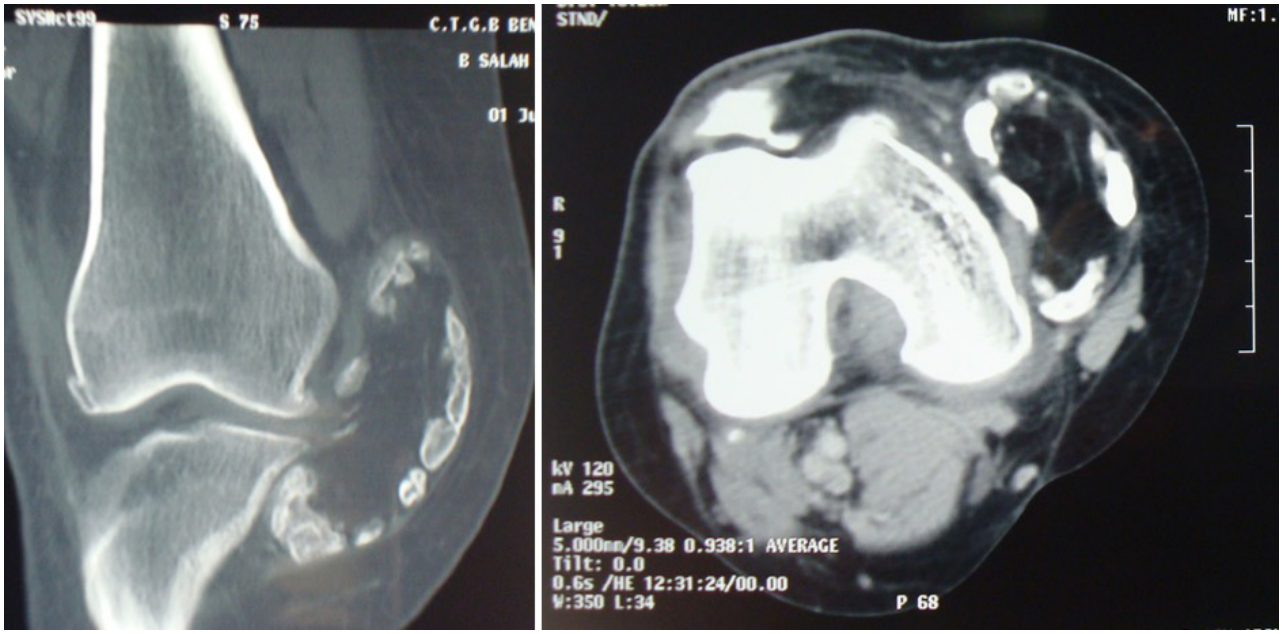

Figure 2: CT scan of the knee: juxta-articular heterogeneous mass of fatty density containing peripheral calcification ranges.

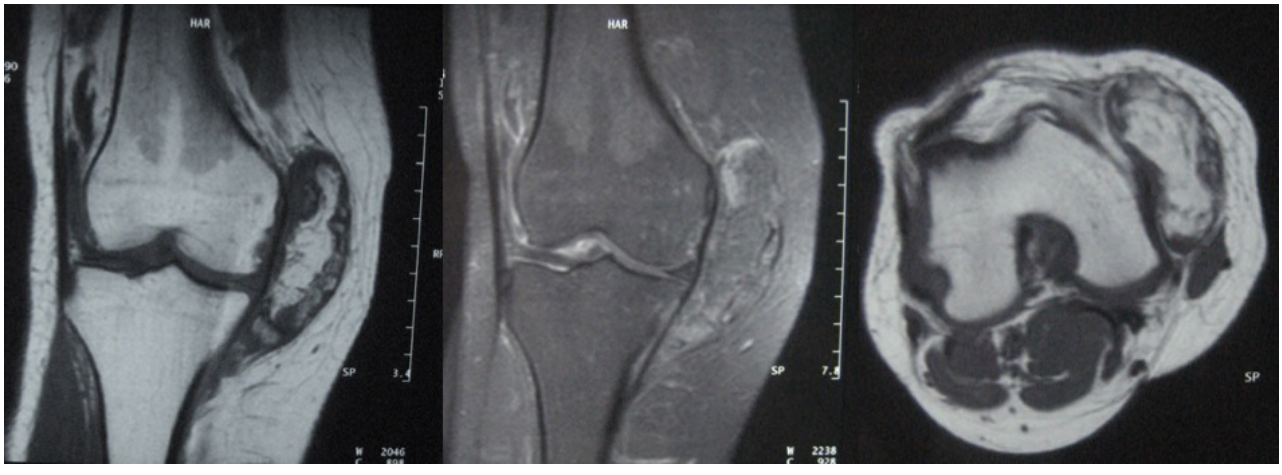

Figure 3: MRI: antero-medial well-defined mass of the right knee located in contact with the medial collateral ligament, fatty signal in T1 and T2 hyper signal, fading on FatSat sequences and enhancing shortly after injection of Gadolinium. In the periphery there are millimeter-sized nodular formations in T1 and iso signal on T2 relative to the bone evoking bone metaplasia.

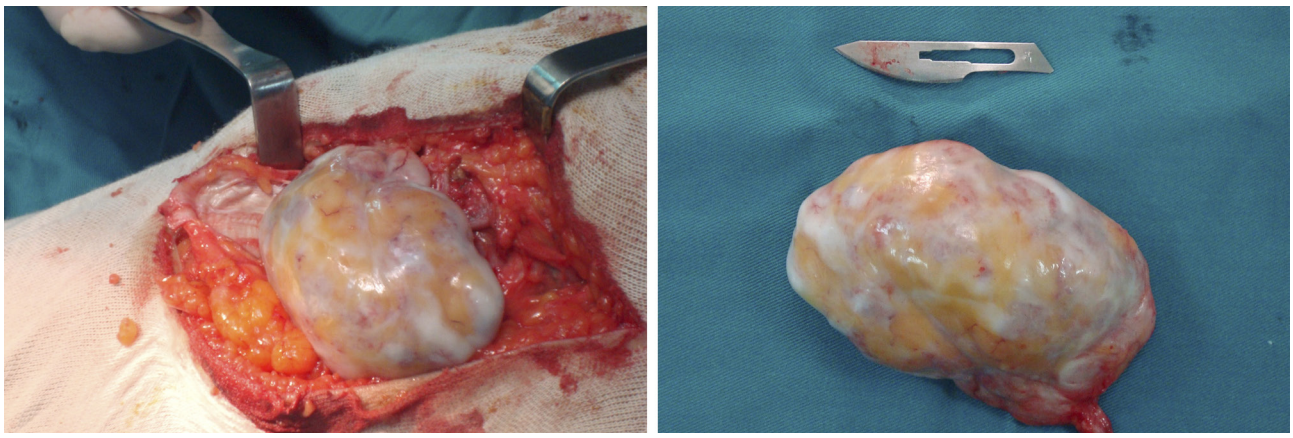

Figure 4: firm oval tumor well encapsulated finely vascularized of yellowish color not communicating with the joint

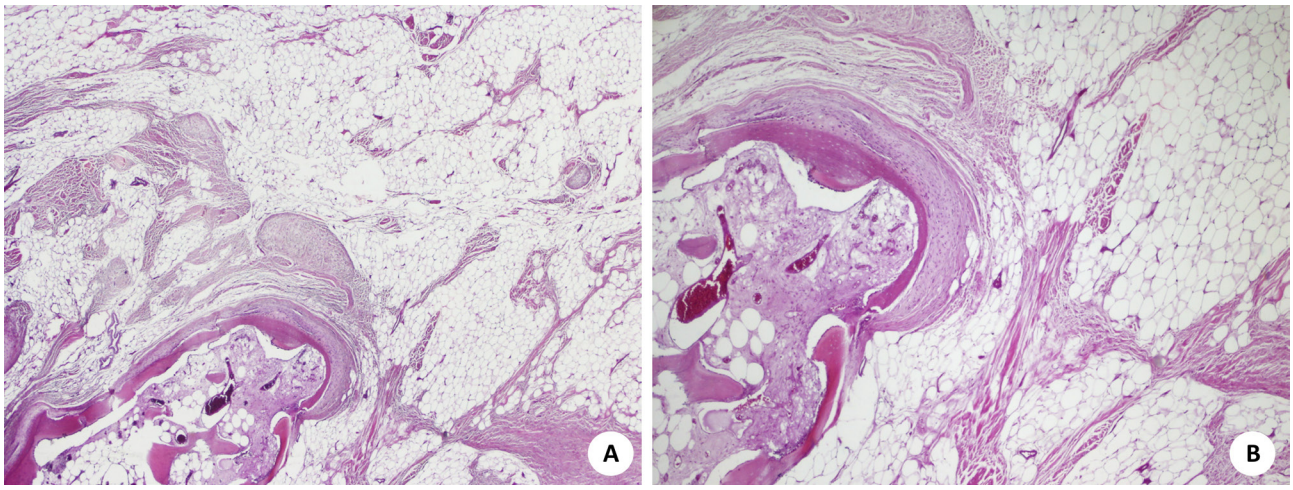

Figure 5: (A) Histological sections of the tumor specimen show lipoma with cartilaginous and osseous differentiation (HEx20). (B) Enchondral ossification within lipoma (HEx100).

Total resection of the tumor was performed. Macroscopic examination revealed a well-encapsulated firm oval tumor that was vascularized yellowish in color and not communicating with the joint (fig.4).

Histopathological examination confirmed the diagnosis of lipoma with osteochondral metaplasia by showing mainly mature adipose tissue associated with micronodules of mature hyaline cartilage and lamellar bone areas containing osteocytes (Fig.5)

With a follow-up of 8 years postoperatively, the evolution was favorable and the patient did not present a local recurrence.

Conclusion

Lipoma with osteochondral metaplasia is an extremely rare benign tumor that often affects the area of the head and neck. Knee localization is uncommon. The nomenclature and physiopathology of this lesion remain controversial. Diagnostic confirmation is anatomopathological only. The treatment is surgical and consists of complete excision.

REFERENCES

1. Huynh T-PV, Cipriano CA, Hagemann IS, Friedman MV. Osteolipoma of the knee. Radiol Case Rep. 2017 Mar;12(1):124–9.
2. Nishio J, Ideta S, Iwasaki H, Naito M. Scapular osteochondrolipoma: Imaging features with pathological correlation. Oncol Lett. sept 2013;6(3):817-20.
3. Choi Y-J, Kang J-H, Kang G-H, Choi S-J. Osteochondrolipoma presenting as a popliteal cyst. Clin Orthop Surg. 2015;7(2):264.