Epiphyseal pseudotumor of the tibia: an uncommon presentation of osteoarthritis

Une pseudotumeur épiphysaire du tibia: une présentation rare de l'arthrose

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RÉSUMÉ

Les pseudotumeurs épiphysaires secondaires à l'arthrose sont rares chez les patients de moins de 50 ans. Nous rapportons le cas d'une femme de 48 ans présentant des gonalgies gauches évoluant depuis trois ans. Les radiographies du genou gauche ont retrouvé une gonarthrose associée à des lésions lytiques multicloisonnées. Une tumeur épiphysaire du tibia gauche a été suspectée. La tomodensitométrie a conclu à des kystes sous-chondraux géants secondaires à l'arthrose. Notre observation se distingue par sa survenue chez une patiente jeune, ses localisations multiples (fémur, tibia et patella) ainsi que la taille inhabituelle des kystes de plus de 2 cm.

Mots-clés

Subchondral cyst, osteoarthritis, pseudotumor

SUMMARY

Epiphyseal pseudotumor secondary to osteoarthritis are rare in patients under 50 years. We report here the case of a 48-year-old woman who complained of pain in the medial side of the left knee for three years. X-rays of the left knee showed a large lytic lesion containing multiple septae, with sclerotic margins at the upper end of the tibia, associated with knee osteoarthritis. An epiphyseal tumor of the left tibia was suspected. CT scan of the left knee concluded in a giant subchondral cyst secondary to osteoarthritis. Subchondral cysts or geodes are a common finding in patients with knee osteoarthritis. Nevertheless, some unusual aspects of the lesions may lead to diagnosis difficulties.

Key-words

Subchondral cyst, osteoarthritis, pseudo tumor

Subchondral cysts or geodes are a common finding in patients with knee osteoarthritis (OA). Nevertheless, some unusual aspects of the lesions may lead to diagnosis difficulties.

CASE REPORT

A 48-year-old woman without a pathological history working in the textile industry, complained of pain in the medial side of the left knee for three years. Pain was aggravated by activity and relieved by rest. Other joints were not painful. Clinical examination was unremarkable for all joint expect for pain on palpation of the medial side of the left knee. There were no axial deviations. X-rays (Figure1) of the left knee showed a large lytic lesion containing multiple septae, with sclerotic margins at the upper end of the tibia, associated with small osteophytes formation and narrowing of the medial femorotibial joint space. An epiphyseal tumor of the left tibia was suspected. Radiographs of the right knee showed similar lesions. Routine blood tests were normal. CT scan of the left knee (Figure 2) showed a large cyst-like lesion with sclerotic margins in association with some trabecular bone-like septum formation and air within the cystic lesion. Periosteal reaction was absent, as well as disruption of the cortical bone, joint or extra osseous invasion. Similar but less extensive lesions were seen in the left patella and in the right knee (Figure 3, 4). Thus, the presence of multiple localizations in both knees with air inside the lesions, and lesion characteristics in CT are suggestive of giant subchondral cyst secondary to osteoarthritis. Occupational overuse of leg joint seems to be involved in early onset of osteoarthritis in this patient; no family history of osteoarthritis or personal history of trauma was found.

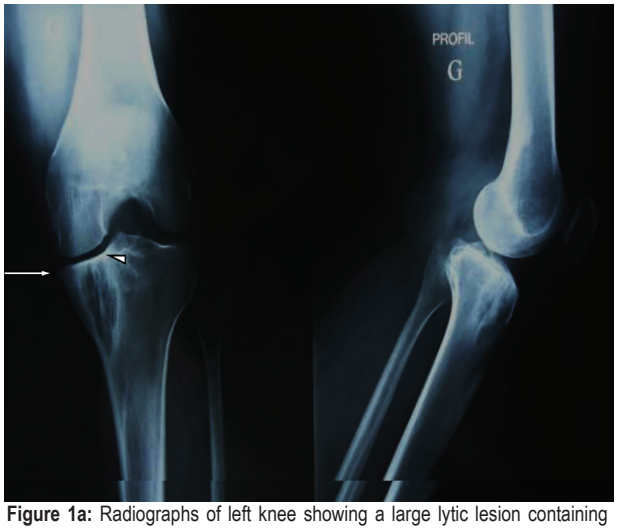

Figure 1a: Radiographs of left knee showing a large lytic lesion containing multiple septae involving the medial side of the epiphysis and the metaphysis of the left tibia associated with small osteophytes formation (→) and narrowing joint space of the medial femorotibial joint and subchondral sclerosis (Δ).

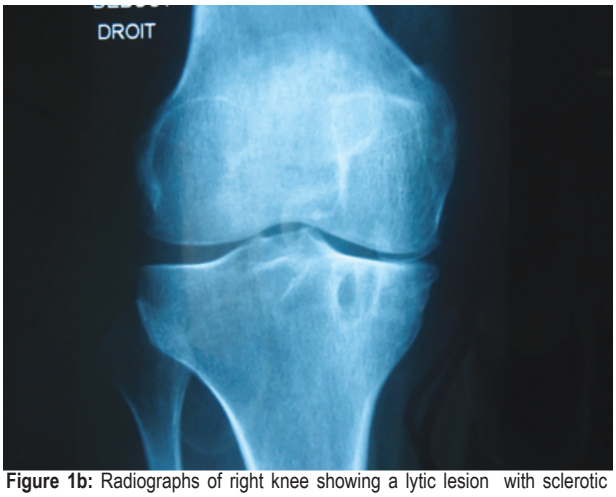

Figure 1b: Radiographs of right knee showing a lytic lesion with sclerotic margins involving the medial side of the epiphysis of the right tibia associated with osteophytes formation and narrowing joint space of the medial femorotibial joint

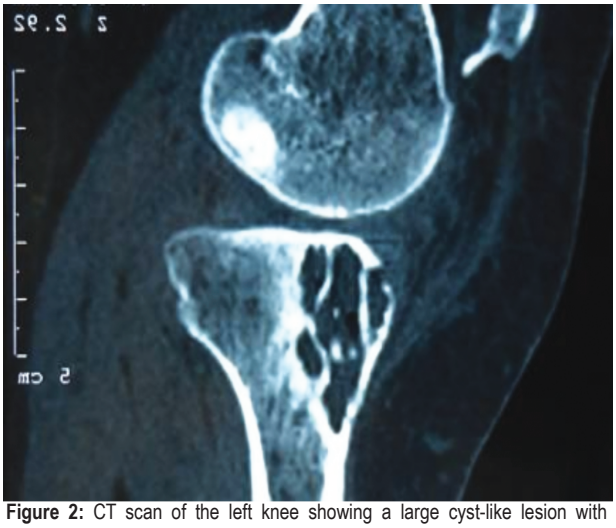

Figure 2: CT scan of the left knee showing a large cyst-like lesion with sclerotic margins in association with septum and air within the cystic lesion.

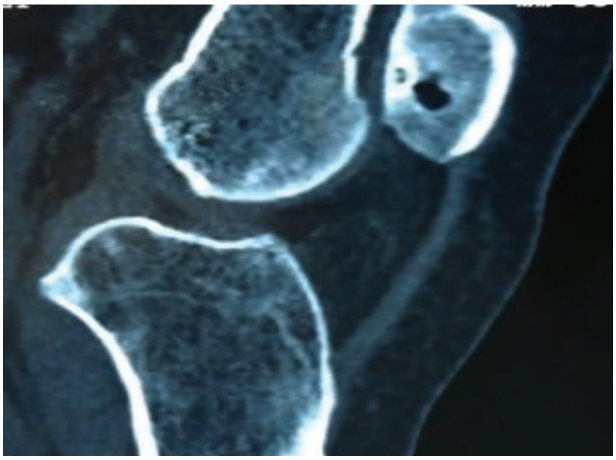

Figure 3: CT scan of the left knee showing the same lesion in the patella.

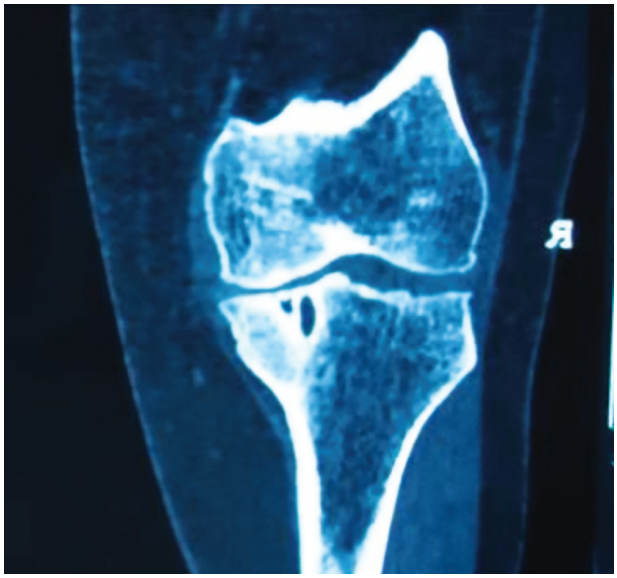

Figure 4: CT scan of the right knee showing subchondral cyst in the medial side of the upper tibia

DISCUSSION

Osteoarthritis (OA) is the most common joint disorder worldwide. Radiographic and/or pathologic changes consistent with OA can be found in 70% of persons over 65 years and subchondral cysts can be found up to 50% of these patients [1-4]. But our case was particular because it occurs in a young patient; there are multiple localizations even in patella and the size of the cyst greater than 2 cm was an unusual finding. A few cases of this uncommon osteoarthritis are reported in the literature [5-8].

Positive diagnosis of OA was particularly difficult in our case because in one hand structural damage of OA was not very far advanced if we consider the volume of the cyst and on the other hand joint space narrowing of the medial tibiofemoral compartment does not necessarily indicate loss of articular cartilage due to OA. It may also be due to degeneration or subluxation of the medial meniscus or other causes as seen by MRI or arthroscopy [9]. But in this context OA was the most likely hypothesis, in fact no physical trauma or intensive sporting practice was reported by the patient. Otherwise, it's possible that the subchondral cysts in both tibias and patella were the primary problem and that the OA was secondary to the adverse mechanical environment that was created by the presence of the cysts in the subchondral bone [10]. But primary ganglion cysts aren't usually multiple and their radiological aspect was different of subchondral cyst secondary to osteoarthritis [11]

Differential diagnosis can be considered with epiphyseal bone tumors like giant cell tumor, chondroblastoma, clear cell carcinoma and other lytic malignancies. The consideration of clinical presentation and identification of related osteoarthritic changes can help to differentiate subchondral cysts from tumors. Moreover, the subchondral cyst should not demonstrate features that would be considered aggressive (wide zone of transition, cortical destruction, periosteal reaction) [12]. Otherwise bone tumors mimics like intraosseous ganglion cyst, pseudocyst and Brodie abscess can sometimes be confused with subchondral cysts. However traditionally these lesions should not have sclerotic margin, are not associated with osteoarthritis changes, are likely uniloculated and could be located elsewhere other than weight bearing joints [13].

Physiopathology of subchondral cysts formation still unknown. The most likely causes are either synovial fluid intrusion or bone contusions [1]. The synovial fluid intrusion theory posits that elevated intra-articular pressure leads to the intrusion of joint fluid into the subchondral bone through fissured or ulcerated cartilage with subsequent development of cystic cavities. In fact the subchondral cysts should develop more frequently in regions of the knee exhibiting full-thickness cartilage loss or fissuring. Also, the serial histological sections showed small defects that penetrate through the articular cartilage and the bony subchondral plate were seen at the apex of the pseudocyst in OA [14]. On the other hand, the bone contusion theory posits that subchondral cysts are a consequence of traumatic bone necrosis after impact of two opposing articular surfaces. In fact, this theory was supported by the fact that subchorndral cysts are often observed in areas of the knee exhibiting concomitant bone marrow edema–like lesions that show histologic features of bone trauma, including areas of necrosis [3]. This theory can explain the fact that structural damage of OA was not very far advanced while the cyst was voluminous.

Otherwise, the presence of air inside the cystic lesion can be explained by both theories. In fact, it consist in a vacuum phenomenon that was defined as a radiolucent collection representing gas that appears at sites of negative pressure; the gas comes out of solution because of the reduced pressure. A vacuum phenomenon can be a sign of degenerative disease and in this case the intrusion of the air into the subchondral cyst could be through fissured or ulcerated cartilage(1st theory) or it can be a sign of osteonecrosis (2nd theory).[15]

CONCLUSION

A few cases of this uncommon osteoarthritis are reported in the literature. Differential diagnosis must be considered particularly with epiphyseal tumors. Its recognition permits to avoid expensive and invasive investigations.

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