CLINICAL REPORT

Patella tuberculosis: A case report

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Summary A rare case of patella tuberculosis is reported. Clinical signs comprised chronic inflammatory pain, knee swelling and joint stiffness, with two years’ evolution. Standard X-ray showed focal osteolysis with intact joint line. Diagnosis was based on surgical biopsy during arthrotomy. Treatment comprised nine months’ antibiotherapy and bone curettage to prevent intra-articular extension. At 42 months’ follow-up, functional results were good, without recurrence of infection.

Introduction

Worldwide, osteoarticular tuberculosis accounts for 3 to 5% of cases of tuberculosis and 15% of extrapulmonary forms. In Morocco, osteoarticular tuberculosis is in third place after pulmonary and ganglion tuberculosis in terms of frequency. The most frequent osteoarticular locus is the spine, then the hip and then the knee [1,2,3]. In the knee, involvement is mainly synovial, with local extension eroding the bone. Pure tuberculous osteitis is rare, with a few occasional reports. Patella tuberculosis is extremely rare, at less than 0.1% of cases of osteoarticular tuberculosis in the French-language literature [4,5]. We here report one case.

Observation

This case is of an 18-year-old, educated woman with no particular history, who had had all the vaccinations and boosters (including BCG) scheduled under the Moroccan public health system. She came from a low-level socioeconomic background, but there was no suspicion of any tuberculosis contagium in the family.

Her clinical history, going back two years prior to admission, consisted in inflammatory pain, right knee swelling and limping, accompanied by knee stiffness and flexion contracture. There was no clear feverish syndrome or night sweats, but she did suffer a 2 kg weight-loss.

Clinical examination was relatively unrevealing, with tenderness on palpation of the medial joint surface of the patella, patellar crepitation, and slight effusion. There was no knee laxity, inguinal adenopathy or other (notably, respiratory) associated signs.

On standard X-ray, the lateral view (Fig. 1) showed a circumferential rosette form with a light peripheral halo. CT scans (Fig. 2) showed a circular image of varying density and well distinguished from the healthy bone, taking up almost all of the medial half of the patellar thickness. Arthroskan, to check patellar joint cartilage integrity, was not performed. There was a lateral shift in the patella, with slight joint effusion. Chest X-ray was normal. Biological analysis found moderate anemia and an inflammatory syndrome:

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Figure 1  Lateral X-ray view of right knee: circumscribed central patellar lesion surrounded by light halo.

SR = 36–105 and CRP = 32 mg/l. Suggested diagnoses were osteoid osteoma, benign cartilage tumor or Brodie’s abscess.

The patient underwent open surgery with a medial parapatellar approach and arthrotomy. Joint fluid was sampled. Direct exploration of the medial side of the patella found soft but continuous cartilage on palpation. Inflammatory synovitis in the sub-quadriceps recess was sampled for biopsy. Opening the cartilage revealed crumbly grayish-white tissue, which was entirely removed by curettage, leaving an unfilled bone space over which the joint cartilage was simply laid without suture.

Intra-osseous tissue histology confirmed the diagnosis of bone tuberculosis, revealing caseous necrosis surrounded by epithelioid and giant-cell follicles. Synovial biopsy diagnosed non-specific chronic synovitis. The joint fluid contained no BK bacilli; the curettage tissue was not explored for BK.

Chest X-ray was normal; three BK cultures proved negative. Tuberculin skin test was positive at 12 mm.

Antibiotherapy was administered for nine months, following the official Moroccan protocol: two months rifampicin (10 mg/kg/d), isoniazid (5 mg/kg/d) and pyrazinamide (25 mg/kg/d), followed by seven months rifampicin and isoniazid. Plaster cast immobilization was maintained for four weeks.

Familial contagion survey proved negative.

Short-term evolution was good, with improved knee function and normalized SR and CRP levels. Knee X-ray showed gradual filling of the curettage bone space.

The patient was re-operated on three years later for medial femoropatellar conflict associated with an osteophyte on the medial edge of the patella where curettage had been performed (Fig. 3). The conflict area was trimmed and the medial osteophyte was dissected. There were no macroscopic signs of recurrence of infection. The final six-months’ result was good, pain-free and with complete knee mobility (0/0/135°). Knee X-ray showed no femorotibial or femoropatellar joint narrowing or alterations to the tibia or femur.

Discussion

The incidence of patella tuberculosis in the international literature ranges from 0.09 to 0.15% [6]. Tuli reported one patella tuberculosis in a series of 1,074 lesions in 980 patients [7]. The knee is the third most frequent skeletal location for tuberculosis. Galois et al., in their 2003 literature review, found 10 cases of patella tuberculosis [5]. The largest recent series was that of Ravi Mittal et al., with five cases [6].
Tuberculosis is coming back into the spotlight due to AIDS, and is a public health issue in pandemic areas such as Morocco. Osteoarticular involvement is probably hematogenic, of pulmonary origin [6]. Clinicians should therefore look for entry points and possible secondary loci.

Patella tuberculosis is hard to diagnose, especially at early stages, which accounts for the generally late diagnosis. It mainly affects adolescent and young adult males, even without risk factor. The clinical aspect is initially non-specific. The appearance of a fistulized prepatellar cold abscess argues for a diagnosis of tuberculosis [5]. Reactive joint effusion is frequently observed, but BK culture in joint fluid often proves negative.

A considerable inflammatory syndrome is often found on biological analysis, and provides a means of monitoring treatment efficacy.

On X-ray, the aspect is of central osteolysis with, at first, continuous patella joint cartilage, but evolving towards an opening through the cartilage within the knee joint, transforming a pure bone mass into a potentially more serious osteoartricular form. Hartofilakidis-Garofalidis [8] reported three cases of patella tuberculosis, all involving open osteolysis in the knee joint and probably representing very evolved forms.

The most suggestive aspect, however, is osteolysis containing a central bone sequestration, bordered by peripheral sclerosis [6,9,10—17], reminiscent of the X-ray aspect of chronic osteomyelitis.

Bone scan and MRI can locate the lesion and its joint extension, but it is the arthroscan that explores patella joint cartilage integrity in the pure osseous form.

Diagnosis is confirmed by histology and bacteriology. With the benefit of hindsight, we consider that biopsy could be performed percutaneously under X-ray or CT guidance, given the superficial location of the patella. This would avoid seeding the knee joint. Knee arthroscopy is another less invasive solution that could be applied at any point during care, first for biopsy of open evolved forms in the joint space, and then for complete curettage of the lesion.

Osteoarticular tuberculosis treatment is based on multiple antibiotic therapy. Treatment duration varies, but often exceeds one year. In recent publications, surgery has been limited to biopsy. The presence of an abscess, however, or persistent resistant bone lesion may require surgical cavity curettage [14,18]. Evolution of strictly osseous forms tends to be favorable. Knee joint extension, with generalized osteoarthritis, on the other hand, is always of poor functional prognosis [1,6,15,18].

Conclusion

Bone tuberculosis remains difficult to diagnose. Certain locations should always be borne in mind, however rare, in case of pandemic or immunodeficiency. In case of osteolysis, associated with abscess or not, infectious etiology is to be considered and appropriate samples should be taken. Diagnosis is confirmed by histology and bacteriology. The slow evolution of bone tuberculosis requires local treatment of lesions and abscesses. Antibiotherapy regularly ensures recovery.

Conflict of interest

None.

References