CASE REPORT

Silent chronic osteomyelitis lasting for 30 years before outburst of symptoms

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SUMMARY

A 56-year-old male patient presented with left knee and thigh pain after suffering a knee contusion. History revealed a complex fracture of the distal femur 30 years prior to presentation. Initial blood tests upon admission showed elevated C reactive protein values. Subsequent imaging and biopsies showed a correlate to osteomyelitis, upon which the diagnosis of a late onset osteomyelitis as an outburst of silent chronic osteomyelitis was made. The patient was successfully treated surgically by means of aggressive debridement and discharged after confirmation of negative biopsies.

BACKGROUND

This is a case of an outburst of osteomyelitis triggered by a knee contusion, occurring 30 years after an initial complex fracture of the femur.

CASE PRESENTATION

A 56-year-old male patient was admitted to our orthopaedic department due to persistent stress-related knee and thigh pain.

Symptoms initially began 3 weeks prior to admission after falling on the left knee, after which the patient felt progressive stress-related pain.

The history revealed a complex fracture of the femur due to an accident 30 years before the current presentation. During the treatment at that time, the patient had to undergo a series of reoperations due to symptomatic chronic osteomyelitis which lasted for a period of 3 years, after which the osteomyelitis was considered healed. The patient fully returned to his normal activity and, until the current incident, did not suffer any related symptoms.

After admission to our department, clinical examination showed painful knee flexion and local pain in the popliteal fossa, although there was no sign of capsular or ligament injury. The patient had no fever.

INVESTIGATIONS

Initial blood tests showed elevated C reactive protein (CRP) levels (24 mg/l), and the blood cultures were negative for bacterial and fungal growth.

Figure 1 represents the CRP pattern during the inpatient stay. X-ray imaging of the femur showed a healed femur fracture with a translational and rotational deformity, signs of distal femur destruction and osteoarthritis of the knee joint (figure 2).

MRI and CT scan revealed post-traumatic knee-osteoarthritis with large marginal osteophytes

Figure 1 C reactive protein (CRP) trend during the 3 week inpatient stay showing times of interventions (red lines).

in all three knee compartments, slight articular effusion and a medial meniscal lesion. Images of the distal femur showed large fluid collection in the medullary space with infiltration of the compact bone and penetration into the popliteal fossa (figures 3 and 4).

Figure 2 Orthoradiogram showing a healed left femur fracture with a translational and rotational deformity, signs of distal femur destruction and osteoarthritis of the knee joint.

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Figure 3 Sagittal (A) and coronal (B) plane MRI scan images showing the distal femur region with fluid collection in the medullary space and infiltration of the compact bone.

Excision-biopsy probes taken initially showed no micro-organism growth in culture, but it showed the presence of Gram-positive cocci in histology sections and a histological correlate to osteomyelitis.

DIFFERENTIAL DIAGNOSIS

It is important to rule out several causes of bone destruction, especially when considering the history of the patient. The most common pathogenetic micro-organism causing osteomyelitis is known to be *Staphylococcus aureus*.¹ However, since the initial complex fracture happened 28 years previously, skeletal tuberculosis as a new onset entity was considered a possible diagnosis and ruled out by means of culture and histology.²

Multiple myeloma could present as solitary bone plasmacytoma; the destructive character of the malignancy would allow for its consideration as a possible differential diagnosis.³ Serum electrophoresis and histology of plasma cell infiltrates were performed, excluding malignancy in our patient.

TREATMENT

Surgical treatment was carried out. The femur was exposed, and bone fracturing and windowing were performed distal and proximal to the region of the old fracture. Several biopsies were

taken and aggressive curettage and debridement with removal of the dead bone was performed.

Second and third look procedures were undertaken after 4 and 16 days, respectively, with retrieval of tissue biopsies for histological and microbiological evaluation.

OUTCOME AND FOLLOW-UP

All biopsy samples were tested for microbial growth and examined histologically. All cultures were negative for microbial growth; in contrast to the preoperative biopsy, histology of the samples taken intraoperatively showed no more microbes but a histomorphological correlate to chronic osteomyelitis. The presence of eubacterial and mycobacterial DNA was excluded by means of PCR. Plasmacytoma was ruled out as a possible cause.

Immediately after the second look procedure, the CRP levels began to decline and the patient was discharged on the sixth postoperative day. Upon follow-up 6 weeks postoperatively, the patient was symptom-free and his CRP was within the normal range.

DISCUSSION

Osteomyelitis is an inflammatory process accompanied by bone destruction and caused by an infecting micro-organism.¹ Acute osteomyelitis usually occurs in the presence of predisposing factors, due to the fact that healthy bone is extremely resistant to infection.⁴ Such factors could be the local spread by a contiguous contaminated source of infection, as well as general predisposing factors associated with vascular insufficiency such as diabetes and peripheral vascular disease.^{2,5}

Along with vascular insufficiency, trauma and surgery produce devitalised bone fragments that necrotise and form an ideal medium for bacterial growth.⁶

While acute osteomyelitis develops over a period of days to weeks, chronic osteomyelitis is characterised by the persistence of micro-organisms over a period of months or years, fistula formation, necrosis and relapses in the same region.⁷

We present a case of late onset chronic osteomyelitis appearing 30 years after a complex fracture, with symptoms evolving after an acute knee injury. In this case, we assume that the patient carried a silent chronic infection for a period of 30 years and that the acute knee injury acted as a trigger inducing an outburst of the infection. Late onset chronic osteomyelitis is unusual and necessary to be considered as differential diagnosis when dealing with new onset pain in trauma sites. A few cases of late infections up to 19 years after healed fractures have been reported in the literature.⁸ We highlight the significance of considering late recurrent osteomyelitis as an outburst of chronic silent osteomyelitis as a rather important differential diagnosis when dealing with new onset symptoms in healed fracture regions, despite the length of the symptom-free interval.

Figure 4 Sagittal (A) and coronal (B) CT scan of the distal femur showing fluid collection in the medullary space, bone destruction and penetration into the popliteal fossa.

Learning points

- ▶ Osteomyelitis could present as a silent chronic form persisting for many years without clinical symptoms.
- ▶ Diagnosis could be difficult; biopsies are necessary; negative growth of micro-organisms in culture does not exclude osteomyelitis as a diagnosis.
- ▶ Histology is necessary to ensure diagnosis.
- ▶ Late onset osteomyelitis could occur up to 30 years after an initial complex fracture as an outburst of chronic silent osteomyelitis.

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Competing interests None.

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