Osteomyelitis pubis versus osteitis pubis: a case presentation and review of the literature

S Pauli, P Willemsen, K Declerck, R Chappel, M Vanderveken

An athletic 23 year old man presented with suprapubic tenderness, fever, and raised inflammatory blood variables. A diagnostic laparoscopy was performed, with a presumed diagnosis of retrocaecal appendicitis, but no abnormalities were found, apart from free fluid in the pouch of Douglas. Imaging of the pubic area suggested bony infection and inflammation. Biopsy and culture confirmed the presence of Staphylococcus aureus, a very common pathogen. The final diagnosis was osteomyelitis pubis, an infectious disease, and osteitis pubis, an inflammatory disease.

Abbreviations: MRI, magnetic resonance imaging
general anaesthesia, an x-ray guided biopsy of the left pubic bone was performed. Culture results showed a rich growth of *Staphylococcus aureus* with the following sensitivity: sensitive to oxacillin, clindamycin, netilmicin, amikacin, cotrimoxazole, minocycline, and ofloxacin; resistant to penicillin. Histological examination showed bony destruction, osteolysis, and fibrotic zones with clusters of histiocytes.

Intravenous fluoxacillin was started, in combination with non-steroidal anti-inflammatory drugs. Apart from striking eczema and diffuse scratch lesions, there was no clear entry site for the bacteria.

Fever, pain, and inflammatory blood variables normalised after one week of intravenous antibiotic treatment. The patient was discharged home after 10 days, and antibiotics were continued orally for four weeks (ofloxacin).

The patient was seen in the outpatient clinic four months later. He was asymptomatic and exercising (football, tennis) at a higher level than before. The inflammatory variables were normal and no further technical investigations were carried out as the patient was completely symptom free.

**DISCUSSION**

The symphysis pubis is a non-synovial amphiarthrodial joint situated at the confluence of the two pubic bones, consisting of an intrapubic fibrocartilagenous disc sandwiched between thin layers of hyaline cartilage. Bony infection or inflammation of the pubic area is rare. In the literature, these two conditions are commonly confused with each other. There is actually a distinct difference between osteomyelitis and osteitis pubis (table 1).

Osteomyelitis of the pubic symphysis differs from osteitis pubis. The latter is an entity characterised by pelvic pain, a wide based gait, and bony destruction of the margins of the pubic symphysis. It is a self-limiting inflammation secondary to trauma, pelvic surgery, childbirth, or overuse (usually in athletes). Osteomyelitis pubis on the other hand has the same uncommon site and rarity, and also because of the difficulty in making a differential diagnosis with urological, gynaecological, and abdominal emergencies. Osteitis pubis and osteomyelitis pubis should be considered when a patient presents with the following signs: pain or pubic tenderness, painful hip abduction, and fever. Pain occurs while walking, radiating to the perineal, testicular, suprapubic, or inguinal region, and can also develop in the scrotum after ejaculation. Furthermore, there is mild leucocytosis, raised levels of acute phase proteins (fibrinogen, C reactive protein), and increased erythrocyte sedimentation rate. The following technical investigations may contribute to the diagnostic process: a whole body bone scintigraphy will show hyperactivity at the pubis; MRI and computed tomography scans can show inflammatory changes in the bone.

To distinguish between osteomyelitis and osteitis pubis, a biopsy and culture of the affected area are necessary. The most common infecting agent is *S. aureus*. Less common are *Pseudomonas aeruginosa*, *Escherichia coli*, anaerobic bacteria, *Salmonella* species, *Streptococcus* species, and *Brucella* species. The most common cause of osteomyelitis pubis is postoperative inoculation, particularly after gynaecological and urological operations, often when a technical complication has occurred. A few cases have been reported to occur after endoscopic inguinal hernia repair as the result of attachment of the prosthesis to the os pubis. However, there remain many cases of osteomyelitis without identifiable origin, for instance after spontaneous vaginal delivery and the present case of a pyogenic osteomyelitis of the pubis in an otherwise healthy athlete. We do not know if eczematous lesions were the source of circulating bacteria; we found no such evidence in the literature.

Osteitis pubis is a painful inflammatory process mostly seen in athletes. It is typical in sports with a lot of sprinting and sudden changes of direction, such as running, basketball, soccer, ice hockey, and tennis. Antibiotic treatment is essential in the management of osteomyelitis pubis, depending on the identification of the causative agent. Initial intravenous treatment must be followed by oral treatment for at least four weeks. After this, antibiotic treatment should be continued until the erythrocyte sedimentation rate is normalised (which often takes more than three months). Other treatment is the same as for osteitis pubis: rest and anti-inflammatory medication. Some athletes with osteitis pubis did well after local injections with corticoids. Surgical debridement and curettage of osteomyelitis pubis is indicated in patients with severe complications such as pelvic diastasis, because of bone necrosis, cystic perforation, pelvic instability, and severe pain not responding to antibiotic treatment.

Our patient clearly had osteomyelitis, as we found infection with a staphylococcal species. However, interestingly, this patient also had typical chronic signs of osteitis pubis, as seen on the technical investigations, but without clinical implications. The bilateral parasymphysial changes observed on the isotope bone scan (fig 1) and plain radiograph (fig 2), such as the posterior symphyseal extrusion and buttressing osteophyte formation with the extrusion indenting into the bladder base on the MRI scan (fig 3), suggest chronic symphysial stressing changes. We assume that the osteitis pubis with the inflammatory process, especially in the superior aspect of the left pubis, is the ideal spot for bacterial ingrowth causing pyogenic osteomyelitis.

**Conclusion**

The diagnosis of osteomyelitis pubis should be considered in every patient who experiences pubic pain that is exacerbated

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**Table 1** Comparison of the features of osteomyelitis pubis and osteitis pubis

<table>
<thead>
<tr>
<th>Feature</th>
<th>Osteomyelitis pubis</th>
<th>Osteitis pubis</th>
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</thead>
<tbody>
<tr>
<td><strong>Basic feature</strong></td>
<td>Infectious</td>
<td>Inflammatory</td>
</tr>
<tr>
<td><strong>Bacterial growth</strong></td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Antibiotics, NSAID, rest, surgery for complications</td>
<td>Self limiting, rest, NSAID, corticoids</td>
</tr>
<tr>
<td><strong>Causes</strong></td>
<td>Pelvic surgery, childbirth, abdominal pathology, unknown</td>
<td>Trauma, pelvic surgery, childbirth, overuse (athletes)</td>
</tr>
<tr>
<td><strong>Clinical features</strong></td>
<td>Wide based gait, pelvic pain, painful hip abduction, fever</td>
<td>Wide based gait, pelvic pain, painful hip abduction, fever</td>
</tr>
<tr>
<td><strong>Technical investigations</strong></td>
<td>x Ray, MRI, CT scan, bone scintigraphy</td>
<td>x Ray, MRI, CT scan, bone scintigraphy</td>
</tr>
</tbody>
</table>

NSAID, Non-steroidal anti-inflammatory drugs; MRI, magnetic resonance imaging; CT, computed tomography.
while walking. Biopsy and culture are necessary to make a differential diagnosis with osteitis pubis, an inflammatory condition of the pubic symphysis and the surrounding muscular insertions. However, both osteitis and osteomyelitis pubis can appear together in one patient as shown in our case. The most common pathogen of pyogenic osteomyelitis is Staphylococcus aureus. Intravenous antibiotic treatment should be started immediately. Delay in diagnosis and treatment can cause severe complications, such as pelvic instability, pubic diastasis, and even urinary bladder perforation.

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Accepted 13 September 2001

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