CASE REPORT

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.

A 23 year old man presented to our emergency room with the following complaints: lower abdominal tenderness and pain, and pyrexia of 38°C for 24 hours. On clinical investigation the hypogastrium was found to be painful with guarding. There were no further abnormal findings. Rectal examination was normal. Laboratory examination showed raised inflammatory variables: erythrocyte sedimentation rate was 28 mm in first hour, fibrinogen was 60.9 g/l (normal range 18–40 g/l), and C reactive protein was 269 mg/l (normal value less than 10 mg/l). The white blood count was 11 200/mm³ (normal range 3500–9800) with 80.4% of neutrophils. A plain abdominal radiograph was normal.

An emergency laparoscopy was performed. Peroperatively, free fluid was found in the pouch of Douglas. There was no bacterial growth when this fluid was cultured. The appendix was macroscopically normal and was left in situ. Further diagnostic steps were necessary. Urine culture was negative. Ultrasound examination of the abdomen showed intraperitoneal air, which was due to the laparoscopy. Clinical re-evaluation showed a localised tenderness in the pubic area. A more detailed history was taken at this stage. The patient reported that for the past year he had only be able to exercise twice a week. After exercising he experienced pain in the pubic region and stiffness for two days, which then resolved spontaneously. A radiograph of the os pubis showed sclerosis and bony destruction of the margins of the symphysis pubis, suggesting osteitis pubis (fig 1). A technetium-99m methyl diphosphonate bone scan showed a solitary area of hyperactivity in the left os pubis and symphysis pubis (fig 2). Magnetic resonance imaging (MRI) of the pubic region clarified the diagnosis, with enhanced activity in the symphysis pubis on the T2 images—on the left side of the symphysis more than on the right side (fig 3).

The next step was to obtain a biopsy specimen of the pubic bone for microscopic and microbiological examination. Under

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**Abbreviations:** MRI, magnetic resonance imaging
In the bone.

Computed tomography scans can show inflammatory changes. The following technical investigations (fibrinogen, C reactive protein), and increased erythrocyte sedimentation rate. The following 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 fibrocartilaginous 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 wide based gait, pelvic pain, painful hip abduction, fever as osteitis pubis (table 1).

Osteomyelitis of the pubic symphysis should be considered 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 symphysial 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 by sudden changes of direction, such as running, basketball, soccer, ice hockey, and tennis.

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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>
</tr>
</thead>
<tbody>
<tr>
<td>Basic feature</td>
<td>Infectious</td>
<td>Inflammatory</td>
</tr>
<tr>
<td>Bacterial growth</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Treatment</td>
<td>Antibiotics, NSAID, rest, surgery for complications</td>
<td>Self limiting, rest, NSAID, corticoids</td>
</tr>
<tr>
<td>Causes</td>
<td>Pelvic surgery, childbirth, abdominal pathology, unknown.</td>
<td>Trauma, pelvic surgery, childbirth, overuse (athletes)</td>
</tr>
<tr>
<td>Technical investigations</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.

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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.

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**CONCLUSION**

The diagnosis of osteomyelitis pubis should be considered in every patient who experiences pubic pain that is exacerbated by sudden changes of direction, such as running, basketball, soccer, ice hockey, and tennis.
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 

\textit{S. 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.

\textbf{References}


