Infectious osteitis pubis

Case reports

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Summary

Two cases of spontaneous septic osteitis of the pubis in patients who had not previously undergone intrapelvic or abdominal surgery are presented. Early diagnosis and evaluation of the immunological system are discussed. Drainage of the pus and thorough debridement of the affected bone are the hallmarks of correct treatment. The administration of suitable antibiotics with simultaneous correction of immunological deficiencies will result in eventual cure.

Infectious osteitis pubis is a well-known but rare condition, which may follow urological or gynaecological procedures within the pelvis. On the other hand, haematogenous septic osteitis pubis is relatively unknown.

The typical symptoms of osteitis pubis are considered to be almost pathognomonic of the disease, but the aetiology and correct treatment remain uncertain and controversial. Experience with 2 clinical cases has led to a better understanding of this condition and we suggest an aggressive approach to its diagnosis and treatment.

Case reports

Case 1

A 20-year-old black man was admitted to hospital complaining of mild swelling and moderate pain in the right inguinal area. The pain and swelling had started 3 weeks before admission and had gradually increased. At times the pain radiated to the umbilicus and inner aspect of the right thigh. Micturition became uncomfortable on the day before admission. Direct questioning elicited no history of previous operations or illnesses although the patient had become pyrexial at the onset of symptoms.

On examination the patient was a well-built, healthy young man with a temperature of 38.5°C, pulse rate of 90/min and blood pressure of 120/90 mmHg. There were no signs of respiratory, urinary tract, ear or nasopharyngeal infection. The patient had a few pustules on his face but no septic wounds or cuts.

Local examination revealed a moderate swelling in the right suprapubic area, approximately 4 x 5 cm in diameter. The skin over the swelling was normal. The swelling was tender, and pressure on the superior ramus of the right pubis as well as on the symphysis pubis caused considerable pain. Although the swelling was soft it did not fluctuate and appeared to be deeply situated, beneath the rectus abdominis muscle. The right inguinal canal, testis and rectum were normal. The erythrocyte sedimentation rate (ESR) was 34 mm/1st h (Westergren), the white blood cell count 17.4 x 10^9/l and the haemoglobin concentration 11.4 g/dl. Blood cultures were negative, as were sputum and urine cultures for tuberculosis.

Radiographic examination showed widening of the symphysis pubis, irregular areas of lysis in the right os pubis, and a soft-tissue mass (Fig. 1).

A diagnosis of osteitis pubis was made and 100 ml of pus deep to the abdominal muscles was drained under general anaesthesia. The os pubis was involved and a sequestrectomy was carried out on the right side. The pus was sent for aerobic and anaerobic culture and part of the pubis was sent for histological examination. The area was thoroughly rinsed and a thick corrugated drain was inserted. The patient received penicillin G 2 million units as well as cloxacillin 1 g every 6 hours intravenously for a week and orally for another 5 weeks. The wound was irrigated twice a day with povidone-iodine.

Bacteriological culture showed the presence of Staphylococcus aureus sensitive to cloxacillin, co-trimoxazole and erythromycin. Histological examination of the bone specimen revealed necrotic bone trabeculae and an infiltration of acute inflammatory cells. Areas of bleeding and fibrosis were also seen in the bone marrow. No sign of tuberculous infection was present.

The patient’s ESR declined over 3 weeks to 10 mm/1st h, and the white cell count 1 month after surgery was 7.7 x 10^9/l. A sinogram 1 month after operation showed a reduction in the size of the abscess cavity (Fig. 2).
Fig. 2. A sinogram of the area shows that the cavity is closing up.

The patient was discharged 6 weeks after admission in a completely healthy state with a healed wound.

Case 2

A 15-year-old white boy was admitted to hospital with acute septic arthritis of the left hip joint, which had to be drained surgically. Pus cultures revealed the presence of *Staph. aureus* which was sensitive to most of the antibiotics tested. The patient received intravenous penicillin G 3 million units 6-hourly, intramuscular gentamicin 40 mg 8-hourly, and oral fusidic acid 500 mg 6-hourly.

In spite of this treatment the ESR suddenly increased 10 days after the operation, and the patient developed pyrexia and again complained of a painful, swollen left hip. The hip joint was drained a second time and the antibiotic regimen was changed to oral cloxacillin 500 mg 6-hourly, and sulphamethoxazole 400 mg and trimethoprim 80 mg twice daily, after which he recovered uneventfully. The ESR returned to normal and the patient was discharged on oral cloxacillin 500 mg 6-hourly for 6 weeks.

Six weeks after leaving hospital and in spite of the continuous specific oral antibiotic, the patient again presented with general malaise, pain over the symphysis pubis, a high temperature, an ESR of 130 mm/1st h and a high white cell count. A radiograph confirmed osteitis of the os pubis (Fig. 3). The control radiographs of the pelvis taken before the patient's earlier discharge from hospital had shown no abnormalities.

The patient was once again confined to bed and oral cloxacillin 500 mg 6-hourly and oral ampicillin 500 mg 6-hourly were started, after blood samples had been taken. The white blood cell count was normal. The unusual presentation of spontaneous osteitis pubis under cover of specific antibiotics prompted examination of the patient's immunological system. The gammaglobulins were normal, but the white cell function was abnormal in spite of a normal count, and chemotaxis was virtually non-existent.

Stimulation of the white blood cells with vitamin C 1 g 3 times a day improved their function, but not to an adequate level. Since the patient had not responded adequately to vitamin C and antibiotics, it was decided to debride the pubis surgically. This procedure proved to be the most important aspect of the treatment regimen and the patient responded dramatically after surgery. The ESR dropped to 25 mm/1st h after 10 days and then to 11 mm/1st h after another 5 days.

Culture of the debrided tissue again revealed a *Staph. aureus* infection sensitive to the same antibiotics (including cloxacillin and ampicillin) as before. Culture and histological examination for *Mycobacterium tuberculosis* was negative.

Radiographs taken 4 weeks after the operation showed bony healing in progress (Fig. 4).

Fig. 3. Irregular areas of lysis in the right os pubis are visible, as well as marked widening of the symphysis pubis.

Fig. 4. New bone formation is visible in the area of the symphysis pubis.
**Discussion**

Osteitis pubis is relatively rare but can be incapacitating for a considerable period of time. It is usually associated with: (i) infection of the genito-urinary tract; (ii) pelvic or perineal surgery; (iii) pregnancy; (iv) degenerative or rheumatoid arthritis; or (v) haematogenous spread of an infection.

Coventry and Mitchell[5] classified infections of the symphysis pubis into three broad categories: (i) those due to a bacterial infection, i.e. osteomyelitis of the os pubis; (ii) those occurring after surgery in the pelvis or lower abdomen but from which no micro-organism can be cultured; and (iii) those associated with some form of arthritis.

In 1827 Elliotson, (cited by Merimsky et al.[3] and Beer[10]) in 1924 described the Coventry and Mitchell category (ii)-type osteitis pubis, but little progress has since been made in determining the aetiology of this condition. Factors that may play a role in its pathogenesis are trauma to the pubis, infectious venous thrombosis of the periprostatic venous system, pubic vein thrombosis, impaired venous circulation of the symphysis pubis, an infectious lesion elsewhere, and an abnormal immunological system.

The symptoms and signs of osteitis pubis are always the same regardless of the cause, and include suprapubic pain, abnormal gait and pubic tenderness. The pain may radiate upwards to the umbilicus or downwards into the perineum or inner thigh and is aggravated by walking. Malaise and pyrexia are common. An audible click or snap in the symphysis on manipulation of the pelvis and lower extremities has been reported.[3]

Patients with infectious osteitis pubis usually have symptoms for many weeks before the infection is diagnosed. Radiographs of the infected bones show changes indistinguishable from osteitis pubis which is not of bacterial origin. These include irregularity of the margins of the pubic bones, widening of the symphysis pubis, cystic changes in the os pubis, areas of rarefaction and sclerosis, and a periosteal reaction of the os pubis, while late in the disease process the symphysis pubis may become narrow, irregular and even ankylosed.

Osteitis pubis has recently been described in athletes, which suggests that in some cases mechanical strain may play a role in its development.[11] In these cases in particular a bone scan is valuable for early detection.

In any infection of bone, successful therapy is based on surgical drainage, sequestrectomy and curettage. Culture of the debrided tissue or pus will indicate the appropriate antibiotics. Histological examination may be helpful to confirm the diagnosis and to exclude other conditions, e.g. tuberculosis. Surgery may be withheld initially in patients with minimal symptoms and signs and a normal radiograph. In these cases, especially if a concomitant condition such as a urinary tract infection is present, combination antibiotic therapy is justified, while carefully monitoring the signs. Should radiographic changes occur, immediate surgery should be performed.

A sterile culture may not exclude a bacterial infection. Therefore, antibiotics in combination should still be administered, but anti-inflammatory agents may be added to suppress the inflammatory process and alleviate symptoms.

Our second patient had deficient leukocyte chemotaxis. Despite combination antibiotic treatment the infection could not be overcome. The only effective treatment proved to be surgical drainage and debridement of the infective lesions in the hip joint and later in the symphysis pubis. This principle of thorough surgical debridement cannot be over-emphasized.

A further point which needs stressing is that if a patient develops a spontaneous septic focus, e.g. septic arthritis or osteitis, an incompetent immune response should be assumed until proven otherwise. All of the last 8 cases of chronic osteitis treated by one of the authors (U.M.) in a clinical series currently being studied had abnormal immunological defence mechanisms; 7 of these patients responded very well to high doses of vitamin C. Stimulation of the leucocytes by vitamin C and other drugs is well documented.[11-15]

In conclusion, osteomyelitis of the os pubis may follow other lesions. Spontaneous septic osteitis pubis should direct investigative procedures to the immune response. The treatment should always be initiated by proper debridement including sequestrectomy, and be followed by specific antibiotics and bed rest. The immunological system should be stimulated to a maximum extent.

**REFERENCES**