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Osteomyelitis of the Symphysis Pubis: A Separate Disease from Osteitis Pubis

REPORT OF THREE CASES AND REVIEW OF THE LITERATURE

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ABSTRACT: We reviewed the cases of three of our own patients who had osteomyelitis of the symphysis pubis, as well as those of twenty-five patients described in the literature. The early symptoms of osteomyelitis of the symphysis mimic those of osteitis pubis. Osteomyelitis almost invariably is preceded by urological or gynecological surgery (often when a technical complication has occurred), and does not respond to short-term antibiotic treatment. Characteristic radiographic findings develop. Osteomyelitis of the symphysis pubis should be treated by débridement and curettage, together with long-term treatment with an appropriately high dose of antibiotics.

Osteitis pubis was first described by Beer in 1928. A variety of causes have been postulated, such as pregnancy, direct trauma, athletic exertion, urological manipulation, and urological or gynecological surgery^{3,4,6,9,11-13,26}. Patients with osteitis pubis usually have a history of progressive suprapubic pain which radiates into one or both sides of the groin, and a characteristic waddling gait due to rectus abdominis and adductor muscle spasm. The white blood-cell count and sedimentation rate are often elevated, but may be normal. Varying degrees of sclerosis and rarefaction with occasional cystic change in the pubis on both sides of the symphysis may be seen on radiographs (Fig. 1-A). The changes may occur as far posterior as the ischial tuberosities. Ankylosis of the symphysis may also be seen^{4,6,13}.

Studies of biopsy material from patients with osteitis pubis have demonstrated a slight-to-moderate inflammatory cell reaction, primarily of plasma cells and lymphocytes (Fig. 1-B). When the disease is more severe, polymorphonuclear leukocytes are observed. Local hemorrhage, followed by ossification, has been reported^{10,16,20,24}.

Low-grade infection has been suggested as another possible cause of osteitis pubis. However, in all of the reported pathological studies of the disease, cultures have been negative and no organisms have been identified^{5,6,14}.

Osteitis pubis is said to be a self-limiting condition, with symptoms persisting over weeks or months, but usually with ultimate resolution. A variety of treatments, some of them contradictory, have been proposed: rest, activity, anti-inflammatory medications, radiation therapy, corticosteroids, antibiotics, and anticoagulation. Surgical curettage has been recommended for patients whose symptoms are not relieved by conservative means^{4-6,14,15,18}.

Osteomyelitis involving the symphysis pubis has signs and symptoms similar to those of osteitis pubis: distal anterior pelvic pain, spasm of the adductor and rectus abdominis muscles, and a waddling gait. There is often no fever or elevation of the white blood-cell count or sedimentation rate. In contrast to osteitis pubis, however, the clinical course of osteomyelitis is progressive, with increasing bone destruction and widening of the symphysis seen on radiographs^{2,3,6,16,22}. The clinical course of osteomyelitis of the pubis is therefore sufficiently different from that of osteitis pubis to justify considering it as a separate entity.

We are reporting on three patients with osteomyelitis of the symphysis who were treated in our institution, as well as reviewing twenty-five cases from the literature.

Case Reports

CASE 1. A sixty-four-year-old white woman had a vesico-urethral suspension procedure performed for stress incontinence in November 1977. Postoperatively, there was profuse drainage through a Penrose drain placed into the bladder. The wound was re-explored on the seventh postoperative day and three puncture wounds were found in the anterior wall of the bladder. Following this re-exploration, the patient was treated with oral cephalexin for ten days. She was febrile for the first three postoperative days, but this resolved. She was discharged from the hospital, free of pain, one week after the wound exploration. Two weeks later, she had localized suprapubic pain which radiated into both sides of the groin and the low back. The pain was dull, constant, and exacerbated by walking, coughing, or sneezing. She was noted to have a waddling gait. Cystoscopic and cystographic examinations were normal, and urine cultures were negative. A diagnosis of osteitis pubis was made. The patient was treated for ten days with oral cephalexin, phenylbutazone, and prednisone, with no relief. Ten weeks later, radiographs of the pelvis showed bone rarefaction and sequestrum formation in the right side of the pubis (Fig. 2). On surgical exploration, necrotic inflammatory material was found in the cartilaginous symphysis and the right and left pubic bones. These areas were curetted until bleeding bone was reached. Routine intraoperative cultures were negative. Postoperatively the patient remained afebrile, with dramatic improvement in the symptoms. She was treated

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with intravenous cephalosporin for two weeks and oral cephalexin for three months. She had remained free of symptoms when last seen, one year after surgery.

CASE 2. A sixty-five-year-old white woman had a vesico-urethral suspension procedure performed for stress incontinence in October 1976. Postoperatively a wound seroma developed, and it was incised on the seventh day. The wounds healed uneventfully and the patient was discharged from the hospital, free of symptoms, ten days after the wound was incised. She did not receive antibiotics. One month later, she was rehospitalized because of a fever. Blood and urine cultures were negative. She was treated empirically with intravenous cephalosporin antibiotics, with a rapid resolution of symptoms, and was discharged after one

week although the cause of the fever had not been identified. Shortly afterward, however, increasing suprapubic pain and tenderness developed. Although a low-grade fever was present, the white blood-cell count remained normal. Radiographs at that time showed irregular resorption of the left and right pubic bones on both sides of the symphysis, and a diagnosis of osteomyelitis of the symphysis was made. A surgical exploration demonstrated necrotic tissue in the symphysis. The symphysis was curetted, as were the adjacent right and left pubic bones. The wound was closed with suction tubes in place, which were irrigated with a saline solution containing cephalosporin for three days. The patient was treated systemically with intravenous cephalosporin for six weeks. She had marked relief of symptoms and the wound healed. When she was discharged, six weeks after the surgical exploration, she was walking



FIG. 1-A

Anteroposterior radiograph of a sixty-four-year-old woman with osteitis pubis. Condensation and sclerosis of the pubis on both sides of the symphysis are demonstrated.

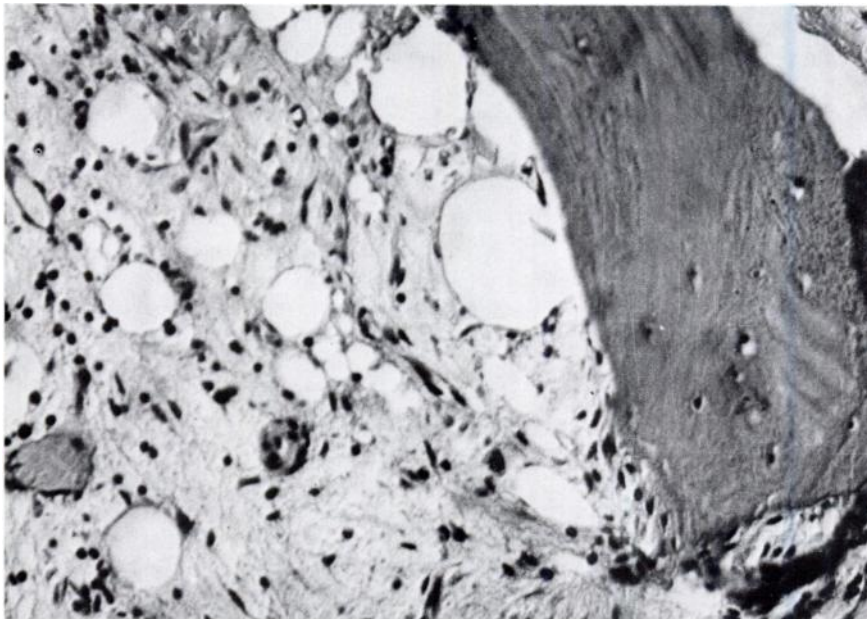


FIG. 1-B

Histological section of pathological material obtained from this patient. A chronic inflammatory reaction is noted surrounding spicules of living bone ($\times 90$).

well and was without evidence of infection. She did not return for a follow-up examination.

CASE 3. A seventy-two-year-old white woman underwent a vesico-urethral suspension procedure for stress incontinence in October 1978. No intraoperative or postoperative complications occurred, and she did not receive antibiotics. She was discharged from the hospital ten days postoperatively. One month after operation, progressive suprapubic pain and tenderness developed. Radiographs of the pelvis made in February 1979 showed erosion of the pubis on both sides of the symphysis, and sequestrum formation (Fig. 3-A). The patient was hospitalized, and was treated with intravenous cephalosporin. A diagnosis of osteomyelitis of the symphysis was made. Surgical exploration of the symphysis revealed chronic granulation tissue and bits of necrotic bone and cartilage. The symphysis and the adjacent left and right pubic bones were curetted down to bleeding bone. The wound was closed over a Penrose drain, which was removed on the second postoperative day. Intraoperative cultures were sterile. The patient was treated with intravenous cephalosporin for six weeks postoperatively. The symptoms were relieved and she was still well when seen one year postoperatively.

of the cases reported in the literature, and in our three patients, intraoperative cultures of the affected area were sterile. In the patients in whom the cultures were positive, no single organism predominated. A variety of gram-negative organisms and occasionally a mixed flora of gram-negative and staphylococcal organisms has been reported.

In the vesico-urethral suspension operation described by Marshall, the urethra and the neck of the bladder are sutured directly to the ligaments overlying the inferior part of the pubis, to the symphysis, and to the insertions of the rectus abdominis muscles¹⁷. A bladder or urethral perforation by a suture would thus allow a direct communication between the urinary stream and the cartilaginous symphysis or its ligament structures. Many patients with stress incontinence have a chronic urinary-tract infection, which allows infection to develop by direct extension in the sym-



FIG. 2

Case 1. In this patient with osteomyelitis of the symphysis, a sequestrum is apparent on the right side of the pubis.

Discussion

We collected twenty-five additional reports of osteomyelitis of the symphysis pubis from the English-language literature. The series included fifteen female and ten male patients^{2,8,16,22,23}. In twenty-four of these patients, and in our three patients, osteomyelitis followed a major gynecological or urological surgical procedure. In the remaining patient, osteomyelitis of the symphysis was found at autopsy after a fatal staphylococcal septicemia following pregnancy²³. Thirteen of the female patients had undergone a vesico-urethral suspension, and one had had a vaginal hysterectomy. Three men had had a urethral prosthesis inserted for impotence while the remainder had had open prostatectomies. In twenty-two of the twenty-five patients described in the literature and in two of our three patients, a technical complication (wound infection or disrepair, or a bladder perforation) was documented. In half

of the patients, a bladder or urethral perforation from a suture should occur. In the patients described in the literature, intervals of two weeks to two months were noted from the time of the surgical procedure to the onset of the symptoms of osteomyelitis, an incubation period appropriate to the development of bone infection.

In twenty-three of the twenty-five patients reported on in the literature, as well as in our three patients, surgical débridement and curettage were necessary for ultimate control of the infection. In half of these patients, a specific species of bacteria was never isolated preoperatively or intraoperatively, and the definitive diagnosis of osteomyelitis was made on the basis of the preoperative radiographic appearance, the gross appearance of the lesion, and the pathological appearance of the curetted material. Patients with osteomyelitis of the symphysis frequently do not show the classic signs or symptoms of

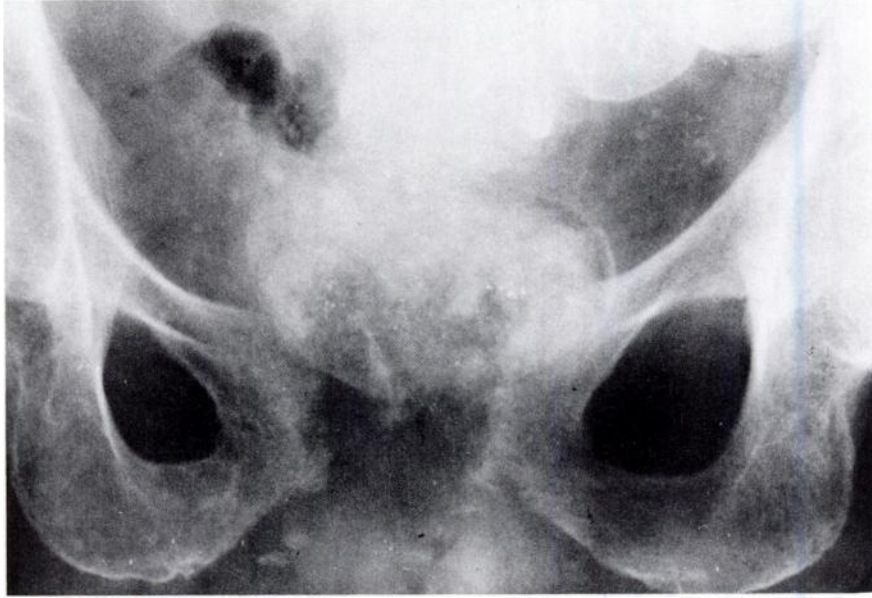


FIG. 3-A

Figs. 3-A through 3-D: Case 3. A patient with osteomyelitis of the symphysis.

Fig. 3-A: Anteroposterior radiograph of the pelvis made six weeks after the onset of symptoms. Resorption of the pubis on both sides of the symphysis is noted.



FIG. 3-B

Anteroposterior tomogram made at the same time. A sequestrum is apparent.

bacterial infection. There may be no fever, the white blood-cell count and differential may be normal, and the sedimentation rate may or may not be elevated. However, radiographic changes may be noted within a few weeks after the onset of symptoms. The demonstration of a sequestrum is diagnostic for osteomyelitis of the pubis, and the disease should be suspected in any patient in whom suprapubic pain and tenderness develop following urethral or gynecological surgery, particularly a vesico-urethral suspension operation, and when a technical complication has occurred or is suspected. Although osteitis pubis is far

more common than osteomyelitis in such patients, the latter must be definitively ruled out. Needle aspiration of the affected area to obtain material for culture has been reported infrequently, and was not carried out in any of the three patients in our series, although it appears to be a worthwhile procedure. If the results are positive, they will make the diagnosis of osteomyelitis definite, although a sterile culture does not completely rule out the presence of the disease. In our three patients, and in most of the cases reported in the literature, the radiographic changes were diagnostic for osteomyelitis. Sequestrum formation

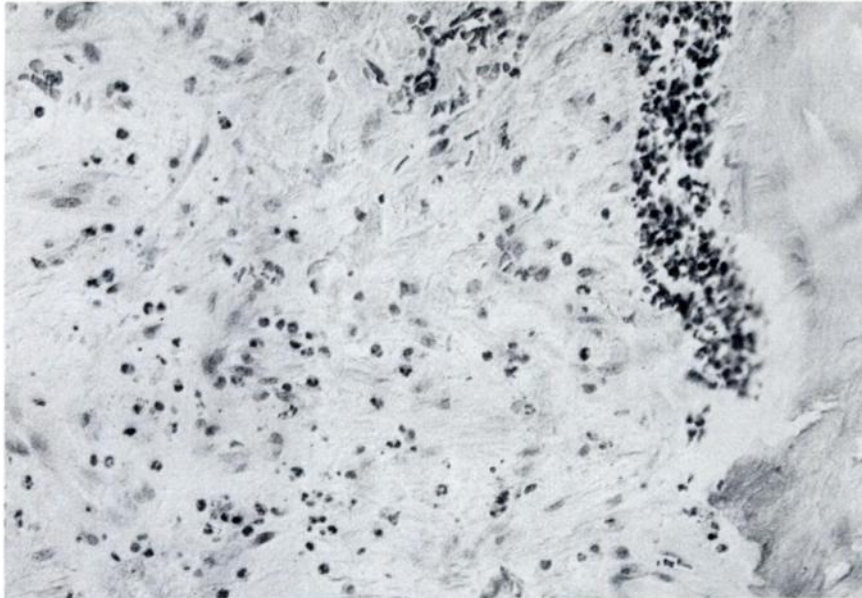


FIG. 3-C

Histological section of material removed at the time of operation. An acute inflammatory reaction is noted, with spicules of necrotic bone ($\times 45$).

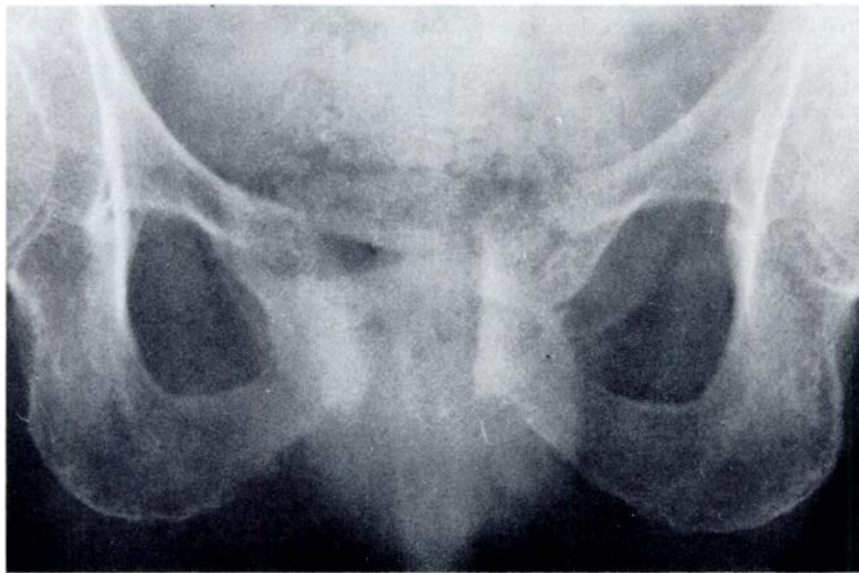


FIG. 3-D

Plain radiograph of the pelvis made two months after curettage of the symphysis. Reactive sclerosis has developed.

should be sought, with tomograms if necessary.

Once the diagnosis of osteomyelitis has been established, surgical débridement and curettage and the administration of intravenous bacteriocidal antibiotics is the treatment of choice. Currently, the cephalosporins are the preferred antibiotics. However, if a specific organism is identified, the appropriate antibiotic-sensitivity studies should be carried out to determine a definitive drug of choice.

The exact length of antibiotic treatment following surgery has varied. We believe that a minimum of six weeks of intravenous antibiotics, followed by oral antibiotics for another three weeks, offers the best chance of controlling this bone infection²⁵.

We believe that osteomyelitis of the symphysis pubis is a disease that is separate and distinct from osteitis pubis, despite the fact that both diseases have a similar mode of presentation. Osteomyelitis is a progressive disease while osteitis pubis can usually be managed by non-surgical means, as it tends to be self-limited. Osteomyelitis almost invariably is preceded by bladder or urethral surgery, especially when there has been a surgical complication. Surgical treatment is necessary for its proper management. Prolonged, unnecessary disability may occur in patients with osteomyelitis of the symphysis until the correct diagnosis is made.

NOTE: The authors wish to thank George Carpenter, Jr., M.D., for permission to use the case illustrated in Figures 1-A and 1-B.

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