

Perforated retroperitoneal retrofascial sigmoid diverticulitis as a cause of osteomyelitis and septic necrosis of the acetabulum and proximal femur

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Keywords : diverticulitis, retroperitoneum, perforation, colon, osteomyelitis, hip, psoas abscess.

To the Editor,

A 44 year old man was treated during four months for a purulent inflammation of the left inguinal lymph nodes. Abdominal CT delineated left psoas abscess with osteomyelitis of the proximal part of the left femur. Barium enema and intravenous pyelography were normal. Left inguinal incision with opening of the retroperitoneal space was performed and approximately 1 L of pus was evacuated. The patient also complained of pain in the left hip region with painful movements. Reincisions were made three times and finally pus was found in the hip joint with osteomyelitis of the femoral head of unknown cause. Garamycin and metronidazole were administered according to the antibiogram (*Bacteroides spp.*, *E. coli* and *S. rubidaea*). In spite of therapy the condition worsened, with development of sepsis. Patient was sent to the Department of Surgery at the Clinical Hospital Center Zagreb. At arrival patient had a 38°C and tachycardia, tachypnea, was unconscious, immobile and had lost approximately 20 kg. A purulent secretion was found at the incision site, which aroused suspicion the pus being of intestinal origin. The culture showed *E. coli* and *Enterococcus spp.* sensitive to gentamicin, cephazolin, and amoxicillin plus clavulanic acid. Cephazolin 3 × 1 g, garamycin 2 × 120 mg and metronidazole 3 × 500 mg were administered intravenously as well as parenteral nutrition. Abdominal CT showed an inhomogenous and voluminous iliopsoas muscle with drain to the sacroiliac joint. The gluteal muscles were also inhomogenous and voluminous both indicating a left retroperitoneal abscess (Fig. 1A). Other intra-abdominal organs were not affected. CT of the pelvic girdle delineated osteolytic changes in the roof of the left acetabulum and destruction of the femoral head and neck with gas in the intraarticular space and posterior periarticular space (Fig. 1B). Barium enema showed numerous diverticula of descending colon and upper part of the sigmoid colon. Perforation of one sigmoid diverticulum was evident and contrast was leaking retroperitoneally and retrofascially forming a pouch at the level of the left iliopsoas muscle. Fistulography through the

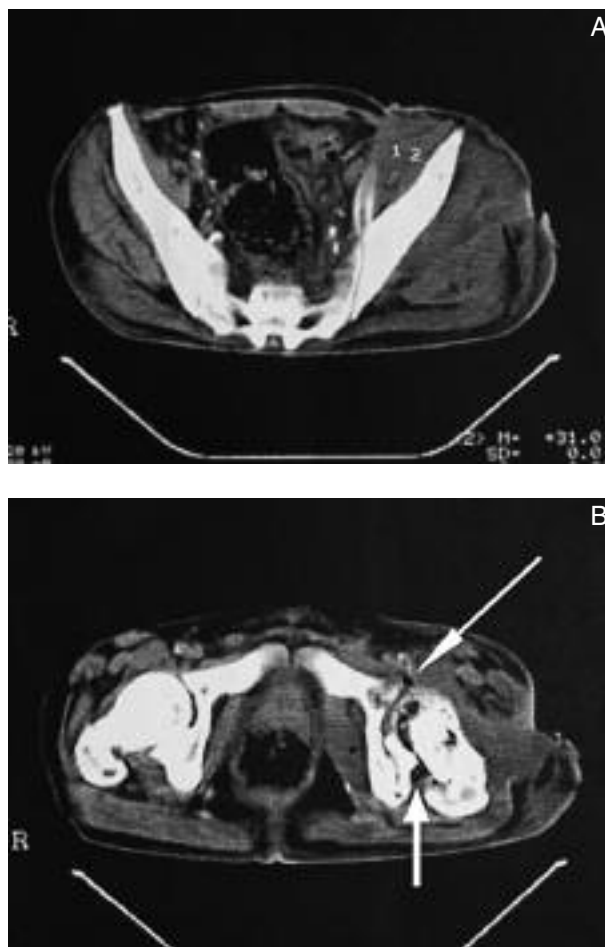


Fig. 1. — A) Preoperative abdominal CT shows inhomogenous and voluminous gluteal, iliac and psoas muscles (number 2) with drain in contact with sacroiliac joint indicating left retroperitoneal psoas abscess (number 1); B) Osteolytic changes in the roof of the left acetabulum and destruction of the femoral head and even neck with air or gas in the intraarticular (arrowhead) and posterior periarticular space (arrow) caused by the septic process.

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Submission date : 03/11/2009

Acceptance date : 01/12/2009

inguinal wound showed a channel of 1.5 cm wide ending at the left acetabulum.

Left hemicolectomy with colorectal anastomosis was performed after identification of perforated sigmoid diverticulum confirmed by pathohistological analysis and aforementioned antibiotic therapy was continued for 7 days. After 20 days of normal postoperative course, extirpation of the head and neck of the left femur, and part of the acetabulum was performed, as well as necrosectomy of the surrounding tissue. The bone defect was filled with two Septopal® (Biomet Orthopedics, Indiana, USA) gentamicin sulphate chains with 30 beads and the wound was broadly drained. The dressing was changed daily. The culture analysis confirmed *Enterococci spp.* sensitive to gentamicin. Control abdominal CT did not show any residual or newly formed abscess. Because of persistent secretion after 20 days an additional excochleation was made and a new Septopal® chain was implanted. Subsequently, secretion decreased, however two channels persisted: one in the postoperative scar at the lateral thigh and the other one in the inguinal region. Pelvic X-ray delineated a sequestrum in the region of the acetabulum right across the ischium. Therefore, 30 days after the first operation, necrosectomy of a part of the ischium was performed and new Septopal® chains implanted. Finally the patient's status improved; he was afebrile and the laboratory tests normalized. The wound secretion in the region of the postoperative scar reduced, however secretion in the inguinal region persisted. The culture confirmed *S. epidermidis* sensitive to vancomycin. During 10 days of intravenous vancomycin therapy the secretion in the inguinal region was reduced and completely eliminated at the lateral thigh. Afterwards, the Septopal® chains were removed and the inguinal wound dressings were changed on a daily basis. Sixty-eight days after the extirpation of the proximal femur the patient was mobilized and was able to leave the hospital after 152 days. The patient attended regular controls for 3 months with a gradual occlusion of the fistula in the inguinal region. Gradually, he started to walk with crutches. He gained 30 kg. There was no wound secretion, the cutaneous fistula openings closed completely and the laboratory tests became normal. Pelvic X-ray showed a defect following the extirpation of the proximal femur and a part of acetabulum without any signs of an inflammation.

Psoas muscle abscess is a rare entity with an estimated worldwide incidence of 12 cases annually, 20% occurring in persons over 40 (1). Primary abscesses are caused by hematogenous spread from distant infection mostly due to an unrecognized *Staphylococcal* septicaemia in 88.4% (2). They occur predominantly in younger patients and in developing or tropical countries. The secondary type is caused by contiguous infections from various sites with primary pathology. Prior to antituberculous therapy, mostly it was a complication of tuberculosis of the spine or sacroiliac joints. Today in 80% of patients the cause is gastrointestinal pathology. It is

mostly due to Crohn's disease (up to 73%) followed by appendicitis (16%), ulcerative colitis, diverticulitis and colon cancer (together 11%) with predominantly mixed infections (55.7%), mostly with *E. coli* and *Bacteroides spp.* Right-sided predilection occurred in 58% to 68% of patients and bilateral abscesses are rare, less than 3% (2), with higher percentage in severe diabetics (3).

Clinical diagnosis could be made by the triad of fever, flank pain, and limitation of hip movement, which is specific to psoas abscess, but is present in only 13.3-30% of patients (3). The similarity of clinical symptoms between retroperitoneal abscess and septic arthritis of the hip necessitates reliable methods for definitive diagnosis. Diagnostic modalities should be indicated according to the case presentation. Abdominal CT scan is the most sensitive. Barium enema and fistulography are necessary for defining location and extension of colorectal origin of the disease process and colonoscopy is mandatory for confirming cancer, diverticulitis or inflammatory bowel disease.

Therapy of secondary psoas abscess depends on several factors including extent and the cause of the abscess. Simple drainage succeeded in only 49% of cases. One of the causes of lower success rate was a lower rate (53%) of correct preoperative diagnosis and the need for elimination of the primary process (2). Pus evacuation is performed by image-guided percutaneous drainage or as an formal surgical incision. Percutaneous drainage may be the preferred treatment when CT scan shows uniloculated abscess with no gross involvement of structures adjacent to the iliopsoas muscles with exclusion of the secondary type of psoas abscess (2,4). Open drainage is the procedure of choice for complex and/or multiloculated abscesses, abscesses in patients with sepsis and patients with psoas abscess and concurrent intra-abdominal or retroperitoneal pathology (4). Broad-spectrum antibiotics covering aerobic and anaerobic bowel flora are mandatory and duration individualised, guided by clinical signs, involvement of other structures and laboratory results. Antibiotics should be continued for at least two to three weeks after subsiding of fever or after cessation of the wound drainage (5). In Crohn's disease or some other gastrointestinal diseases, combined procedure or a subsequent one or two-stage operation, combining bowel resection with drainage, may be warranted. If osteomyelitis is present it is treated according to local findings. If sequestrectomy or resection is needed it is performed as second procedure. A third procedure, in form of reconstructive procedure, meaning an implantation of a hip prosthesis is postponed for 3 months after control laboratory and abdominal CT findings exclude inflammatory process in the abdomen and left hip. Preceding this procedure, bone scintigraphy with marked leukocytes is performed to exclude any possible latent focuses of infection because foreign material is to be implanted.

The higher mortality rate in the secondary type (18.9%) is caused by often serious primary disease, older age with more frequent serious comorbidities, polymi-

crobial infections, delay in establishment of a correct diagnosis and sometimes need for one or more extensive operations (1).

Our case of secondary psoas abscess with extension to the hip joint with destruction of the acetabulum and proximal femur due to osteomyelitis is extremely rare with only 7 articles published (6-11). It must be stressed that hip abscess but without femoral necrosis occurring after other causes of psoas abscess either primary or secondary is more often reported.

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