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STAGE III XANTHOGRANULOMATOUS PYELONEPHRITIS TREATED WITH ANTIBIOTHERAPY AND PERCUTANEOUS DRAINAGE

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Xanthogranulomatous pyelonephritis (XPN) is a rare inflammatory condition usually secondary to chronic obstruction caused by nephrolithiasis and resulting in infection and irreversible destruction of the renal parenchyma. Its standard therapy consists of total or partial nephrectomy. A case of stage III xanthogranulomatous pyelonephritis treated with antibiotherapy and percutaneous drainage is presented in this paper.

Key-word: Nephritis.

Xanthogranulomatous pyelonephritis (XPN) is a rare variant of chronic pyelonephritis that is frequently associated with urinary tract obstruction usually caused by nephrolithiasis. Affected cases demonstrate massive renal parenchymal destruction with granulomatous tissue infiltrates containing the lipid-laden macrophages replacing the parenchyma. It is believed that removal of the xanthogranulomatous inflammatory tissue is required for curative therapy. That is why total or partial nephrectomy is recomended for a long-standing mainstay treatment. However, focal XGP cases cured with antibiotherapy alone have also been reported (1-5).

This paper presents a stage III xanthogranulomatous pyelonephritis case cured by antibiotherapy and percutaneous drainage.

Case presentation

A 76-year-old male patient presented to our hospital with the complaint of a right lumbar pain and swelling. His medical history was significant with regard to hypertension and a previous cerebrovascular disease. Physical examination revealed a fluctuating right lumbar mass tender to palpation. The patient's fever was 36.7 C°, and his urinalysis was normal. The white blood cell count was 14300. Ultrasonography (US) evaluation revealed a giant hyperechoic mass in the right kidney lodge, with a centrally located region of increased echogenity, consistent with acoustic shadowing characteristic for renal calculi. In addition, a loculated collection containing dense echoes was noticed in the right lumbar region, starting from the subcutaneous area and extending into the right perirenal space. The obtained computed tomography (CT) images demonstrated significant fatty proliferation of the right renal sinus, hilus and perirenal space, focal areas of low density and advanced parenchymal atrophy. The renal contours were preserved. There were central areas of high density and a staghorn calculus. In addition, an anterior displacement of the right colon was noticed due to the space occupying effect of the mass. Besides, a wide collection was observed showing peripheral contrast attenuation and extending from the superior lumbar triangle posteriorly to the subcutaneous tissue, consistent with a perirenal abscess (Fig. 1). The patient was diagnosed with stage III xanthogranulomatous pyelonephritis based on epidemiological properties (advanced age), clinical findings (non-specific and poor symptoms), and CT findings (diffuse atrophic kidney, staghorn stone, low-attenuation parenchymal areas, and widespread perinephritic abscess). In addition, the process was thought to be accompanied by renal replacement lipomatosis, due to observation of significant renal fat proliferation. Antibiotic therapy was initiated (cephasolin and gentamycine), and 2 weeks later a 12F pig-tail catheter was inserted into the abscess cavity under ultrasound guidance. The treatment was continued with cephasolin only following the culture results which indicated Staphylococcus aureus growth. Following the drainage procedure, irrigation with saline was done twice daily. The catheter was removed on day 25. No collection was noticed with US in the follow-up visits 2 and 4 months later. The low-density renal parenchymal areas were noticed to have disappeared on the follow-up CT obtained a year later, and no recurrent infection was observed.

Discussion

XGP is a chronic renal inflammatory disease that arises from an abnormal host response to bacterial infection and results in parenchymal destruction and replacement with lipid-laden macrophages. The most frequently encountered infecting agents (59-95%) are E. Coli and Proteus mirabilis. Gram-positive cocci (especially Staphylococcus aureus), Klebsiella species and Pseudomonas species have also been isolated from urinalyses (6).

The main predisposing factors for XGP development are obstruction and genito-urinary system infections. Stone-related obstructions comprise 38-83% of the XGP cases. In addition, diabetes mellitus, lipid metabolism abnormalities, lymphatic obstruction, deterioration of the immune system, leukocyte function abnormalities, malignancy, renal vein occlusion, long-standing paralysis, alcohol, malnutrition, hyperparathyroidy, and renal transplantation are factors that have been described to be weakly corelated with XGP (6-8).

XGP usually affects adults age 50 and above. However, the condition has been described in all age groups. The age range of reported cases is 21 days to 90 years (1, 9, 10). Male children and female adults are more frequently affected by the disease. The disease is typically unilateral, and may be focal, segmental or diffuse. Rarely, however, it can show bilateral involvement (11). Clinical

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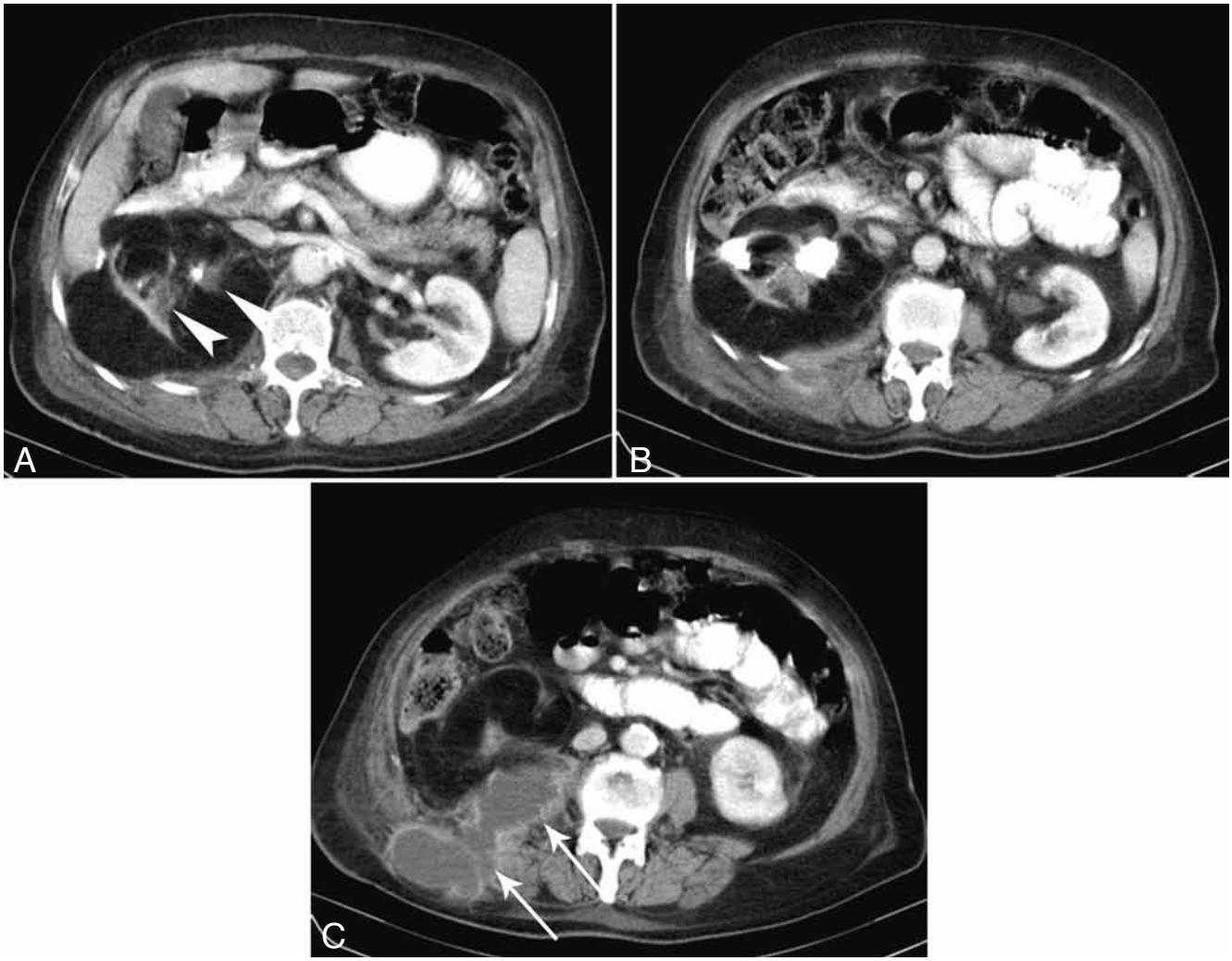

Fig. 1. — Axial CT image showing significant fatty proliferation of the right renal sinus, hilus, and perirenal space, focal low-density areas (arrowheads) and advanced parenchymal atrophy (A). Central areas of high-density and renal calculi are observable (B). In addition, a broad collection is noticed extending from the right lumbar subcutaneous area into the right perirenal space, demonstrating peripheral contrast attenuation, consistent with abscess (arrows) (C).

findings are usually non-specific and include fever, deteriorated general condition, weight loss, insidious low-back pain, and palpable mass. Laboratory findings usually show leukocytosis. Additionally, elevation of C-reactive protein, erythrocyte sedimentation rate and liver enzymes may be observed.

Abdominal CT has been prompted as a good non-invasive diagnostic tool (12). Renal enlargment, calyx dilation, significant cortical thinning, renal stone, and multiple non-homogeneous areas of low-attenuation indicative of abscess and dilated calices are observed in diffuse XGP. In addition, extrarenal XGP extension (to the perirenal space, anterior and posterior pararenal spaces, ipsilateral psoas muscle, the diaphragm, posterior abdominal wall, skin and bowel wall) and fistula formation are also clearly demonstrated by CT imaging. On the other hand, focal XGP is observed in CT images as a low-density area with no contrast attenuation following intravenous contrast administration. The focal disease can be easily misdiagnosed as a renal tumor. In addition, XGP is sometimes difficult to be differentiated from hydronephrosis or pyonephrosis, malakoplakia, renal abscess or lymphoma.

The basic therapy-determining factor is the stage of the disease. In stage I (20-64%), nephritic XGP, the inflammation is confined to the kidney. In stage II (14-70%), perinephritic XGP, there is involvement of both the kidney and the perirenal area. In stage III (10-36%), as was the case with our patient, involvement of kidney, perirenal area, and diffuse retroperitoneal area is observed (13). Nephrectomy is considered the curative therapy. Total nephrectomy is the most appropriate therapeutic modality for all stages of diffuse XGP, and for stage III focal XGP. On the other hand, segmental resection of the affected kidney may be applied for stage I and II focal XGP cases. However, the present case, and review of the medical literature, are in support of the option of percutaneous drainage and antibiotic treatment for XGP cases.

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