Xanthogranulomatous Pyelonephritis

A Pseudo-Neoplastic Disease

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Xanthogranulomatous pyelonephritis (XGP) is an uncommon form of chronic pyelonephritis. In most cases, it is a complication of obstruction caused by renal stones (1, 2). The mass-like effect of XGP including invasion of contiguous structures could be confused with malignancy and could result in nephrectomy on the presumptive diagnosis of Grawitz tumor.

We present a 46-year-old man with a seminoma of the right testis with lymphnode metastasis in the right-lower abdomen. After chemotherapy, he went into remission. Several months later there was progression of the tumor located just below the right kidney, suggesting recurrence of the metastasis. Surprisingly, resection of the tumor showed XGP without any evidence of seminoma.

Case report. In November 1996, a 46-year-old man presented with a seminoma of the right testis with large metastasis (6.8×6.5 cm), located in the right-lower abdomen. In December 1996, he underwent an orchiectomy followed by treatment with 4 cycles of chemotherapy (bleomycine, etoposide and cisplatinum), resulting in regression of the intra-abdominal metastasis. After 4 cycles of chemotherapy there was evidence of a small residual mass (1.8×2.2 cm). Furthermore, before chemotherapy the patient was known with hydroureteronephrosis (with a small rim of cortex parenchyma) of the right side induced by external compression of the ureter by intra-abdominal metastasis.

After treatment with chemotherapy, the hydronephrosis disappeared. In March 1997, the patient developed a urinary tract infection with *E. coli* which was adequately treated with antibiotics. In June 1997 he again developed hydronephrosis of the right kidney without volume progression of the residual mass located in the right-lower abdomen.

In July 1997 the patient presented with right-lumbar pain irradiating to the right leg, and subfebrile temperature with dysuria.

On physical examination, a large mass was palpated in the right-lower quadrant of the abdomen. Laboratory tests revealed an erythrocyte sedimentation rate (ESR) of 113 mm/h, a white blood cell count of 16.9×10^9/L, hemoglobin of 5.8 mmol/L and creatinine of 95 μmol/L. Abdominal computed tomography (CT) showed a diffuse mass in the right paravertebral region with extension into the right musculus psoas inferior caval vein, ureter and inferior region of the right kidney with hydronephrosis (Fig. 1). CT-guided, fine-needle aspiration of the tumor showed pus. Cultures of the pus and urine revealed *E. coli* bacteria. A course of intravenous antibiotics was started. Cytologic examination of the aspiration material showed no conclusive diagnosis.

In view of probable recurrence of seminoma metastases or intra-abdominal abscess localization, a urological exploration by lumbotomy with nephrectomy was scheduled. Histological examination of the resection specimen revealed destruction of the normal renal parenchyma and replacement by an inflammatory infiltrate composed of foamy (lipid-containing) macrophages, giant cells, polymorphonuclear cells, lymphocytes, plasma cells and fibrosis (Fig. 2). The renal parenchyma and ureter were filled with purulent exsudate (in culture: *E. coli*). The histological diagnosis was XGP. The resection specimen revealed no malignancy.

Six months after surgery no recurrence was found.

Discussion. XGP, first described by Oberling in 1935 (5), is an uncommon inflammatory response to a chronic bacterial infection of the renal parenchyma. Proteus species and *E. coli* are found to be the most common involved microorganisms (3).

Fig. 1. Computed tomography (CT) of the abdomen showing a solid enhancing mass in parenchyma of the hydronephrotic right kidney and musculus psoas.

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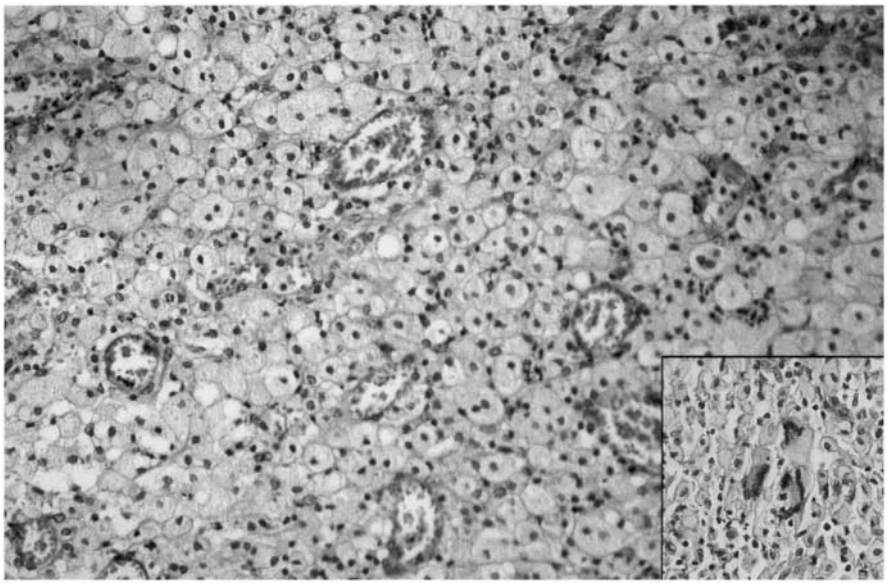

Fig. 2. Microscopy of the tumor showing inflammatory cells which include lymphocytes, plasma cells and macrophages filled with lipid in the cytoplasma, indicating xanthoma cells and giant cells (inlay). (HE stain 200 ×).

The etiology of XGP is unknown. However, a combination of urinary-tract obstruction secondary to urolithiasis and chronic bacterial infection proximal to the obstruction is usually present. In our case the obstruction was first induced by the intra-abdominal metastasis (which disappeared after treatment with chemotherapy) and later on by fibrosis induced by the chemotherapy (as examination of the resection specimen showed). To our knowledge, the combination of obstruction of the ureter by XGP and a malignant process has never been published before.

XGP usually occurs in middle-aged women who frequently have a history of recurrent urinary-tract infections (1). The symptoms include flank pain, fever and/or chills, malaise, anorexia and weight loss (4). Laboratory findings are non-specific, for example anaemia, leukocytosis and elevated liver enzymes (1, 5). Only rarely is the diagnosis made preoperatively (6, 7).

The differential diagnosis includes renal neoplasms, renal abscess, lymphoma, sarcoma, pyonephrosis, renal tuberculosis and actinomycosis (7).

XGP is almost always unilateral and associated with the complete destruction of the kidney. The treatment of choice is surgery and consists of nephrectomy with resection of all other involved tissue (8). If the diagnosis is made preoperatively and surgery is the first option, an extraperitoneal approach should be used to minimize the spread of infected material (6). Preservation of the kidney is possible when there is focal localization of XGP (7, 9–11), in which case the treatment of choice consists of antibiotics and close follow-up. In our patient a nephrectomy was mandatory since the preoperative imaging was compatible with malignant tumor and the renal function of the involved kidney had irreversibly deteriorated.

So, XGP is a disease which can mimic malignancy, in this particular case recurrence of seminoma metastasis. It is important to remember this diagnosis because nephrectomy can sometimes be avoided in focal XGP by antibiotic treatment.

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