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Xanthogranulomatous Pyelonephritis with Pancreatic Infiltration: A Rare Case Report

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ABSTRACT

Introduction : Xanthogranulomatous pyelonephritis (XGP) is a rare chronic granulomatous infection of the kidney usually linked to urinary tract obstruction and infection. Extension into adjacent organs is uncommon pancreatic involvement is exceptionally rare.

Case Presentation : A 45-year-old woman with recurrent left renal colic presented with pyelonephritis and left-sided pain. Laboratory tests showed leukocytosis and elevated C-reactive protein with preserved renal function. CT revealed an enlarged left kidney with staghorn calculi and a "bear paw" appearance adherent to a lesion of the pancreatic tail. MRI confirmed an infiltrative process. After intravenous antibiotics, en bloc left nephrectomy with splenopancreatectomy was performed. Histopathology confirmed XGP extending into the pancreatic tail. Recovery was uneventful, with spontaneous closure of a low-output pancreatic fistula and no recurrence at 6-month follow-up.

Conclusion: Pancreatic infiltration by XGP is extremely rare and can mimic renal or retroperitoneal malignancy. Recognition of characteristic imaging features and histopathological confirmation are crucial for accurate diagnosis and appropriate surgical management.

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Introduction

Xanthogranulomatous pyelonephritis (XGP) is a rare chronic destructive granulomatous process of renal parenchyma in association with long-term urinary tract obstruction and infection. It affects females more often than males, with a wide range of age, from newborn to elderly [1,2].

XGP frequently mimics renal malignancy in the preoperative setting, making diagnosis difficult [3].

It usually remains confined to the kidney and perinephric tissues. Extension into adjacent organs is uncommon, and pancreatic infiltration is exceptionally rare. We report a case of XGP with direct infiltration of the pancreatic tail, which, represents an extremely unusual presentation illustrating diagnostic challenges, surgical management, and favorable outcome.

Case Presentation

A 45-year-old patient with a 3-year history of recurrent left renal colics presented with left-sided pyelonephritis and pain in the left hypochondrium. The patient's general condition was preserved and there were no comorbidities.

Laboratory investigations showed leukocytosis (15,000/mm³) and elevated C-reactive protein (120 mg/L), with preserved renal function (serum creatinine 60 µmol/L). Urine culture was sterile.

Contrast-enhanced abdominal CT revealed a typical "bear paw" appearance of the enlarged left kidney with multiloculated low-attenuation areas and mid-calyx and pelvis staghorn calculi (Figure 1). The superior pole of the left kidney appeared adherent to a tumor-like lesion of the pancreatic tail measuring 65 ×53 cm, with obliteration of the fat plane (Figure 2).

Figure 1: Contrast-Enhanced CT Scan Showing an Enlarged Left Kidney with A Typical "Bear Paw" Appearance, Multiloculated Low-Attenuation Areas, and Staghorn Calculi in the Mid-Calyx and Renal Pelvis.

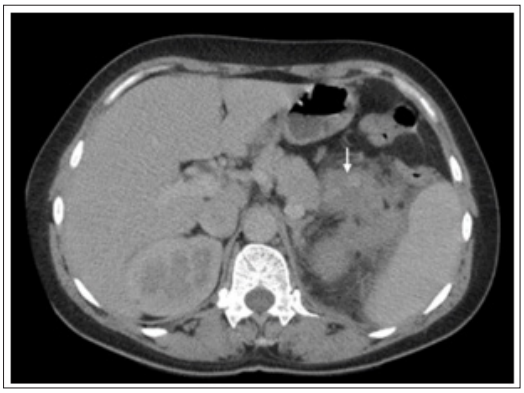

Figure 2 : Contrast-Enhanced CT Scan Demonstrating Adhesion of the Superior Pole of the Left Kidney to a Tumor-like Lesion of the Pancreatic Tail with Loss of the Intervening Fat Plane.

Abdominal MRI demonstrated a hypointense T1/T2 infiltrative lesion involving the pancreatic tail, suggestive of XGP extension (Figure 3).

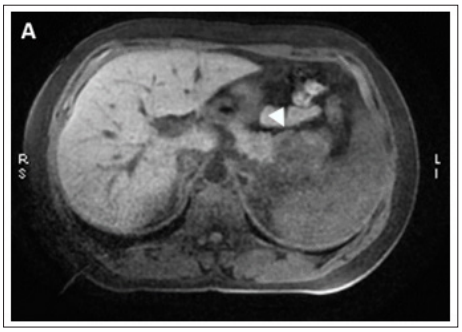

Figure 3 : Abdominal MRI Demonstrating A Hypointense T1/T2 Infiltrative Lesion Involving the Pancreatic Tail, Consistent with Extension of Xanthogranulomatous Pyelonephritis (XGP).

After 7 days of intravenous antibiotic therapy, the patient underwent exploratory laparotomy. A monobloc resection was performed, including left nephrectomy with splenopancreatectomy.

Postoperatively, the patient developed a low-output pancreatic fistula that resolved spontaneously within 8 days.

Macroscopically, the renal lesion extended to the pancreatic tail (Figure 4).

Figure 4 : Macroscopic View of the Surgical Specimen Showing the Renal Lesion Extending into and Infiltrating the Pancreatic Tail Following

Histopathological examination (HE 50×) showed massive infiltration of inflammatory cells including foam cells, plasma cells and lymphocytes within the renal tissue with extension into the pancreatic tail (Figure 5).

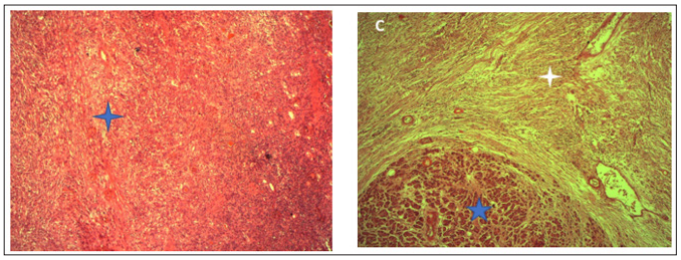

Figure 5 : Histopathological Examination (H&E, 50×) Revealing Dense Infiltration of Inflammatory Cells, Including Foam Cells, Plasma Cells, and Lymphocytes, Within the Renal Tissue, with Extension Into the Pancreatic Tail.

Discussion

XGP accounts for less than 1 % of chronic pyelonephritis and is typically associated with chronic obstruction, infection and the presence of staghorn calculi. The condition more commonly affects middle-aged women but can occur in any demographic.

Typical presenting symptoms of xanthogranulomatous pyelonephritis include flank or abdominal pain, palpable mass, gross hematuria, and weight loss. Most cases are unilateral and associated with impaired renal function. Common laboratory abnormalities include leukocytosis and anemia, while urine cultures frequently isolate Escherichia coli and Proteus mirabilis [4].

Xanthogranulomatous pyelonephritis (XGP) is further classified into three stages according to the extent of disease: stage I, confined to the kidney; stage II, extending into the Gerota fascia, and stage III, involving the perinephric tissues. XGP has been described as a "great imitator" due to its frequent misdiagnosis as a renal mass [5]. Fistula formation has been reported in stage III XGP, with tracts extending to the skin, psoas muscle, or intestinal tissues [6].

Extension beyond the perinephric space is rare, reported sites include the spleen, colon and duodenum. Pancreatic infiltration is exceptional, with only a few cases described in the literature. The pathophysiology of such spread is thought to involve chronic inflammation and adhesions that erode anatomical boundaries.

Radiologically, XGP may mimic renal cell carcinoma or retroperitoneal malignancy, particularly when a mass effect and adjacent organ invasion are present. Recognition of the "bear paw" sign, associated calculi and characteristic imaging features may help in preoperative diagnosis [7]. Nevertheless, definitive diagnosis must be performed by histopathological examination of specimens.

Focal forms of xanthogranulomatous pyelonephritis may be managed with partial nephrectomy. Laparoscopic nephrectomy has also been successfully performed in selected cases [8].

Due to its pseudotumoral appearance, XGP management should ideally be conservative.

In septic patients or those with treatment-resistant disease, emergency nephrectomy remains the treatment of choice [9].

When adjacent organs are infiltrated, as in our case, management generally involves surgical excision, with in bloc resection recommended [10]. Awareness of these atypical presentations is important for urologists and general surgeons to plan the appropriate surgical approach and avoid misdiagnosis.

Conclusion

In conclusion, xanthogranulomatous pyelonephritis with pancreatic extension is a very rare presentation. Because it may mimic various renal and extrarenal pathologies, diagnosis should rely on a thorough clinical evaluation combined with imaging studies and confirmed by histopathological examination, which remains essential for definitive identification.

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Ethics Declaration : Not applicable.

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Refereces

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