International Journal of Clinical and Diagnostic Pathology

ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2020; 3(3): 10-12
Received: 08-05-2020
Accepted: 10-06-2020

Himani Parmar
Post-graduate Resident, Department of Pathology, B.J. Medical College and Civil Hospital, Asarwa, Ahemdabad, Gujarat, India

Mahesh Patel
Professor, Department of Pathology, B.J. Medical College and Civil Hospital, Asarwa, Ahemdabad, Gujarat, India

Urvi Parikh
Assistant Professor, Department of Pathology, B.J. Medical College and Civil Hospital, Asarwa, Ahemdabad, Gujarat, India

Hansa M Goswami
Professor and Head, Department of Pathology, B.J. Medical College and Civil Hospital, Asarwa, Ahemdabad, Gujarat, India

Corresponding Author:
Himani Parmar
Post-graduate Resident, Department of Pathology, B.J. Medical College and Civil Hospital, Asarwa, Ahemdabad, Gujarat, India

A clinicopathological study of Xanthogranulomatous pyelonephritis

Himani Parmar, Mahesh Patel, Urvi Parikh and Hansa M Goswami

DOI: https://doi.org/10.33545/pathol.2020.v3.i3a.252

Abstract
Introduction: Rare, severe and atypical form of chronic pyelonephritis characterized by destruction of renal parenchyma and the presence of granulomas, abscesses, and collection of lipid filled macrophages.
Objective: To study the clinicopathological relationship of the lesion.
Method: A 8 year retrospective study was done to analyze the lesions of renal and ureteric calculi. XGP was found to be most common in female.
Conclusion: Xanthogranulomatous pyelonephritis is unusual variant of chronic pyelonephritis. Preoperative diagnosis is desirable with laboratory analysis. Histopathological examination is important to know the type and etiological factor of the lesion.

Keywords: Xanthogranulomatous pyelonephritis, foamy macrophage

Introduction
Xanthogranulomatous pyelonephritis is rare type of chronic infective pyelonephritis being recognized as an important cause of renal morbidity worldwide. It now globally accounts between 0.6% and 1% of all pyelonephritis cases [1]. Inflammation destroys the renal parenchyma either diffuse (83-90%) or segmental and focal (together 10-17%) [2]. Clinically XGP presents with recurrent urinary tract infections resistant to antibiotics, fever, hematuria, dysuria, abdominal mass, palpable mass, anorexia and weight loss [4]. Often associated with Proteus infections and obstruction, the lesion sometimes produce large, yellowish orange nodules that may be grossly confused with renal maliganancy [2]. The condition is usually unilateral and results in non-functioning kidney [3] Hydronephrosis and renal calculi are often observed. Obstruction with Renal calculi causing parenchymal destruction and replaces with sheets of foamy macrophage, lipid laden macrophage (xanthoma cells), diffuse infiltration of plasma cells. XGP presented as a complication of renal transplant [5, 6] and also correlated with metabolic syndrome and diabetes mellitus [5] The laboratory findings show leukocytosis, anemia, pyuria in urine analysis. E-coli, Proteus mirabilis are most common organism in urine culture others are S.aureus. Group B streptococci, Candida, klebsiella, and bacteroids [7-13] For better prognosis pre-operative biopsy can be performed and nephrectomy can be reduced.

Aims and objectives
- To study the clinicopathological correlation of Xanthogranulomatous pyelonephritis.
- To study age and sex wise incidence of XGP.
- To evaluate the organism causing XGP.

Materials and method
This study was conducted in Dept. of pathology, Tertiary care teaching hospital, Ahmedabad from June 2013 to May 2020. The clinical data was taken from the hospital records. The complete history and preoperative investigations including blood count, ESR, fasting blood glucose, renal and liver function test, urine examination, and urine culture and sensitivity were done. The radiological investigations ultrasonography and intravenous urography were noted. The nephrectomy specimen were processed and H&E stained sections were reviewed. Diagnosis was confirmed by histopathological examination. During this period, 15 nephrectomy specimen of XGP were analysed in detail by histopathologist. When diagnosis

of XGP was confirmed it was staged according to:

Stage 1- Lesion was confined to renal parenchyma
Stage 2- Lesion involved the preirenal space
Stage 3- Lesion was extended in perirenal space and pararenal spaces

Results

During the study, 15 cases of xanthogranulomatous pyelonephritis were reviewed. Among the 15 cases, 9 lesions (60%) were in female and 6 lesions (40%) with male to female ratio 2:3. The maximum no. of cases were identified in 4th decade (40%). Our youngest patient was 32 years and oldest patient was 68 years. History of urinary tract infection was noticed in all cases. Other symptoms were anorexia, pyuria, dysuria, proteinuria, weight loss and hematuria. 12 patients had hemoglobin less then 8gm/dl and polymorphs in 14 cases, ESR raised in 13 cases. In 7 cases the urine was sterile but pyuria was found in 6 cases. Proteus mirabilis and E-coli were the most common organism isolated from kidney after nephrectomy. Radiological examination shows multiple calculi in kidney in 6 cases and ureteric calculi with multiple calculi in kidney in 2 cases. In 8 patients' right kidney was involved and in 7 cases left kidney was involved.

Grossly kidney was enlarged, the cut surface showed diffuse cortical scarring with effacement of corticomedullary junction. In diffuse XGP the kidney was enlarged with hydronephrosis, pelvic calculi, single or multiple yellow nodules.

On microscopic examination, structure of kidney with presence of interstitial mixed inflammatory infiltrate, chiefly consists of neutrophils, lymphocytes, plasma cells, histiocytes surrounded by dense fibrous tissue. At places collection of foamy macrophages and foreign body type of giant cells are also seen. Focal and diffuse involvement of renal parenchyma. The interstitium showed microabscess, lymphoid aggregates with germinal centre formation. Intimal fibrosis of small to medium sized arteries with luminal narrowing, areas of hemorrhages. Majority of cases revealed involvement of renal capsule with extension to perirenal soft tissue.

Stage 1- 50-55% (8 cases)
Stage 2- 25-27% (4 cases)
Stage 3- 15-20% (3 cases)

Table 1: Age and Sex wise distribution of cases

15-30		30-40		40-50		50-60		60-70		Total	
M	F	M	F	M	F	M	F	M	F	M	F
		1	3	3	3	1	2	1	1	6	9

Table 2: Clinical Presentation- Number of Cases

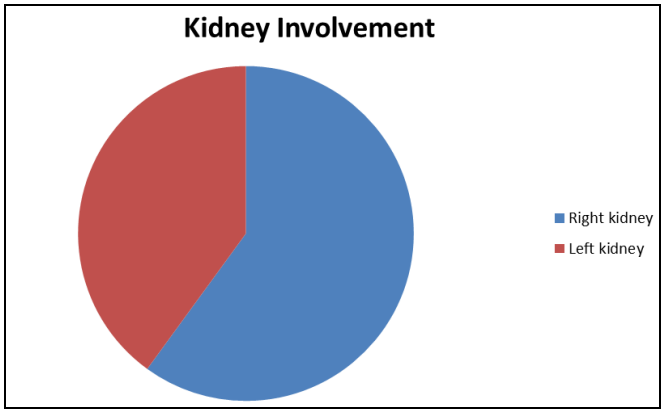
Fever	15(100%)
Flank Mass	15(100%)
Anorexia	10(66%)
Weightloss	9(60%)
Pyuria	7(46%)
Dysuria	10(66%)
Proteinuria	12(80%)
Hematuria	6(40%)

Table 3: Complete blood picture of patients

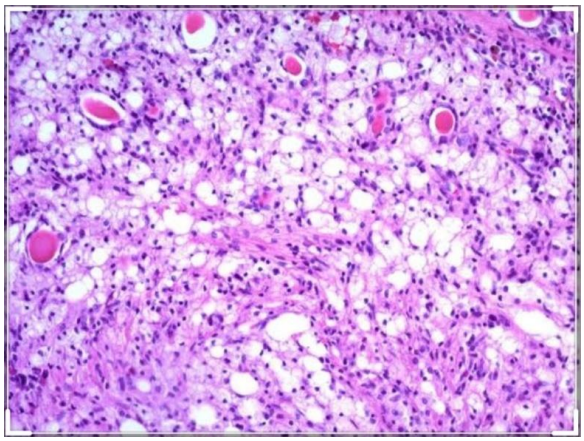
Anemia (<8 gms%)	10 cases (65%)
Polymorphs(lymphocytes)	11 cases (73%)
ESR (>30 MM/hr)	12(80%)

Table 4: Urine examination of patients

Sterile	7 cases (46%)
Pyuria	6 cases (40%)
Culture sensitivity	9 cases (60%)



Microscopic image of xanthogranulomatous pyelonephritis



Discussion

XGP is uncommon form of chronic pyelonephritis accounts for 6/1000 of surgically proved cases [14, 15]. Women Affected more than male with M:F ratio 2:3 [14, 15, 16].

The present study correlated with above study. In present study 6 cases were secondary to calculi (40%).

In our study common finding were diffuse involvement of whole kidney with decreased and non-functioning kidney 6 cases (40%). The present study correlates with Haq nawaaz *et al.* 2005, D'Costa GK *et al.* 1990, Shauser JD *et al.* 1972.

In present study most of the patients were anemic and presented with tender flank mass Haq nawaaz *et al.* 2005 Documented similar finding in his study.

The preoperative diagnosis is very difficult. The possible diagnosis of XGP is possible by the clinopathological and radiological investigation. In present study findings were unilateral involvement, impaired and or absent renal function on affected side, presence of renal calculi, fever, anemia, luecocytosis, raised ESR, pyuria, hematuria and hypertrophy of non- affected kidney (contralateral kidney).

Our findings are consisitent with Haq nawaaz *et al.* 2005, Toprak U *et al.* 2005, Ginjell JC *et al*. 1973

In present study all cases of XGP grossly yellowish nodules, with areas of necrosis and hemorrhage. Microscopy revelead focal or diffuse involvement with foamy macrophage, polymorphs, lymphoplasma cells and focal abscess. Urine culture and preoperative fluid fluid collected from kidney showed E-coli, proteus mirabilis organism. The present study correlated with McDonald GS *et al.* 1981, D'Costa GK *et al.* 1990 and Nataluk EA *et al.* 1995.

Renal malignancy is main differential diagnosis, evidence of chronic renal infection and microscopic findings were confirmed on XGP. The other renal inflammatory conditions like renal malakoplakia and megalocytic interstitial nepritis were differentiated from XGP, by the histology.

Conclusion

XGP is a rare manifestation of chronic renal parenchymal inflammation associated with chronic urinary tract infection and obstruction. It has to be differentiated from benign and malignant conditions. Evaluation of disease requires clinical presentation, imaging studies and biopsy for confirmation of diagnosis.

References

1. Siddappa S, Ramprasad K, Muddegowda MK. Xanthogranulomatous pyelonephritis. A retrospective review of 16 cases. Korean J Urol. 2011; 52(42):1-4.
2. Robbins and cotran pathologic basis of disease (9e) volume II
3. Das DP, Pal Dk. Co-existing malokoplakia and xanthogranulomatous pyelonephritis of kidney: Two spectrum of same disease process. Urol Ann. 2016; 8:252-4.
4. Yousof A, Aldhilan A, Alamer A, Fahad A. Renal squamous cell carcinoma presented with bone metastasis and coexistence with xanthogranulomatous pyelonephritis: A case report. Urology Case Reports. 2014; 2(2):35-37.
5. Ahmad Enshaei, Arash A. Boora, Diana Taheri, Zahra Changizi, and Nahid Bahmani, Focal Xanthogranulomatous Pyelonephritis with Pulmonary Lesions on the Background of Type Two Diabetes Mellitus, Case Reports in Radiology, vol. 2018, Article ID 1698286, 5 pages, 2018. https://doi.org/10.1155/2018/1698286.
6. Elkhammas EA, Mutabagani KH, Sedmak DD, Tesi RJ, Henry ML, Ferguson RM. Xanthogranulomatous pyelonephritis in renal allografts: Report of 2 cases. The Journal of Urology. 1994; 151(1):127-128.
7. Korkes F, Favoretto RL, Bróglio M, Silva CA, Castro MG, Perez MD. Xanthogranulomatous pyelonephritis: clinical experience with 41 cases. Urology. 2008; 71(2):178-180.
8. Loffroy R, Guiu B, Watfa J, Michel F, Cercueil JP, Krausé D. Xanthogranulomatous pyelonephritis in adults: clinical and radiological findings in diffuse and focal forms. Clin Radiol. 2007; 62(9):884-890.
9. Al-Ghazo MA, Ghalayini IF, Matalka II, Al-Kaisi NS, Khader YS. Xanthogranulomatous pyelonephritis: analysis of 18 cases. Asian J Surg. 2006; 29(4):257-261.
10. Mittal BV, Badhe BP. Xanthogranulomatous pyelonephritis-a clinicopathological study of 15 cases [published correction appears in J Postgrad Med. 1990;36(2):103]. J Postgrad Med. 1989; 35(4):209-214.
11. Dwivedi US, Goyal NK, Saxena V *et al.* Xanthogranulomatous pyelonephritis: our experience with review of published reports. ANZ J Surg. 2006; 76(11):1007-1009.
12. Parsons MA, Harris SC, Longstaff AJ *et al.* Xanthogranulomatous pyelonephritis: a pathological clinical and aetiological analysis of 87 cases. Diagn Histopathol. 1983; 6:203-219.
13. Elder JS, Marshall FF. Focal xanthogranulomatous pyelonephritis in adulthood. Johns Hop Med J. 1980; 146:141-7.
14. Al-Sulaiman MH, Al-Khader AA, Mousa DH, Al-Swailem RY, Dhar J, Haleem A. Renal parenchymal malacoplakia and megalocytic interstitial nephritis: Clinical and histological features: Report of two cases and review of the literature. American Journal of Nephrology. 1993; 13(6):483-488.
15. Haq Nawaz, Saadat Khan, Israr Hussain, Sheir Ahmed, Masha Khan, Nadeem Niazi. XGP due to calculi: report of 63 cases and review of literature. j pak med assoc. 2005; 55(9):387-9.
16. Malek RS, Elder JS. Xanthogranulomatous pyelonephritis: a critical analysis of 26 cases and of the literature. J Urol. 1978; 119(5):589-593.