



XANTHOGRANULOMATOUS PYELONEPHRITIS: PRESENTATION AND SURGICAL COMPLICATIONS.

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Article received on:
22/07/2019
Accepted for publication:
16/10/2019

ABSTRACT: Objectives: To review and evaluate the clinical presentation & surgical complications of Xanthogranulomatous Pyelonephritis (XGP). **Study Design:** Case Series study. **Setting:** Department of Urology Sandeman Provincial Teaching Hospital Quetta. **Period:** 7 years July, 2011 to June, 2018. **Material & Methods:** We retrospectively reviewed all biopsy proven cases of XGP who underwent surgery in the department of Urology of a tertiary care hospital from July, 2011 to June, 2018 regarding clinical characteristics, laboratory & radiological finding, interoperate & postoperative complications. **Results:** There were 42 patients of XGP. The mean age was 49.8+-16.04 years. Male & female percentage was 40.50 & 59.50 respectively. Majority (88.1%) of patients were of low socio-economic status. The most common presentation was flank pain in 100% patients. Fever & dysuria in 64.28%, anorexia in 85.71% and weight loss in 83.33%. In laboratory findings, pyuria was present 88.09%, anemia in 71.42%, azotemia & abnormal liver enzymes in 14.29% each. The most common associated conditions were renal calculi in 83.33% and diabetes in 47.61%. The commonest organism isolated on culture was E-Coli in 35.48%. Intra-operatively excessive bleeding occurred in 3(7.14%), including one with tear of inferior vena cava. Two patients suffered colonic injury & another one pleural injury. Postoperatively the common complications were, wound infections in 8(19.04%) patients & Incisional hernia in 2(4.76%) patients. **Conclusion:** Urolithiasis and urinary tract infection are two well known risk factors for the development of XPN. Our experience in the present series, demonstrates that low socioeconomic status could be another risk factor for XPN. Early diagnosis and proper treatment of urolithiasis & urinary tract infection is important to prevent their complications including XGP.

Key words: Granulomatous Infection, Nephrectomy, Pyelonephritis, Urolithiasis.

Article Citation: Khan M, Salahuddin, Anwar M, Nawaz A, Shoaib M, Samad A, Nawaz H, Zarkoon Y, Khan S. Xanthogranulomatous pyelonephritis: Presentation and surgical complications. Professional Med J 2020; 27(7):1391-1395.
DOI: 10.29309/TPMJ/2020.27.07.3965

INTRODUCTION

Xanthogranulomatous Pyelonephritis (XGP) is an uncommon chronic inflammatory disease of the kidney. In this a granulomatous reaction occurs to ch. infection often in the presence of chronic obstruction, resulting in a destructive mass that invades the renal parenchyma and adjacent organs.¹

The granulomatous tissue contains lipid-filled foamy macrophages which appear yellow in pathological appearance; hence the term 'xantho' (Greek for yellow) is used in its name^{2,3} (Figure-1,2). Though common in fifth to sixth decade, it can occur at any age. Women are more frequently affected than men.⁴

The most common symptoms of patient with xanthogranulomatous pyelonephritis are flank pain and fever.⁵

Other complaints include palpable mass, voiding symptoms, anorexia and weight loss. Obesity and other conditions associated with metabolic syndrome may coexist at the time of presentation and may be contributing factors to the development of xanthogranulomatous pyelonephritis and poor outcomes associated with it.²

In the past, the preoperative diagnosis of XGN was notoriously difficult because of its nonspecific clinical presentation and nonspecific radiographic

appearances. However the preoperative diagnosis has considerably been improved with the use of ultrasound and computed tomography. The typical features of XGP on CT & Ultra Sound are unilateral renal enlargement with multiple hypo echoic areas, calyceal dilatation along with multiple calculi and extra renal extension of inflammatory changes⁶ (Figure-1). Their presence in a patient with constitutional symptoms and urinary tract infection should alert the urologist to the possibility of this uncommon condition. Radiological findings diagnose & classify XPN into three stages depending on the extension of the inflammation, namely: stage 1 (Nephric XPN), stage 2 (perinephric XPN), & stage 3 (paranephric XPN).⁷

Surgery remains the mainstay for a definitive diagnosis and cure of xanthogranulomatous pyelonephritis, requiring extirpation (nephrectomy) as the standard surgical technique.^{8,9} We retrospectively reviewed the cases of XGP who underwent nephrectomy in our Urology Department with pathological documentation.

MATERIAL & METHODS

This study was conducted at the Urology department, Sandeman Provincial Teaching Hospital, Quetta. We retrospectively reviewed case reports of patients of XGP who had been operated in our unit from July, 2011 to June, 2018. The record of patients was assessed regarding complete history including socioeconomic status and physical examination. The investigations done before surgery were complete blood count, ESR, blood sugar, renal function tests, liver function tests, urine D/R, urine culture & sensitivity, ultrasonography, CT urography & DTPA cintigraphy.

The flank sub costal or intercostal approach was used for surgery in all the cases. After nephrectomy, fluid/pus from the kidney was sent for culture & sensitivity while the kidney as a whole was sent for histopathological examination. Intra-operative complications were recorded including excessive bleeding (arbitrarily estimated as $>1/5^{\text{th}}$ of circulating blood of an individual, as in an average adult $>1000\text{ml}$ and was roughly calculated/

judged by the number of used sponges + blood in suction machine). Postoperative complications were also recorded. The diagnosis of XGP was confirmed on the histopathological examination report of the removed kidney.

RESULTS

There were 42 patients in the current study. In these 25 (59.50%) were female and 17 (40.50%) were male. The mean age of the patients was 49.8 ± 16.04 years. Vast majority (88.1%) of patients were of low socio-economic status. The most common presentation was flank pain, which was present in 100% patients. Both fever & dysuria was present in 64.28%. Anorexia & weight loss was present in 85.71% & 83.33% respectively. In laboratory finding pyuria was present in 88.1%, anemia in 71.42%, azotemia & abnormal liver enzymes were present in 14.3% each. The most common associated condition was renal calculi in 83.33%, diabetes mellitus in 47.61% and hypertension in 38.09% (Table-I). Although pyuria was present in 88.1% patients but urine culture was +ve only in 50.0% patients. However in 23.80% more patients, fluid/pus obtained from the affected kidneys intra-operatively, was culture positive. So the total percentage of positive culture raised to 73.81%.

The remaining (26.19%) had sterile pyuria. The organisms isolated on culture were Escherichia coli 35.48%, Proteus 29.03%, Klebsiella 16.13%, Pseudomonas 9.68% & other organisms (including Staphylococcus & Enterobacter) 9.68% (Table-II). Intra-operative excessive bleeding, requiring more than one pint blood transfusion occurred in 3(9.68%) patients. Intra-operative adjacent organs/visceral injury also occurred in 3(9.68) patients. While intra-operative major vessel (Inferior vena cava) tear/injury occurred in 1 (2.38%) patients. Regarding postoperative complications, septicemia occurred in 1 (2.38%), wound infection in 8 (19.04%) & incisional hernia in 2 (4.76%) Patients (Table-III).



Figure-1



Figure-2

Number of Patients & (%)	42 (100)
Male & (%)	17 (40.4)
Female & (%)	25 (59.5)
Mean Age (years)	49.8 +/-18.6
Flank pain (%)	42 (100)
Fever (%)	27 (64.28)
Dysuria (%)	27 (64.28)
Anorexia (%)	36 (85.71)
Weight loss (%)	35 (83.33)
Pyuria (%)	36 (85.71)
Anemia (%)	30 (71.42)
Haematuria (%)	21 (50.00)
Azotaemia (%)	6 (14.30)
Abnormal liver enzymes (%)	6 (14.30)
Associated renal calculi (%)	35 (83.33)
Associated diabetes mellitus (%)	20 (47.61)
Associated hypertension (%)	16 (38.09)

Table-I. Patient's characteristics, laboratory findings and clinical presentation.

No.	(%)
No growth	11 (26.19)
+ve growth	31 (73.81)
E-coli	11 (35.48)
Proteus	9 (29.03)
Klebsiella	5 (16.12)
Pseudomonas	3 (9.68)
Others (Staphylococcus & Enterobacter species)	3 (9.68)

Table-II. Culture reports of urine + fluid/pus from affected kidney.

Complications	No. of patients	(%)
A: Intra-operative		
Excessive bleeding	3	(9.68)
Adjacent organs/ Visceral injury	3	(9.68)
Major vessels injury	1	(2.38)
B: Post-operative		
Septicemia	1	(2.38)
Wound infection	8	(19.04)
Incisional hernia	2	(4.76)
Reno-cutaneous fistula	1	(2.38)

Table-III. Intra-operative & Post-operative complications.

DISCUSSION

Although XPN is described in World literature, as a rare entity^{1,2}, but in our region, where neglected long standing urolithiasis with improper treated recurrent urinary tract infection is a common happening, the condition is not so rare. In the last 7 years, in our department. 42 biopsy proven cases have been managed. There is still a high possibility of many cases of XPN being managed, un-diagnosed & hence not included in the study. Although we did not use any specific tool to measure the socio-economic status of the patients, however by history & general look, most of the patients were of far flung rural area, un-educated and of low socio-economic status. The mean age & male female ratio of our patients is quite compareable to previous local studies.¹⁰ Women were affected more often than men. The frequent occurrence of XPN in females is most likely related to the higher incidence of urinary tract infection in women. Flank pain, pyuria, dysuria, low grade fever, anorexia & weight loss was present understandably in majority

of patients as in other series.^{10,11,12} Urinary tract obstruction either by urinary calculi or congenital malformation in children (ureteropelvic junction obstruction, vesico-ureteric reflux etc), is one of the important factor of this condition. Urinary calculi association with XPN has been described from 53 to > 83% in various previous series.^{1,11} Similarly 83.33% patients in our study had urinary calculi.

Although pyuria was present in 88.1% cases but urine culture reports were +ve only in 50.0% of patients. However in 10 (23.80%) more patients fluid/pus obtained from the affected kidneys intra-operatively, was culture positive, hence raising the total culture positive cases to 73.81%. These discrepancies between urine & into-operative renal fluid cultures were most probably due to complete obstruction of the affected kidney, as described in previous series.¹² It has been reported that more than half of the patients have sterile pyuria.¹¹ The same was the case in our study where pyuria was present in 85.71%, while urine culture was positive in only 52.38% of patients. The explanation of this sterile pyuria is most likely the prolong and repeated use of various antibiotics.

Regarding the isolated pathogens in XGP, many authors have found, *Proteus mirabilis* as the most common organism.^{10,13} Contrary to this, *E-coli* was the most common pathogen, in 35.48% and *Proteus mirabilis* was the 2nd common pathogen in 29.03% cases. Ours these findings are supported by Kuo et al, who have described *E-coli*, as the most prevalent pathogen in 36.7% cases.¹⁴

Surgery of XPN can be difficult due to extensive adhesions as a result of inflammatory processes extending beyond the kidney. These factors contribute to both intra-operative and postoperative complications. Intra-operatively we encountered 3 cases with excessive bleeding, one of them due to tear of inferior Vena Cava. All these patients needed intra-operative blood transfusions. In 2 patients colonic injury occurred on left side preoperatively, due to severe adhesions. One patient got pleural injury due to severe adhesions of the upper pole of right kidney, which required

intercostal drain placement. Nearly same type of pattern and frequency of complications have been mentioned in previous series.^{14,16}

Postoperatively the most common complication was wound infection in 8 (19.04%) patients. All of them were treated by change of antibiotics and regular dressings. Out of these 3 patients needed simple re-suturing, while one patient developed incisional hernia and another one cutaneous (reno-cutaneous) fistula. These results are comparable to other series^{14,16} where open surgery has been carried out for XPN. However laparoscopic surgery has been mentioned to have minimized some of the complications of XPN.^{14,15,16}

CONCLUSION

Urolithiasis and urinary tract infection are two well known risk factors for the development of XPN. Our experience in the present series, demonstrates that low socioeconomic status could be another risk factor for XPN. Early diagnosis and proper treatment of urolithiasis & urinary tract infection is important to prevent their complications including XGP.








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