ORIGINAL ARTICLE

PELVI-URETERIC JUNCTION OBSTRUCTION AS SEEN IN UNIVERSITY OF MAIDUGURI TEACHING HOSPITAL: A SIX-YEAR EXPERIENCE

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ABSTRACT

Background: Pelvi-ureteric junction obstruction is defined as narrowing or kinking of the junction between the ureter and the renal pelvis, that is associated with symptoms and or complications. It can result from a congenital narrowing or external compression by aberrant vessels, fibrous band or peri-ureteric fibrosis. The obstruction however may be due to impacted stone. It can be unilateral or bilateral and associated with complications ranging from pyelonephritis, nephrolithiasis and impaired renal function. Surgical procedures for treating this condition include minimally invasive techniques like laparoscopic pyeloplasty and open pyeloplasty. **Objective:** To determine the clinical presentation and outcome of Pelvi-Ureteric Junction (PUJ). **Materials and method:** We retrospectively reviewed all patients that were managed as pelvi-ureteric junction obstruction in University of Maiduguri Teaching Hospital between January 2006 to December 2011. Information was obtained from clinical records and laboratory results. Data was analysed using PASW statistic18. **Results:** A total of 73-patients were analysed. Fifty-four of the patients were males and 19 females, ratio of 3:1, age ranged from 15months-55yrs, mean of 26.77 $\pm$ 12.78. The peak age is 20-29(35.62%), with over 70% of the patients presenting within the age of 10-39years. The cardinal features were loin pain, loin tenderness, fever, and nausea/vomiting occurring in, 63(86.30%), 42(57.53%), 37(50.68%), and 28(38.36%) patients respectively. Associated co-morbidities were diabetes in 6 patients (8.22%), hypertension in 3(4.11%), HIV in 4(5.48%) and asthma in 1(1.37%). **Conclusion:** Pelvi-ureteric junction obstruction is common in this environment but patients present late with complications. Therefore early diagnosis and prompt treatment is necessary for good outcome.

Keywords: *Pelvi-ureteric junction obstruction, fibrosis, aberrant vessel.*

INTRODUCTION

Pelvi-ureteric junction [PUJ] obstruction is essentially a congenital problem and patients may present early or late. The acquired form of PUJ obstruction usually follows fibrosis from a previous renal/ureteric surgery with injury to the pelvi-ureteric junction, or inflammatory process following pyelonephritis[1]. Obstruction can be from congenital narrowing by fibrous band, aberrant vessel[2], and or retroperitoneal fibrosis. In the tropics where schistosomiasis[3] and tuberculosis[4] are common, extensive involvement of the urinary tract can involve proximal ureter and PUJ. Late presentation is usually associated with complications such as pyelonephritis, hydronephrosis, stone formation, pyonephrosis and impaired renal function or absolute loss of renal unit[5]. Currently in developed countries diagnosis is made in-utero[6] However in developing countries the diagnosis is usually made in the post-natal period; In older children and in adults with late presentations, there are associated complications. The management of PUJ obstruction ranged from stenting, endoscopic balloon dilatation, open pyeloplasty, laparoscopic pyeloplasty, robotic- assisted, to robotic pyeloplasty[7-9]. However open pyeloplasty remain the best option where the state of the art facilities are not readily available. This study reviewed PUJ obstructions, presentation, management and outcome as seen at the University of Maiduguri Teaching Hospital [UMTH].

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Materials and Method

The study reviewed all cases of PUJ obstruction managed at the UMTH over the study period. A total of 73 of the 81-patients had complete information for analysis. PSAW statistics18

was used for analysis. Written permission was obtained from the Hospital Research and Ethical Committee. All patients gave written informed consent for the respective procedures done for them. Basic investigations done included urinalysis, packed cell volume, serum electrolytes, genotype (in children), abdominopelvic ultrasound scan, urine microscopy, culture and sensitivity. Diagnosis was made via intravenous urography. Anaemia and electrolytes derangements were corrected and urinary tract infection was treated based on sensitivity tests. Co-morbid conditions like diabetes, hypertension, asthma and HIV infections were optimised before operation. Prophylactic antibiotics (Ceftriaxone and Metronidazole) were routinely given. Those patients that presented in renal failure had serial haemodialysis or temporary nephrostomy tube drainage until renal function returned to normal before definitive surgery. All patients had surgery under general anaesthesia with endotracheal intubation. Accesses were via midline transperitoneal laparotomy for patients with bilateral obstruction, while subcostal incisions were used in those with unilateral obstruction. All procedures were stented with double-J stent in 52 procedures and the rest were improvised with feeding tubes. All stents were removed within 72hrs-6weeks.

RESULTS

Fifty-four of the patients were males and 19 females, a ratio of 3:1, age ranged from 15months-55yrs, with a mean of 26.77 $\pm$12.78 years [Table 1]. The peak age group is 20-29(35.62%), with over 70% of the patients presenting within the age of 10-39years. Duration of symptoms ranged from 3months -13years. The cardinal features were loin pain, loin tenderness, fever, and nausea/vomiting occurring in, 63(86.30%), 42(57.53%), 37(50.68%), and 28(38.36%) pateients respectively as in table 2. Associated co-morbidities were diabetes in 6 patients (8.22%), hypertension in 3(4.11%), HIV in 4(5.48%) and asthma in 1(1.37%).

Table 3 showed complications at presentation: hydronephrosis, pyelonephritis, and stone disease were the major complications. A total of 17 stones were found with 6 obstructing while 11 were non-obstructing. There was a high incidence of anaemia in bilateral disease occurring in 7(58.33%). Intra-operative findings revealed the various causes of obstruction as shown in table 4, with an unusual cause of schistosomal fibrosis accounting for 5 out of the 9 causes due to fibrosis. One nephrectomy was done for a non-functioning kidney histology of which revealed a polycystic kidney with a focus of papillary cell carcinoma in the renal pelvis obstructing the PUJ.

Table 5 showed procedures performed. Some patients had more than one technique or procedure performed due to severity of their condition or bilateral disease. Both obstructing stones (6) and non-obstructing stones (11) were dealt with at the same sitting. In one patient with bilateral severe schistosomiasis involving the entire ureters up to the PUJ causing obstruction, Yang montie procedure on the left and Mitrofanoff's procedure on the right was done. There was no mortality. The hospital stay ranged from 5days-6weeks with a mean of 9 days.

Post-operative complications seen were: One patient(1.37%) had post operative renal failure which improved on haemodialysis. surgical site infection (ssi) in 6(8.22%), UTI in 6(8.22%),leakage in 3(4.11%),and reoperation in 2 for re-stricturing (2.74%). The follow up period ranged from 3months to 4years, with the mean of 23months. During the follow up period the clinical condition of the patients improved with optimum biochemical and radiological outcome.

Table 1: Age distribution

Age (yrs)	No (%)
<10	8(10.96)
10-19	11(15.07)
20-29	26(35.62)
30-39	16(21.92)
40-49	6(8.22)
≥50	6(8.22)
Total	73(100)

Table 2: Signs & Symptoms

Signs/symptoms	No(%)
Loin Pain/discomfort	63(86.30)
Loin tenderness	42(57.53)
Fever	37(50.68)
Nausea/vomiting	28(38.36)
Palor	11(15.07)
Haematuria	10(13.70)
Dysuria	8(10.96)
Loin mass	6(8.22)
*Others	11(15.07)

**Facial/leg oedema, uraemic frost, weight loss*

Table 3: Complications at presentation

Complications	Unilateral disease(61)	Bilateral disease(12)
Hydronephrosis	15(24.59)	7(58.33)
Pyelonephritis	16(26.23)	7(58.33)
Stone	16(26.23)	1(8.33)
Renal failure/impairment	2(3.28)	4(33.33)
Non-functioning kidney	0(0.00)	2(16.67)
Anaemia (pcv<30)	6(9.84)	7(58.33s)

Table 4: Causes of obstruction

Intrinsic narrowing	46(63.01)
Extrinsic fibrous band	5(6.85)
Aberrant renal vessel Fibrosis/stricture (eg. schistosomiasis)	6(8.22)
Obstructing stone	9(12.33)
Tumour(papillary cell Ca)	6(8.22)
Total	1(1.37)
	73(100)

Table 5 Procedures done

Anderson-Hynes	44
Heineke-Mirhulicz	14
Foley Y-V Plasty	8
Culp- De Weerd	11
Adhesiolysis	10
Pylolithotomy	6
*Others	3

**1 nephrectomy, 1Yang montie procedure and 1 Metrofanoff's procedure (in one patient).*

DISCUSSION

Pelvi-ureteric junction obstruction is a common problem presenting in children and young adults, however in this environment it is seen in all ages associated with complications due to late presentation. This study found loin pain, fever and loin tenderness due to urinary tract infections the common presenting features. Complications of pyelonephritis, hydronephrosis, and varying degree of renal function impairment were also documented in previous reports [7, 8] except for renal failure necessitating dialysis especially in bilateral disease. We made the diagnosis of PUJ obstruction based on clinical grounds, ultrasonography and radiological imaging in keeping with diagnostic procedures worldwide[9].

The aetiology of PUJ obstruction is mainly congenital narrowing accounting for the majority of cases as seen in this study(63.01%), others are fibrous band[10](6.85%), aberrant renal vessel[11](8.22%) and retroperitoneal fibrosis/ stricture from previous inflammation(12.33%) as seen in a previous study[12]. However peculiar findings in this study are the occurrence of schistosomal fibrosis[13] (6.85%) and obstructive stone disease (8.22%) obstructing the PUJ which are in variance with studies elsewhere. Majority of the procedures (44) were Anderson Hyenes dismembered pyeloplasty which is the gold standard[14]. There were 8 Foley Y-V plasty, and 11 Culp pyeloplasty for high insertion ureters, and redundant renal pelvis as indications respectively[15]. Postoperative complications of wound infection (8.22%), urine leakage (4.11%) and urinary tract infection (8.22%) are in keeping with similar study by Maranya etal[10]. There were unusually prolonged hospital stays compared to other studies[16] due to complications at presentations like urosepsis, anaemia, impaired renal function, and co-morbid medical conditions for which patients needed to be optimised before definitive open surgery.

In conclusion, pelvi-ureteric junction obstruction is fairly common in this environment. Late presentation with attendant complications was a common finding. High index of suspicion for early diagnosis and management to improve outcome is essential.

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Cite this article as: Ibrahim A G, Hamid I, Waziri A M. Pelvi-Ureteric Junction (PUJ) Obstruction as seen in University of Maiduguri Teaching Hospital: A six-year experience. Bo Med J 2013;10(1):39-43