ORIGINAL ARTICLE

Bilateral pelvi-ureteric junction obstruction: Our experience in a developing country

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Abstract

Background: Bilateral pelvi-ureteric junction (PUJ) obstruction is rare and causes high morbidity and mortality. Recent advances have led to its diagnosis and management in the perinatal period. However, open surgery is still the mainstay of treatment in less endowed nations where late presentation is the norm.

Materials and Methods: All patients with PUJ obstruction diagnosed and managed at the University of Maiduguri Teaching Hospital between January 2006 and December 2011 were retrospectively reviewed. All had open surgery and all repairs were stented with double J stents or appropriate size feeding tube.

Results: A total of 18 patients were analyzed, 11 males and 7 females with a ratio of 1.57:1 and mean age of 27.5 years (age range 2-38). The main clinical features were loin pain (72.22%) and fever (72.22%); while the main complications at presentation were hydronephrosis (55.56%), impaired renal function (61.11%) and pyelonephritis (50%). The causes of obstruction were mainly congenital (50.0%) and due to schistosomal fibrosis/stricture (22.2%). Preliminary double J stents, tube nephrostomies and hemodialysis were used to recover renal function before surgery. Anderson-Hynes (41.7%) and Heineke-Mirhulicz (19.4%) pyeloplasty were the main procedures performed. The main post-operative complications were urinary tract infections (67.67%) and leakage (11.11%). The mean duration of symptoms was 23.72 months and the mean hospital stay was 13 days. The mortality rate was 5.56%.

Conclusion: Bilateral PUJ obstruction is uncommon in Maiduguri, with congenital causes and schistosomal fibrosis as the most common etiologies. Aggressive treatment aimed at recovering renal function is necessary before open pyeloplasty if morbidity and mortality is to be reduced. Open pyeloplasty remained the best treatment option with favorable outcome.

Key words: Bilateral pelviureteric junction obstruction, causes, management, outcome

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Introduction

Bilateral pelvi-ureteric junction (PUJ) obstruction though uncommon, is associated with high morbidity and mortality. Common causes are congenital narrowing, aberrant renal vessels, and fibrous bands. In the tropics however schistosomiasis and tuberculosis are increasingly been seen.[1-4] In developed countries, the congenital variant is often diagnosed *in utero* and management instituted in the perinatal period with excellent outcome,[5] in most developing countries however, late presentation with attendant complications is common.[6] This study was aimed at reviewing our experience with the management of bilateral PUJ obstruction with emphasis on presentation and outcome of management.

Materials and Methods

All patients with bilateral PUJ obstruction diagnosed and managed at the University of Maiduguri Teaching Hospital between January 2006 and December 2011 were retrospectively reviewed. The data obtained from clinical

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and laboratory records were analyzed. The diagnosis of PUJ was made on the clinical presentation, ultrasound scan and intravenous urography (IVU). Other investigations were urinalysis, urine culture and full blood count and blood chemistry. All patients gave written informed consent and permission obtained from the Hospital medical ethics committee. All patients were resuscitated; urinary tract infections (UTI) were treated based on sensitivity and those with anemia corrected by blood transfusion. Those with impaired renal function had preliminary double J stent, nephrostomy tube placement, or hemodialysis. All patients were operated under general anesthesia with prophylactic antibiotics at induction (ceftriaxone and metronidazole). All had open surgery and all repairs were stented with double J stents or appropriate size feeding tube.

Results

A total of 21 patients bilateral PUJ obstruction were managed over the study period. Three were excluded due to incomplete data; of the 18 analyzed 11 (61.11%) were males and 7 females with a male to female ratio of 1.57:1. Their ages ranged from 2 to 38 years with a mean of 27.5 years. The age group 20-29 years and 30-39 years accounted for 6 (33.33%) each while the age group 10-19 years, and those less than 10 years accounted for 3 (16.67%) each. The clinical features were loin pain, and fever occurring in 13 (72.22%) patients each, while loin tenderness, anemia, and nausea/vomiting occurred in 12 (66.67%), 11 (61.11%), and 9 (50%) respectively [Table 1]. Complications at presentation were hydronephrosis seen in 20 (55.56%) renal units and pyelonephritis seen in 9 (50%) patients. Impaired renal functions were seen in 11 (61.11%) patients while non-functioning kidneys on IVU were seen in 2 (5.56%) renal units. Intercurrent medical conditions were hypertension in 7 (38.89%) patients, while diabetes and malnutrition occurred in 1 (5.56%) and 2 (11.11%) patients respectively. Intra-operative findings revealed causes of obstruction with congenital intrinsic narrowing accounting for 18 (50%) renal units, while an unusual cause was schistosomal fibrosis/stricture in 8 (22.22%) renal units among others, Tables 2 and 3 shows the various procedures done with Anderson-Hynes in 15 (41.67%) renal units, followed by Heineke-Mirhulicz in 7 (19.44%) among others. Post-operative complications were wound infection in 2 (11.11%) patients, UTI in 3 (16.67%), fistulae/leakage in 2 (11.11%) and re-stricture in 2 (11.11%). There were 2 (11.11%) patients that progressed to end-stage renal disease of which 1 (5.56%) had renal transplant while 1 (5.56%) is awaiting transplant. 1 (5.56%) patient, a 6-year-old malnourished boy died of sepsis following acute- on- chronic renal failure.

Table 1: Clinical features

Clinical features	Frequency (%)
Loin pain	13 (72.22)
Fever	13 (72.22)
Loin tenderness	12 (66.67)
Pallor	11 (61.11)
Vomiting/nausea	9 (50)
Facial/leg oedema	7 (38.89)
Loin mass	4 (22.22)
Weight loss/failure to thrive	4 (22.22)

Table 2: Causes of obstruction

Causes	Frequency (%)
Congenital intrinsic narrowing	18 (50)
Stricture/fibrosis (schistosomiasis)	8 (22.22)
Aberrent vessels	5 (13.89)
Fibrous band	3 (8.33)
Stone	2 (5.56)
Total of renal units	36 (100)

Table 3: Procedures done

Procedure	Frequency (%)
Anderson-Hynes	15 (41.67)
Heineke-Mirhulicz	7 (19.44)
Forley Y-V plasty	5 (13.89)
Culp-De Weerd	4 (11.11)
Pyelolithotomy	2 (5.56)
Others	3 (8.33)
Total renal units	36 (100)

NB=Others are, nephrectomy, Yang Montie procedure, Metrofanoff's procedure 1 renal unit each. Adhesiolysis was an added procedure where indicated

Discussion

PUJ 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 presenting features of loin pain, fever and loin tenderness due to UTI in keeping with similar studies.[7] Complications of pyelonephritis, hydronephrosis and varying degree of renal function impairment are similar to other studies[8] and renal failure necessitated hemodialysis dialysis before definitive treatment. Many studies in the past advocated for early surgery for bilateral PUJ obstruction especially in the presence of complications such as hydronephrosis and deteriorating renal function. Some authors have managed such cases by concurrent bilateral pyeloplasty.[9] Eckstein and Drake reported the feasibility of concurrent bilateral open pyeloplasties[9] while Schwab and Casale performed concurrent bilateral laparoscopic pyeloplasties with favorable results.[10] This study performed concurrent bilateral open pyeloplasties with a similar outcome. Traditionally staged pyeloplasties have been recommended for bilateral disease in order to avoid post-operative renal failure; however this study is in variance with this tradition. Patients with impaired renal function were initially managed by double J stent, nephrostomy tube placement, or hemodialysis to avoid post-operative renal

failure. Patients present late with complications in our environment and bilateral concurrent open pyeloplasties in such patients is the best option, the outcome of which is comparable to unilateral pyeloplasties, or conservative treatment in bilateral disease advocated in children.[11] The etiology of PUJ obstruction is mainly congenital narrowing accounting for the majority of cases as seen in this study and other series,[12] others causes are fibrous bands,[13] aberrant renal vessel[14] and retroperitoneal fibrosis/strictures from previous inflammation as seen in similar studies.[15] A peculiar finding in this study is the occurrence of schistosomal fibrosis[16] and stone disease obstructing the PUJ, which are in variance with studies elsewhere. Majority of the procedures were Anderson-Hynes dismembered pyeloplasty, which is the gold standard.[8] Post-operative complications of wound infection; urine leakage and UTI are in keeping with a similar study.[17] There were unusually prolonged hospital stays compared with other studies[18] due to complications at presentations such as urosepsis, anemia, impaired renal function and co-morbid medical conditions for which patients needed to be optimized before definitive surgery.

Conclusion

Bilateral PUJ with its attendant complications is best treated by open concurrent pyeloplasties after optimizing patients.

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