

11 ORIGINAL ARTICLE :

ANTENATAL DIAGNOSIS OF PELVI-URETERIC JUNCTION OBSTRUCTION & ITS OUTCOME

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ABSTRACT

Background: The term pelvic-ureteric obstruction denotes a restriction of flow of urine from the renal pelvis to the ureter which if left uncorrected will lead to progressive renal deterioration. Today majority of the cases are identified and diagnosed in the perinatal period (1,9). To a lesser degree it is also seen in childhood and adolescence period. However not all the cases of PUJ obstruction require surgery

Aim: A retrospective analysis of antenatally detected cases of hydronephrosis was done to elucidate the postnatal outcome and management on a prolonged follow up.

Materials and Method: From about 5000 antenatal ultrasound scans carried out at our institute annually from NOVEMBER 2011 to JANUARY 2014, total 49 cases were suggestive of hydronephrosis; 34 out of these 49 (70%) were diagnosed as Pelvi-ureteric junction obstruction.

Setting and Design: A retrospective study of patients with hydronephrosis detected on antenatal ultrasound scan from NOVEMBER 2011 to JANUARY 2014.

Results: 9 out of 34 babies (25%) detected to have Pelvi-ureteric junction obstruction on antenatal ultrasound were transient obstructions. Out of the remaining 25 cases, 7 (28%) did well on observation alone and did not require surgery while the rest 18 (72%) required surgical intervention.

Conclusion: Conservative management of Pelvi-ureteric junction obstruction is a safe procedure, provided diligent follow up is maintained and surgical intervention is done in case of deterioration of renal function or presence symptoms or both.

Statistics and analysis: The study was subjected to bi-variable analysis with two test preparation and was statistically significant while $p < 0.05$.

Key words: Hydronephrosis, Pelvi-ureteric junction obstruction, Antenatal diagnosis.

INTRODUCTION

The term pelvic ureteric obstruction denotes a stricture of flow of urine from the renal pelvis to the ureter which if left uncorrected will lead to progressive renal deterioration. Today majority of the cases are identified and diagnosed in the perinatal period. To a lesser degree it is also seen in childhood and adolescence period. However not all cases of Pelvi-ureteric junction obstruction require surgery (11).

With this aim a retrospective analysis of antenatal detected cases of hydronephrosis from NOVEMBER 2011 to JANUARY 2014 was done to elucidate the postnatal outcome and management on a prolonged follow up.

MATERIAL & METHOD

From about 5000 antenatal ultrasounds carried out at our institute annually, from NOVEMBER 2011 to JANUARY 2014, 49 cases suggestive of hydronephrosis diagnosed antenatally were studied. The cases which were due to posterior urethral valves, vesico-ureteral reflux or multicystic dysplastic kidney were excluded from the study. After delivery the babies were subjected to physical examination to assess their general condition, recording of the vital data & for presence or absence of a palpable kidney lump. A postnatal Ultrasound was done at birth and again at 7th day to record the Antero-Posterior diameter of renal pelvis. The babies also underwent a DTPA (diethylenetriaminepentacetate) nuclear scan at 3 months of age and the differential renal function was noted.

The patients were initially managed conservatively. The follow up included the ultrasound examinations every three months for 1 year and every six months thereafter. The DTPA (diethylenetriaminepentacetate) renal scan was repeated at 1 year of age or when the child became symptomatic, to decide on the future course of management. The average follow up was 36 months (5 years to 24 months).

RESULTS

All the babies in the study had average APGAR scores and their weight ranged from 2.1kg to 3.6kg. A palpable kidney lump was present in 2 out of the 49 cases showing hydronephrosis on the antenatal Ultrasound. 34 babies had Pelvi-ureteric junction obstruction while the rest were either due to Posterior urethral valve, Vesico-ureteric reflux or Multicystic dysplastic kidney (Table 1).

CASES OF HYDRONEPHROSIS	NO. OF CASES	PERCENTAGE
Posterior urethral valve	5	10.2
Multicystic dysplastic kidney	4	8.1
Vesico-ureteric reflux	6	12.2
Pelvi-ureteric junction obstruction	34	69.5

TOTAL	49	100
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Of the 34 cases having Pelvi-ureteric junction obstruction, 9 had transient dilatation which resolved after birth. They were followed up for a period of 12 months with periodic ultrasound scan and were excluded from further studies. Of the remaining 25 cases, the sex ratio was roughly 3:1 with 19 males and 6 females. The right side was affected in 5, left in 17 and there were 3 bilateral cases.

The tabulation of Antero-posterior diameter of renal pelvis as measured on Ultrasound scan was as follows. (Table-2)

ANTERO-POSTERIOR DIAMETER	NO. OF CASES	PERCENTAGE
<10mm	1	4
11-15mm	6	24
16-20mm	2	8
21-25mm	4	16
>25mm	12	48

The DTPA(diethylenetriaminepentacetate) renal scan was carried out in all the patients. A differential function of >40 % was present in 11 patients, 36-40 % in 3 patients, 31-35% in 3 patients and <30% in 8 patients. (Table.3)

RENAL FUNCTION ON DTPA(Diethylenetriaminepentacetate) SCAN	NO. OF CASES	PERCENTAGE
41-45	11	44
36-40	3	12
31-35	3	12
<30	8	32

7 patients who had more than 40% renal function did well on conservative management. The Antero-posterior diameter of 6 of these patients was <15mm. while 1 had a diameter of 18mm. One patient whose Antero-posterior diameter was <15mm had repeated episodes of Urinary tract infections and was subjected to surgical correction. Of the remaining 18 patients, 11 underwent early surgery because of a combination of falling renal function complicated by Urinary tract infections. The other 7 were initially observed on successful conservative management, but developed lump in abdomen with Urinary tract infections and pain later on and were subjected to late surgery.

As regard to the 3 cases of bilateral obstruction, one patient had mild hydronephrosis on both the sides with preserved differential functions and was doing well at 60 months follow up. The second patient had Multicystic dysplastic kidney on one side and was taken up for surgery to salvage the solitary kidney. While the third case underwent surgery on one kidney while the other kidney was stable and showed a sluggish non-obstructive flow pattern on the renal scan.

The surgical procedure done in all the cases was open Anderson – Hynes pyeloplasty. All the patients had either a transanastomotic double J stent or an infant feeding tube designed to function as both, a stent and a nephrostomy tube. The double J stents were cystoscopically removed 6 weeks after the operation. The nephrostomy cum stent was removed on 10th post-operative day after performing a nephrostogram.

On follow up of the 11 patients undergoing early surgery, 2 patients showed improvement in function on renal scan done 6 months after the operation while 9 had stable renal function. In the late surgery group of 7 patients there was no improvement in the renal function on post-operative scans, but there was no deterioration either. One of the 11 patients of early surgery group developed recurrent Urinary tract infections. On follow up he was diagnosed as having partial Vesico ureteric junction obstruction and improved after re implantation. In the late surgery group, 2 patients continued to have episodes of Urinary tract infections on follow up and were kept on long term chemoprophylaxis.

DISCUSSION

Over the past 4 decades, fetal diagnostics has improved tremendously and many anatomic abnormalities can be accurately detected by ultrasonography (4).

In antenatally detected hydronephrosis an incidence of 52-60% has been reported to be due to Pelvi-ureteric junction obstruction (3,8). In our series approximately 70% of cases were diagnosed as having Pelvi-ureteric junction obstructions, probably due to the timing of antenatal ultrasound in late 2nd trimester or early 3rd trimester. The preponderance of the left side (68% vs 32%) has been reported elsewhere also (10). It has been postulated that left ureter is more vulnerable to ischaemic damage than the right ureter, because of its increased length as compared to the right ureter. In a series reported by Liang et al (6). 73 % of cases were managed conservatively. while this figure was 62% in Duong et al's report (2). In our series 72% (18 out of 25) required surgery.

There was a strong correlation between differential renal function and also the Antero-posterior diameter with need for surgery (5). Of the 11 patients with differential renal function >40%, 7 patients did well on conservative management, while 4 patients (36%) required surgical intervention. From the 7 patients having Antero-posterior diameter <15mm, 1 (14%) developed symptoms on follow-up and was subjected to surgical correction.

The development or persistence of symptoms (pain, fever, kidney lump) along with deteriorating renal function formed a strong basis for intervention in the 18 patients submitted for surgery. The deterioration of renal function was the reason for surgical intervention in 6 patients, while the rest developed symptoms during the course of observation. One needs to follow up the patients with Pelvi-ureteric junction obstructions closely (7). Although it is a benign condition, if intervention is not done at proper time, one can lose the kidney.

CONCLUSION

25% babies detected to have Pelvi-ureteric junction obstruction on antenatal ultrasound were transient obstruction (9 out of 34). 28% (7 out of 25) did well on observation alone and did not require surgery. The patient of the early surgery group (44%) showed either deterioration of renal function or development of symptoms or a combination of both. Conservative management of Pelvi-ureteric junction obstruction is a safe procedure, provided diligent follow up is maintained and surgical intervention is done in case of deterioration of renal functions or presence of symptoms or both.

This is a small series for generalisation of the conclusions. However a study incorporating the major institutes of all the states in co-ordination with the obstetrics and the paediatric departments would go a long way in deciphering the natural history of ante-natally diagnosed cases of Pelvi-ureteric junction obstruction.

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