

Urogenital Anomalies Associated with Anorectal Malformation in Children

Nandlal Kella, Saleh A.B Memon and G. Ali Qureshi

Department of Pediatric Medicine and Medical Research Centre,
Liaquat University of Medical Sciences, Jamshoro, Sindh, Pakistan

Abstract: Urogenital anomalies are common associated anomalies in anorectal malformations and are major contributory factor for high morbidity and mortality in anorectal malformation. There is a intense need to search out the factors responsible for high association of urogenital anomalies in anorectal malformation A retrospective study was conducted in the department of pediatric surgery, Liaquat University of Medical and Health sciences Jamshoro Pakistan stretching for two years from January 2004 to December 2005. The objective of this study was to review the incidence of urogenital anomalies associated with anorectal malformation in our set-up. Out of 160 patients, 92 were males and 68 females. Urogenital anomalies were detected in (18.75%) patients. Patients with high anorectal malformation were (72.5%) and with low ARM (27.5%). Over all urogenital anomalies in high ARM was (86.6%) and in low ARM (13.3 %). Urinary anomalies were high in both sexes in high ARM. Patients with urogenital anomalies require careful assessment and timely intervention for better out come.

Key words: Urogenital anomalies • anorectal malformations • urological complications

INTRODUCTION

Anorectal malformations are complex group of malformations diagnosed at birth because of Absence or ectopic anus [1]. There is variable data however the incidence is approximately 1:5000 in live births. Congenital anomalies of urogenital tract are major associated anomalies in anorectal malformation [2]. Previous studies show the incidence of urogenital anomalies with high anorectal malformation is between 50 to 60%, with low anomalies 15 to 20% [3]. Urologic anomalies are considered prominent in this group of anomalies [4].

Most of the genital anomalies are visible on clinical examination, but urological anomalies need investigations for there detection which are mostly not done because anorectal malformation is considered to be a prime problem. In this situation urogenital anomalies are not getting its normal work up and due management leading to early renal problem which are primary cause of morbidity and mortality [5].

Hence the present study was conducted to detect the prevalence of urogenital anomalies in our setup, where limited data are available [6].

MATERIALS AND METHODS

This study was an observational and conducted in department of pediatric surgery Liaquat University of

Medical and Health sciences Hyderabad Pakistan for two years from January 2004 to December 2005. All 160 patients with anorectal malformation were included who were admitted after recording their detailed antenatal and post natal history and clinical examination. All patients under went ultrasonography for urogenital anomalies. Radiography of spine was done in all patients. Micturating cysto urethrogram was performed in 35 patients only those having hydronephrosis or repeated urinary tract infection. Intravenous urography, renal scanning and karyotyping were performed in selected cases. However along with this all patients had complete blood count, detailed urine report, urea and creatinine levels. Permission from ethical committee was obtained for conducting this study and the risk involved was explained to parents.

RESULTS AND DISCUSSION

This study consisted of 160 patients, 92 were males and 68 females. Ninety patients were less than one month of age and 70 patients were one month to 12 years age. Thirty patients had colostomies at different medical centers and were referred to our institute for further management. Of the 160 patients 70 (43.7%) had associated anomalies. Urogenital anomalies were detected in 30 (18.75%) patients, [16 (53.33%) males and 14 (46.6%)] females. Out of 160, 116 (72.5%) patients [64 (55.17%) males and 52 (44.81%)] females had high anorectal

malformation, while 44 (27.5%) patients [28 (63.63%) males and 16 (36.36%)] females had low anorectal malformation (Fig. 1).

Table 1 showed the urinary anomalies which were seen in 24 patients (12 males and 12 females). Twenty patients had high anorectal malformation (ARM) and 4 had low ARM. Table 2 showed genital anomalies which were seen in 17 (8 males and 9 females) patients. Of the 17, 13 had high ARM and 4 had low ARM.

Out of thirty patients of ARM, (8 males and 5 females) had urinary anomalies, (4 males and 2 females) had genital anomalies and (4 males and 7 females) had both genitourinary anomalies. Of the 30, 26 had high ARM and 4 had low ARM, all low ARM patients had both genitourinary anomalies. Most common anomalies in this study was renal agenesis (6 patients) ectopic kidney (3 patients), small kidney (2 patients) and malrotated kidney (1 patient). Vesicoureteric reflux was seen in 9 (7 males and 2 females) Interesting anomalies in this short study were persistent cloaca in 3 patients and ambiguous genitalia in 2 patients. Common problems in male genitalias were hypospadias in 4 patients and undescended testes in 4 patients.

The anorectal malformations (ARM) are common congenital anomalies occurring in 1: 5000 live births. Most babies born with anorectal malformations have one or more abnormalities that affect other systems. Commonly affected systems are cardiac, vertebral gastrointestinal and urogenital. Most frequently found anomalies in association with ARM are urogenital [2] Many of the urogenital anomalies are serious and the long term prognosis of anorectal malformations depend upon urogenital anomalies, so early detection and timely management are the keys to lower down the risk problems produced by urogenital anomalies.

In the present study it was observed that associated UGA were about more common in high ARM as compared to low ARM, which is not contradicting to other studies [7, 8, 9]. The most common urinary anomalies in our study were renal agenesis, ectopic kidneys, small kidneys and malrotated kidneys, which had also been observed by Flemming [10] and Metts *et al.* [11]. The incidence of vesicoureteric reflux (VUR) in various studies ranges from 19 to 47.2% in patients with ARM [12, 13, 14], while in our study it was 25%. In our protocol MCUGs were done in patients having hydronephrosis or repeated urinary tract infection. Patients which were subjected to micturating cysto-urethrogram (MCUG) were 35 out of them 9 had bilateral and unilateral reflux. Metts reported high incidence of VUR in low imperforate anus and

Table 1: Common urological anomalies

Anomalies	Number
Renal agenesis	6
Ectopic kidney	3
Small kidney	2
Malrotated kidney	1
Vesicoureteric reflux	8
Neurogenic bladder	1
Bladder diverticulum With VUR	1
PUJ obstruction	2
Total	24

Table 2: Common genital anomalies

Anomalies	Numbers
Hypospadias with bifid scrotum	2
hypospadias	2
Undescended testes (UDT)	2
Micro penis and UDT	1
Webbed penis and UDT	1
Persistent cloaca	3
Ambiguous genitalia	2
Urogenital sinus	1
Ovarian cyst	1
Hydrometrocolpos	1
labial haemangioma	1
Total	17

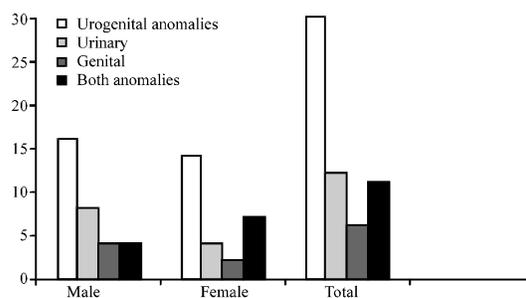


Fig. 1: Showing number and ratio of urogenital anomalies

recommended that all patients with ARM should have MCUG so that renal problems could be detected early. Incidence of VUR may be high if all patients had MCUG. Urinary anomalies were predominated in this study which was found in 25 patients out of 30 which were similar as reported by Mittal [1], Sangkhathat [12] and Misra [15].

Associated genital anomalies were found in 17/30 (56.6%) patients (males 8 and females 9). Incidence of genital anomalies in males and females found to be 26.1 and 5.1% respectively by Metts [11] and 21.25 and 5% by Mittal [1] in contrast our study showed male and female

ratio was 26.6 and 30% respectively. Most common genitalia anomalies in our study were persistent cloaca (3 patients) and ambiguous genitalia in 2 patients which are not consistent with Vaishali [2]. The reason behind different genital anomalies in our study was not sure but we assume that there might be racial, environmental and dietary effects on developing embryo causing high genital anomalies.

Hypospadias and undescended testes were seen in 4 (2.5%) and 4 (2.5%), respectively. Hoekstra *et al.* [13] and Vaishali [2] reported incidence of hypospadias in these studies as 6 and 4.55%, respectively.

Incidence of associated urogenital anomalies in various studies ranges from 38.5 to 50% [16-18], while in our study it was 18.75%. It might be high if all patients had proper investigations and thoroughly detailed search.

Boemer *et al.* [14] recommended that all patients with anorectal malformations should have all necessary investigations to search the associated anomalies in different systems. However large number of patients, poor socio economical conditions, illiteracy of parents and poor primary health care services make us confine to do basic investigations rather than follow a protocol. So we routinely do ultrasonography of abdomen, X-ray spine of all patients. Special investigations for example: intravenous urography, MCUG and fistulogram are done in appropriated cases. Actual incidence of urogenital anomalies may be higher if thoroughly investigated.

CONCLUSIONS

Associated urogenital anomalies are higher in high ARM as compared to low ARM and common urinary anomalies were renal agenesis. While many of the genital anomalies are obvious on clinical examination and investigations are specially needed in renal anomalies.

Every effort should be made to detect the associated urogenital anomalies so that better outcome can be expected in anorectal malformation. There is also an intense need to search predisposing factors responsible for associated anomalies.

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