Undesended testis: How extensive should the work up be?

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ABSTRACT

Aim: The aim of this study was to highlight various anomalies associated with undescended testis and to determine how much work up is necessary for this condition. **Material and Methods:** The study was conducted in the department of Pediatric Surgery SKIMS Srinagar, Kashmir. All patients between 0-14 years of age who attended out patient department (OPD) from January 2002 to December 2003 with maldescent of testes were included in the study. Detailed relevant history and physical examination findings were recorded in all the cases. Baseline investigations were performed along with ultrasonography of the abdomen. In relevant cases other investigations like intravenous urography, micturating cystourethrography, CT scan and laparoscopy were performed as and when indicated. **Results:** A total of 250 cases of undescended testis were registered during this period. Maximum number of cases were in the age group of 5-10 years. In 130 (52%) cases the right testis was undescended while 75 (30%) had left sided undescended testis and 45 (18%) had bilateral undescended testis. Maldescended testis comprised 11% of the admissions. The majority of cases were having gestational age of 37 weeks or more. The associated anomalies picked up on investigations included duplication of upper urinary tract (3.2%), hydronephrosis and polycystic kidney (0.8% each), horseshoe kidney, ectopic kidney, crossed renal ectopia (0.4% each) Posterior urethral valves, Prune belly syndrome (0.4%) and spina bifida (0.4%). On detailed clinical examination of genitalia several abnormalities were picked which included hydrocele, hypospadias, hernia, chordee, micropenis and ambiguous genitalia. **Conclusion:** We recommend ultrasonography to be done in all cases of undescended testis in addition to a thorough history and physical examination. Intravenous pyelography, micturating cystourethrogram, CT scan and other investigations should be performed selectively based on history, physical examination or ultrasound findings.

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Key words: Maldescent of testis, ultrasonography, intravenous urogram.

DOI: 10.4103/0189-6725.62855

INTRODUCTION

Understanding the abnormalities of morphogenesis and the molecular and hormonal milieu associated with cryptorchidism is critical to contemporary diagnosis and treatment of this extremely common entity. Giwercman *et al.* (1993) in their reports have suggested that the incidence of genitourinary abnormalities in human males has increased during the past 50 years, including congenital abnormalities such as cryptorchidism and hypospadias, which seem to be occurring more commonly. The increase in these abnormalities over a relatively short period of time may be due to the environmental rather than genetic factors. There is an epidemiological link among the occurrences of different testicular abnormalities. Therefore, common prenatally acting etiological factors with adverse effects on the foetal male gonad might be suspected. However, postnatal influences may also have a deleterious effect on male fertility. From the reproductive point of view, an increased impact on the human male gonad is of concern.[1]

About 90% of undescended testes are associated with an occult inguinal hernia, especially those with minimal descent and those associated with epididymal abnormalities. Ectopic testes are associated with an inguinal hernia in about 50% of cases. Conversely, up to 6% inguinal hernias are associated with an undescended testis. With undescended testis, the major abnormalities include prune-belly syndrome, spina bifida and posterior urethral valves. Incidental and isolated findings include cases of duplex system, horseshoe kidney and solitary kidney.[2] Patients, who should be screened, however, include those with genital tract, or skeletal anomalies or those with signs or symptoms of a urinary tract malformation.

MATERIAL AND METHODS

The study was conducted in the department of Pediatric Surgery of Sheri Kashmir Institute of Medical Sciences, Srinagar, Kashmir (SKIMS). The study group comprised of all children with maldescent of testes between 0–14 years age attending the Pediatric Surgery OPD of SKIMS from January 2002 to December 2003. A careful and detailed history was obtained. A thorough clinical examination was performed on these children and the presence of undescended testis was documented. The genitalia of each patient were thoroughly examined for the presence of abnormalities of meatus, presence or absence of hypospadias, hernia and hydrocele or any other such lesion. Baseline investigations were performed along with ultrasonography of the abdomen. In cases with history of recurrent urinary tract infection or any abnormality on ultrasonography, other investigations like intravenous urography, micturating cystourethrography, CT scan and laparoscopy were performed which ever was appropriate. The information was recorded on a prepared proforma. Informed consent was obtained from the patients/parents.

RESULTS

A total of 250 children of undescended testis were studied during this period of 2 years. Approximately 3.6% hospital admissions were made into the department of Pediatric Surgery at SKIMS. Out of these admissions in Pediatric Surgery, 11% admissions were of undescended testis. In our study, out of 250 cases, we found that maximum number of patients were in the age group of 5–10 years (112 cases or 44.8%) followed by 2–5 years (56 cases or 22.4%) and 10–14 years (52 cases or 20.8%). And 205 cases (82%) of undescended testis were in full term and 45 (18%) of the cases were premature. In our study, the maximum number of patients with undescended testis (112 cases or 44.8%) were 1st in birth order, 40 cases (16%) were 2nd in birth order, 70 cases (28%) were 3rd in birth order and 20 cases (8%) were 4th in birth order respectively. Out of 250 cases of undescended testis, 130 cases (52%) were on right side, 75 cases (30%) were on left side and 45 cases (18%) were bilateral. In our study, the maximum number of patients 176 (70.4%) were asymptomatic. The parents of these patients had noticed absence of one or both the testes in the scrotum or the local physician noticed it during routine examination. Lower abdominal pain was the second most common symptom in 22 cases (8.8%) followed by an inginoscrotal swelling in 20 cases (8%). Out of 250 cases of undescended testis, testis was palpable on physical examination in approximately 60% of cases. Of these, 105 (35.5%) were in the inguinal canal and 75 (25.5%) were palpable below the external ring. In approximately 40% of the cases, the testes were non-palpable. In 2 (0.7%) cases, the testes were ectopic (perineal) in location. Ultrasonography was performed in all the 250 cases as a preliminary screening test. Ultrasonography had an accuracy of 54% in localizing the undescended testis. Below the external ring, 75 (25.5%) of undescended testes were identified, whereas 56 (18.9%) of canalicular testes were identified. Intravenous urography could pick up lesions in 15 (6%) of cases, out of which duplication of upper urinary tract (bifid pelvis, bifid upper ureter) in 8 cases (3.2%) was the most common lesion followed by hydronephrosis and multicystic dysplastic kidney in 2 cases (0.8%) each. These lesions were ipsilateral to the side of undescended testis in 85% cases. There was one case (0.4%) each of horseshoe kidney, ectopic kidney and crossed renal ectopia. In our study, posterior urethral valves were diagnosed in three patients (1.2%). One of them was an infant and two were older children with persistent urinary symptoms like difficulty in micturation, poor urinary stream and lower abdominal distension. One child (0.4%) had prune-belly syndrome that presented with flabby anterior abdominal wall, undescended testes and palpable kidneys. Special investigations were performed in 37 (14.8%) patients. The commonest was intravenous pyelography in 20(8%) of patients followed by RGU/MCU in 12 (4.8%), laparoscopy in 8 (3.2%) and CT scan in 7 (2.8%) of the patients. A total of 32 (12.8%) patients in our study presented with associated abnormalities of genitalia. The commonest among them was hydrocele in 16 cases (6.4%) followed by hypospadias, hernia and chordee in 4 cases (1.6%) each, respectively. Micropenis was observed in two cases (0.8%) and ambiguous genitalia (intersex) in two cases (0.8%). In our series, the commonest position of the testis was the inguinal canal in 147 cases (58.8%) and below the external inguinal ring in 75 cases (30%). Intra-abdominal testis was found in 26 (10.4%) of cases and in 2 cases testis was ectopic. In associated upper urinary tract anomalies, the unilateral UDT was present in 12 (4.8%) cases and bilaterally undescended testis in 3 (1.2%) cases. In lower urinary tract anomalies, testis was unilaterally and bilaterally undescended in 2 (0.8%) cases each. In associated abnormality of the genitalia, testis was unilaterally undescended in 26 cases (10.4%) and bilaterally in 6 cases (2.4%).

DISCUSSION

Undescended testis comprised about 11% of the

admissions in Pediatric Surgery during these 2 years: in our study, the age of presentation ranged between 0 to 14 years. The maximum number of patients in our study were in the age group of 5–10 years (44.8%) followed by age group 2–5 years (22.4%) and age group 10–14 years (20.8%). While, in Synder study,[3] out of 493 patients, maximum number of patients were in the age group of < 2 years, that is, 48.2%, followed by age group 2–6 years, that is, 39.1% and in the study by Raghavendran *et al.*,[4] the mean age of presentation was 5.16 (2–7 years). In our study, the late presentation is due to the fact that most of the children came from rural areas, where the level of literacy is low. In our study, the incidence of undescended testis in patients less than 37 weeks of gestation was 82% and in cases more than 37 weeks of gestation it was 18%, which is consistent with the study by Swerdlow *et al.*,[5] where the incidence was 12% and 88% in cases with gestational age above 37 weeks and below 37 weeks, respectively. Out of 250 cases of undescended testis in our study, 82% were unilateral (52% were on right and 30% were on the left side), which is consistent with the study of Synder[3] where the incidence of unilateral undescended testis was 83.5% and bilateral in 16.5%. The most common site of palpable undescended testis in our study was canalicular, that is, 35.5%, 25% were below the external ring and 0.7% ectopic (perineal position); while 38.3% of the testis were not palpable. The incidence of palpable undescended testis below the external ring in a study by Thong and Khatwa[6,7] was 33.4% and 24%, respectively, which correlates well with our study. However, ectopic and nonpalpable testis were 45.8%, 20.8% and 12%, 11%, respectively, which does not correlate with our study.

Ultrasonography was performed in all the 250 cases as a preliminary screening *test* in our study and we found that USG was approximately 45% accurate in localizing the undescended testis. However, a study by Elder[8] concluded that sonography is unnecessary in boys with a nonpalpable testis, because it rarely if ever localizes a true nonpalpable testis. The testis was identified by sonography in 12 (18%) of 66 cases, and all were localized to the inguinal canal. Herbinko and Bellinger[9] *found* accuracy of radiological testing of about 45%. Incidence of associated anomalies in our study was (20.4%) of which 6% were upper urinary tract anomalies, 1.6% were lower urinary tract anomalies and 12.8% were genital abnormalities, which is comparable to the study by Felton[10] who found the incidence of genitourinary anomalies in 20% of the cases. Upper urinary tract anomalies associated with undescended testis as depicted reveal total incidence 15%, 13% and 7.8% in studies done by Herman Grossman,[11] Farrington[12] and Norman Noe,[13] respectively. Our study shows total incidence of upper urinary tract anomalies as 6%. This closely correlates with the study by Norman Noe.[13] Lower urinary tract anomalies associated with undescended testis in our study were posterior urethral valves and prune-belly syndrome with megacystis, megalourethra and bilateral hydroureter. Their incidence was 1.6% (posterior urethral valves 1.2% and prune-belly syndrome 0.4%). However, Donohue and his associates[14] and Farrington and Kerr[12] in their respective studies did not find any such case. In our study, the total incidence of associated abnormalities of genitalia was 12.8% of which hydrocele constituted about 6.4% followed by hypospadias, hernia and chordee (1.6% each), while in a study by Thong[6] the incidence of genital abnormalities associated with undescended testis was 16.7% of which hydrocele constituted 8.3%, which is approximately the same as our study. However, the incidence of micropenis in our study was comparatively less than that of Thong. In our series, two cases of intersex were found while Thong did not report any such case in their series.

CONCLUSION

Initial screening is possible even at the primary health care level and in fact the condition should be looked for specifically at the first neonatal examination in the delivery room, which is quite reliable if performed by an experienced clinician. The attending clinician should refer the patients to a Paediatric Surgery unit as soon as undescended testis is detected. Parental awareness has to be cultivated by the treating doctors and by other means of communication including organizing School Health Camps. The undescended tests should never be considered as an isolated anomaly as the associated anomalies occur in significant number of cases. We recommend ultrasonography to be done in all cases of undescended testis in addition to a thorough history and physical examination and associated lesions should be specifically looked for. Never hesitate to order further investigations like IVP, MCU, CT Scan, X-ray spine, etc. etc., whenever associated lesions are suspected on clinical grounds or on ultrasonography.

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Source of Support: Nil, **Conflict of Interest:** None.