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ABNORMALITIES OF EXTERNAL GENITALIA AND GROIN HERNIAS IN THE CITY OF KARAK IN THE SOUTH OF JORDAN

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The aim of this prospective study was to find out the incidence of groin hernias and external genitalia abnormalities in children in the City of Karak at the south of Jordan for referral and early treatment, as well as to educate the population about the risk and complication of these abnormalities.

A total of 2 038 male children aged 6-12 years, primary school attendants, underwent careful clinical examination of groin, penis and scrotum. Abnormal findings were detected in 381 male children (18,7%).

The abnormalities were as follows: indirect inguinal hernia in 280 children, undecided testicles in 44 children, retractile testicles in 26, hypospadias in 15, varicocele in 10, hydrocele in five children. Herniotomy was detected in 66 with 4 cases failures, orchidopexy in five children with two failures, hypospadia in one child who failed. No one with hydrocele or varicocele underwent surgery.

We conclude that indirect inguinal hernia is common in children. Undescended testicles are not uncommon. The majority of children with abnormalities are late for treatment. Failure rate of treatment is high. Education of population is needed to improve the outcome. *Acta Medica Medianae 2010;49(4):5-9.*

Key words: *genitalia, groin hernia, children, abnormality*

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Introduction

Hernia, hydrocele and the inguino-scrotal abnormalities are the most common congenital disorders in children (1,2). Hernia can be life-threatening or can result in the loss of testicles or portion of the bowel, if becoming incarcerated or strangulated. To avoid these complications timely diagnosis and operative therapy are important.

Undescended testicle is a medical term, which means that the testicle is not present in the scrotum. From this term, the situation in which the testicle is retractile and be brought in to the scrotum by hand manipulation must be excluded. Cryptorchidism is defined as a developmental defect in which the testicles remain within the abdominal cavity. Current terminology, however, makes it synonymous with undescended testes. Occasionally, a testicle is absent (anorchism), sometimes, more than two testicles (polyorchidism), one of which may be undescended (3). There is an increased incidence of infertility (4,5), trauma, torsion (6,7), and malignant changes in patient with undescended testicles (8-11).

Hypospadia is developmental anomaly characterized by urethral meatus that opens on the ventral surface of the penis, proximal to the end of the glans. The opening may be located anywhere from the glans, along the shaft of the penis to the scrotum, even in the perineum (12).

Varicocele is a pathological dilatation, elongation and varix-like convolution of the spermatic veins that form a pamponiform plexus. It is known that it is a common cause of male infertility. It is considered that the elevated temperature of the testes caused by dilated and congested internal spermatic vein disturbs spermatogenesis (13) and decreases its volume (14).

Examinees and methods

Between April and May of 1997, a total of 2 038 male children between 6-12 years of age (elementary students) were examined in public and private schools in the City of Karak with a population of 180 000. All children underwent a careful clinical examination of groin area, scrotum and penis before and after straining (cough reflex). All positive findings were recorded as special forms in order to analyze the results and to refer those positive cases for management and follow up by surgeons.

Results

The results of our prospective study were as follows (Tables 1 and 2):

Three hundred and eighty-one examinees (18.7%) had abnormal findings, of which 280 had indirect inguinal hernia, 44 had undescended testicles, 26 had retractile testicles, 15 had hypospadias, 10 had varicocele, one of them right-sided, 5 had hydrocele and one child had ambiguous genitalia.

Out of 280 children with indirect inguinal hernia, 155 (55.36%) had right-sided inguinal hernia, while 58 (20.74%) had left-sided, and 67 (23.9%) children had bilateral inguinal hernias.

Inguinal hernia associated with undescended testicles was found in 33 (11.78%) children, inguinal hernia associated with hypospadias was found in two children. Out of 44 children with undescended testicles 27 had right-sided undescended testicle, 9 had left-sided and 8 bilateral ones.

Undescended testes associated with indirect inguinal hernia was found in 33 (75%) children.

Out of 26 children with retractile testicle, 18 had bilateral while 5 had right and 3 had left retractile testicles, three children, out of 5 had right-sided hydrocele while one left and one bilateral hernias. Out of 15 children with hypospadias, 12 had distal hypospadias, 2 proximal and one middle. One child with hypostasis underwent surgery which failed.

Left varicocele was found in 9 children and the right one in one child. None of them underwent surgery. Ambiguous genitalia was found in one child who had female external genital phenotype in the form of bifed scrotum, bilateral undescended testicle, short penis with proximal penis hypospadia.

Sixty-six children of total of 280 children with indirect inguinal hernia had herniotomy. Surgery failed in four patients. Five out of total of 44 children with undecided testicle had orchidopexy. Surgery failed in two patients.

Table 1. Incidence of inguino-scrotal-penile lesions in 2.068 boys aged 6-12 years

Lesion	Right	Left	Bilateral	Total	Percent
Inguinal Hernia	155	58	67	280	13.7%
Undescended testicle	27	9	8	44	2.15%
Retractile testicle	5	3	18	26	1.27%
Hypospadias	Proximal 2	Middle 1	Distal 12	Total 15	0.73%
Varicocele	1	9	-	10	0.48%
Hydrocele	3	1	1	5	0.25%

Indirect inguinal hernia was associated with undescended testicle in 33 cases (11.78%). Undescended testicle was associated with indirect inguinal hernia in 33 cases (75%).

Table 2. Operative results of inguino-scrotal-penile lesions in boys aged 6-12 years

Lesion	Total	Operated No.	Percent	Failure	Percent
Inguinal Hernia	288	66	23.57%	4	6.06%
Undescended testicle	44	5	11.36%	2	40%
Hypospadias	151	1	6.66%	1	100%
Varicocele	10	-	-	-	-
Hydrocele	5	1	20%	-	-

Table 3. Proposed protocol for early diagnosis of groin and scrotal-penile lesions in children

Name:
City:
Address:
Age:

Lesion	Right	Left	Bilateral	Notes
Hydrocele				
Inguinal Hernia				
Undescended testicle				
Retractile testicle				
Varicocele				
Hypospadias	Proximal	Middle	Distal	
Others				

Discussion

The incidence of indirect inguinal hernia in the general population of infants and children is generally unknown, because of variation in prematurity associated diseases and accesses to medical care.

The incidence in one carefully controlled population study approximates 1-5% (15). In most series, male to female ratio ranged from 8:1 to 10:1. These figures depend on the associated diseases and other factors.

Incarceration was more common in boys with the right-sided hernia (16).

In our study the incidence was 13.7%. This high incidence is most probably related to the inadequate access to medical care, high percentage of prematurity and other associated diseases. Premature infants have increased risk for developmental inguinal hernia. It is estimated to be from 7% to 30% in males and 2% in females (17,18). Increased incidence and recurrence after repair of inguinal hernia was found in patients with cystic fibrosis (19), children with congenital dislocation of the hip (20), and chronic peritoneal dialysis (21). Premature infants with intraventricular hemorrhage and children with ventriculo-peritoneal shunts were noted to have higher frequency of hernia than those in the general population (22). Breast feeding was associated with significant reduction of inguinal hernia (23). The incidence of hydrocele among

male infants is unknown. It is very common in newborn males, and being self-limited, it usually resolves within 6-12 months (1).

The incidence of isolated hydrocele in children older than one year of age is less than 1% (1). Premature infants have an incidence of undescended testes 8 times higher than infants born at term (24). Approximately 50% occur in the right one, 25% in the left and 25% bilaterally; the incidence parallels the incidence of inguinal hernia.

The incidence of undescended testicles in newborn babies followed-up to one year of age in England and Wales was approximately 0.825. A recent study (25) reveled that orchidopexy rate in England and Wales was more than double in the period from 1962 to 1981. In our study the incidence was 2.15%. The incidence of retractile testicles in our study was 1.27%. It is worldwide more common as premature, and it is not considered as a pathological condition (26).

The incidence of hypospadias has been estimated to be between 0.8 and 8.2 per 1000 live male newborns (27). This large variation probably represents some geographic and racial differences. In our study the incidence was 0.73%. The commonest type in our study was the anterior, followed by the middle and posterior, as worldwide (26).

Varicocele is recognized as one of the most frequent causes of male infertility. The incidence of varicocele in the general population was estimated to be 15% (28), where as about 30% of infertile male patient had varicocele (14,29). Varicocele is very rare under the age of 10 years (30). In our study the incidence of varicocele was 0.48% and the range was between the age of 10-12 years. Cough reflex was the method of choice to detect clinical hernia in our study; therefore, it was not always easy to obtain children, so the result of 13.7% of inguinal hernia shows a slightly less value than the actual one. The prevalence of hydrocele of 0,25% is acceptable, and correlates with the international incidence. All impalpable testicles, or those palpable in the inguinal canal and the ones which could not be brought to the scrotum, were considered undescended, while the testicles that could be brought to the scrotum after careful examination were considered retractile. The prevalence of 2.15% for undescended testicles could be slightly high, but is acceptable in comparison to the international incidence.

The prevalence of 1.27% could be acceptable as it can be considered not an abnormal condition. Hypospadias accounted for 0.73% in our study and it was correlated with the international incidence. Out of 66 children who underwent surgery, there were four failures, and another two failures of orchidopexy out of five children. None of the children with varicocele underwent surgery, but one with hypospadia failed. Surgery for inguinal hernia should be done as soon as possible as elective, because it is much better than operation of complicated hernias, while hydrocele should be observed up to the age of one year, because the majority are self-limited, unless they are tense, and there is the risk of testicular insult due to pressure. Hydrocele are best treated as inguinal hernias. Hypospadias should be operatively corrected around the age of 4 years, when the phallus is mature and well-sized. Examination of urinary system is essential.

Orchidopexy should be performed after the first birthday and before the second. To avoid permanent damage, a trial of gonadotrophins is recommended for bilateral testicles and if there is no response, orchidopexy should be carried out, even if it does not prevent malignant change which may occur later.

Surgery for varicocele is recommended once diagnoses has been established to protect spermatogenesis. We propose the protocol for early screening of all children at pre-school and school ages (Table 3). Abnormal results in our study were sent to pediatrician for further evaluation and management.

Conclusion and recommendations

Inguinal hernias and external genitalia abnormalities are common in children in the city of Karak located at the south of Jordan. There is obviously a delay in the diagnosis and management of children at this age group.

Careful screenings of children at pre-school and school age are mandatory to avoid the further complications.

Increased public awareness of such abnormalities and the need for early referral are very important.

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ABNORMALNOSTI SPOLJAŠNJIH GENITALIJA I PREPONSKE HERNIJE KOD DECE U GRADU KARAKU NA JUGU JORDANA

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Cilj ove prospektivne studije bio je utvrđivanje incidence preponskih hernija i abnormalnosti spoljašnjih genitalija kod dece u gradu Karaku na jugu Jordana kako bi se odredilo pravovremeno lečenje, kao i edukacija stanovništva o rizicima i komplikacijama ovih abnormalnosti.

Grupa od 2038 muške dece, uzrasta 6-12 godina, osnovnoškolskog uzrasta, podvrgnuta je detaljnom kliničkom pregledu prepona, penisa i skrotuma. Abnormalni nalazi su zabeleženi kod 381 deteta (18,7%).

Abnormalnosti su bile sledeće: indirektna ingvinalna hernija kod 280 dece, nespušteni testisi kod 44 deteta, retraktilni testisi kod 26 deteta, hipospadija kod 15 deteta, varikočela kod 10 deteta, hidročela kod petoro dece. Herniotomija je zabeležena kod 66 deteta sa četiri neuspela slučaja, orhidopeksija kod petoro dece sa dva neuspela slučaja i hipospadija kod jednog deteta. Nijedno dete sa hidročelom ili varikočelom nije podvrgnuto operaciji.

Zaključujemo da je indirektna ingvinalna hernija česta kod dece kao i nespušteni testisi. Većina dece sa abnormalnostima se javlja kasno za lečenje. Stopa neuspešnosti lečenja je visoka. Edukacija stanovništva je neophodna kako bi se popravio ishod. *Acta Medica Medianae 2010;49(4):5-9.*

Ključne reči: *genitalije, preponska hernija, deca, abnormalnosti*