Original Paper

Pattern of Children Presenting with Inguinal Hernia and Hydrocele- Experience in a Tertiary Level Hospital

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Abstract

Introduction: Inguinal hernias and hydroceles are among the common surgical problems in children. Both the hernia and hydrocele share a similar aetiology. Inguinal hernia in a child is usually an indirect inguinal hernia due to patent processus vaginalis. Likewise a fluid filled sac typically found in the scrotum may result from patent processus vaginalis or due to an imbalance between the secretion and absorption within the tunica vaginalis. Very little study was done in Bangladesh on inguinal hernia and hydrocele though these are very common in children.

Objective: To observe the pattern of inguinal hernia and hydrocele amongst the children reported to a tertiary level hospital.

Materials and Methods: This observational study was carried out in the Department of Paediatric Surgery, Combined Military Hospital, Dhaka during the period of January 2014 to December 2017. During the study period, a total of 258 children with inguinal hernia and hydrocele admitted in this hospital for operative treatment were included in this study.

Results: During the study period 258 children with inguinal hernia and hydrocele were operated. Among them 246 (95.35%) had inguinal hernia and 12(4.65%) had hydrocele. Out of the children with inguinal hernia 206 (83.74%) were male and 40(16.26%) were female with male female ratio of 5.15:1. All had indirect inguinal hernia. Right side was involved in 140(56.91%) children. Out of 246 children with inguinal hernia, 161(65.44%) reported between 6 months to 5 years. Thirteen (5.28%) presented before 6 months and 72 (29.27%) presented after 5 years of age. All children were operated by traditional open method as admitted case. Among 12 children with hydrocele 10(83.33%) had right sided hydrocele and 2(16.67%) had hydrocele on the left side.

Conclusion: Inguinal hernia and hydrocele occur most frequently in premature neonates. Inguinal hernia does not resolve spontaneously and there is high risk of incarceration requiring operative treatment as early as possible.

Key-words: Inguinal hernia, Hydrocele, Children, Tertiary level hospital.

Introduction

Inguinoscrotal region is the most frequent site for surgical conditions in children. Appropriate diagnosis with adequate knowledge is reasonably easy as the area is readily accessible for examination[1,2]. Operations for inguinal hernia are the most common operation performed by a paediatric surgeon[3]. Hydrocele is a collection of fluid in the processus vaginalis (PV) that presents as a swelling in the inguinal region or scrotum. While inguinal hernia develops when abdominal organs protrude into the inguinal canal or scrotum. Inguinal hernia and hydrocele share a similar aetiology and patho-physiology and may coexist[4]. The exact incidence of inguinal hernia in children is unknown; the reported incidence of inguinal hernia varies from 1% to 5%[5]. The incidence of inguinal hernia in premature babies is higher (9-11%) than fullterm[6]. Boys are affected 3 to 10 times more often than girls, and in both genders right sided hernias predominate[7]. Sixty percent inguinal hernias occur on the right side, while about 30% occur on the left side. Ten percent occur as bilateral hernias. Bilateral hernias are more common in premature neonates (45-55%) and female[8]. Inguinal hernia most commonly presents during the first year of life with a peak during the first few months. An inguinal hernia in a child usually refers to an indirect inguinal hernia but may include a femoral hernia and rarely, a direct inguinal hernia[9]. Children with symptomatic indirect hernia have patent processus vaginalis (PPV). There is high incidence of PPV on the side opposite a clinically apparent inguinal hernia[10]. Laparoscopic hernia repair in infancy and childhood is still debatable.

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Laparoscopic hernia repair in children is considered safe and effective, especially for female patients with initial left sided hernia[11]. False-negative contralateral PPV evaluations by transumbilical laparoscopy during laparoscopic unilateral hernia repair can occur resulting in unexpected metachronus hernia development[12].

Inguinal hernia was recognized at least as far back as 1500 BC. There is also evidence that surgery for hernia was done as early as 1200 BC[13]. As the testis passes through the deep ring it drags with it a diverticulum of peritoneum on its anteromedial surface called processus vaginalis[14]. Currently there are little data regarding the incidence and time frame for developing a symptomatic hernia with a known asymptomatic PPV[15]. The aetiological factors in the development of an inguinal hernia remain unclear but relate to failure of closure of the processus vaginalis or diverticulum of Nuck, intra-abdominal pathology responsible for displacement of viscus and musculoskeletal disorders resulting in inherent weakness of the inguinal structures[16]. Although a very frequent surgical problem in children, very little study was done in our country about the pattern of inguinal hernia and hydrocele in children. This study was carried out to share our experience with inguinal hernia and hydrocele in a tertiary level military hospital.

Materials and Methods

This retrospective observational study was carried out on children with inguinal hernia and hydrocele, who were admitted and operated in Paediatric Surgery Department of Combined Military Hospital (CMH) Dhaka during the period of January 2014 to December 2017, to see the pattern of inguinal hernia and hydrocele in children. All children with inguinal hernia and hydrocele irrespective of age, sex were included in the study. During this period a total of 258 children with inguinal hernia and hydrocele were admitted and operated in the hospital. Particulars of all these patients were recorded by age, sex, side, type etc. Data were collected from detailed history, thorough clinical examination and relevant investigations including ultrasonography. As hydrocele in most of the cases resolves spontaneously so those children with hydrocele who were not admitted were excluded.

All but one underwent operative treatment as elective procedure. One child required emergency operation due to incarceration. They were followed up from 02 weeks to 3 months. All relevant clinical information, investigation results, operative procedures and follow up results were analyzed manually.

Results

During the study period a total of 258 children with inguinal hernia and hydrocele were operated in the Department of Paediatric Surgery, CMH Dhaka. Out of them, 246(95.35%) were inguinal hernia and 12(4.65%) were hydrocele (Table-I). Among the patients with inguinal hernia 206(83.74%) were male and 40(16.26%) were female children (Table-II). Male to female ratio was 5.15:1. All cases were indirect inguinal hernia. Right side was involved in 140(56.91%) cases, left side 93 (37.80%) cases and 13(5.28%) cases had bilateral hernia (Table-III). Out of 246 children with inguinal hernia, maximum children, 161(65.44%) presented between 6 months to 5 years. Thirteen (5.28%) cases presented before 6 months and 72 (29.27%) cases presented after 5 years of age (Table-IV). All cases were operated by traditional open method as admitted case. One child required emergency operation for incarceration. There was no recurrence in next 3 months. Among 12 cases with hydrocele 10(83.33%) were right sided hydrocele and 2(16.67%) were left sided hydrocele (Table-V). Out of 12 children with hydrocele 11(91.66%) were operated between 1year to 5 years of age (Table-VI). Most of the children with hydrocele resolved spontaneously by 1 year of age and were not admitted for operation. All children with hydrocele were operated after the age of 1 year and all were male.

Table-I: Distribution of children with inguinal hernia and hydrocele (n=258)

Type	Children (n)	Percentage
Inguinal hernia	246	95.35%
Hydrocele	12	4.65%

Table-II: Distribution of children with inguinal hernia by sex (n=246)

Sex	Children (n)	Percentage
Male	206	83.74%
Female	40	16.26%

Table-III: Distribution of children with inguinal hernia by side (n=246)

Side	Children (n)	Percentage
Right	140	56.91%
Left	93	37.80%
Bilateral	13	5.28%

Table-IV: Distribution of children with inguinal hernia by time of presentation (n=246)

Time of presentation	Children (n)	Percentage
Up to 6 months	13	5.28%
6 months- 5 year	161	65.44%
Above 5years	72	29.27%

Table-V: Distribution of children with hydrocele by side (n=12)

Side	Children (n)	Percentage
Right	10	83.33%
Left	2	16.67%

Table-VI: Distribution of children with hydrocele by time of operation (n=12)

Time of operation	Children (n)	Percentage
1- 5 year	11	91.66%
Above 5years	1	8.34%

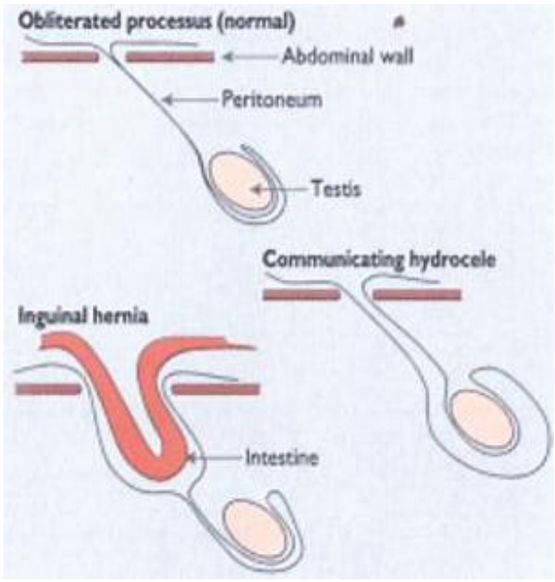

Fig-1: Possible fate of processus vaginalis

Fig-2: Different types of hydrocele

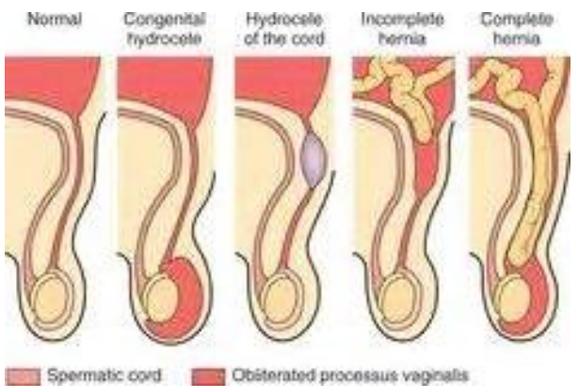

Fig-3: Configurations of hydrocele and hernia in relation to patency of the processus vaginalis.

Discussion

Inguinal hernias and hydroceles are among the most common surgical problems in children. Around 5% of all males will develop a hernia during their life time. Inguinal hernia appears to occur equally among races[5]. Indirect inguinal hernias and hydroceles are known to have familial tendencies; true heredity factors are yet to be clarified[8]. Inguinal hernias in children are almost always indirect and due to a PPV (Fig-1)[17]. If the PPV is small in calibre and only large enough to allow fluid to pass, the condition is called as a communicating hydrocele (Fig-2). If PPV is larger, allowing ovary, intestine, omentum, or other abdominal contents to protrude, the condition is referred to as hernia[4]. Failure of obliteration of the processus vaginalis is associated with several clinical conditions in infant and childhood: inguinal hernia, hydrocele and encysted hydrocele of the cord (Fig-3)[1]. Descent of the testis is initiated and directed by release of calcitonin gene- related peptide (CGRP) from the genitofemoral nerve via foetal androgen release. CGRP also mediates the closure of the PPV, although this process is still poorly understood[9]. The high rate of PPV associated with undescended testis suggests that closure most commonly occurs after the descend of the testis. Androgen appears to play a role because patency of processus is common in androgen insensitivity syndromes[3].

The physical examination in many is so characteristic that only observation is necessary for diagnosis[8]. USG can be an adjunct to physical examination. It is useful for the preoperative evaluation of the contralateral PPV in patients presenting with unilateral hernias[18]. PPV can be incidentally diagnosed during laparoscopy for some other reason in 9.1% of cases and 10.5% of these children later developed an inguinal hernia[19]. Contralateral PPV seems to occur less commonly than previously assumed[20]. Rarely, bilateral inguinal hernias in a phenotypic girl may be the presenting feature of androgen insensitivity syndrome (testicular feminization) and the hernia sac may then contain a testis[6,17]. Sliding hernias are uncommon but are more frequent in females, with an incidence as high as 20%-40%. Other entities associated with increased incidence of inguinal hernia include cryptorchidism, abdominal wall defects, connective tissue disorders, mucopolysaccharidoses, cystic fibrosis, ascites, peritoneal dialysis, ventriculoperitoneal shunts, congenital hip dislocation and myelomeningocele[9]. Approximately 90-95% of all hydroceles will resolve spontaneously in first few months of life. So hydroceles can be observed even up to 1-3 year of age[8,9,17]. Inguinal hernia does not resolve spontaneously. Most surgeons currently recommend repair of hernia soon after diagnosis[2,3]. Repair can be done by traditional open method or laparoscopic[21].

In this study, out of 258 children 246 (95.35%) had inguinal hernia and only 12(4.65%) had hydrocele. Hydroceles were so less as most of hydrocele disappears by the age of 1 year[1]. Among children with inguinal hernia all had indirect inguinal hernia, 206(83.74%) were male and 40(16.26%) were female making a male female ratio of 5.15:1. Inguinal hernias in children are mostly indirect in type due to PPV and reported male female ratio[17] is 5:1 to 10:1[8]. Prsesent study finding closely matches with this. In this study children had inguinal hernia on the right side in 140(56.91%), left side in 93(37.80%) and bilateral in 13 (5.28%) of patients. Inguinal hernia develops in the right side in 60%, left side in 30% and bilateral in 10% of cases[8]. Maximum children with inguinal hernia, 161(65.44%) in this series presented between 6 months to 5 years of age, then 72(29.27%) above 5 years, 13(5.28%) before 6 months. According to Snyder 54% were operated between 6 months to 5 years of age, 31% above 5 years and 15% before 6 months[9]. In this study, fewer children were operated before 6 months as most of the parents were afraid of surgery in these young kids and some sought advice of homeopathic doctors initially, thus reported late for surgery. Reported ipsilateral recurrence rates are lower than 1% with open surgery, 3.4%-4.1% in laparoscopic method[4,9]. During the follow up period of 3 months there was no recurrence in this study. All children with congenital hydrocele were operated after the age of 1 year and all were male.

Most inguinal hernias and hydroceles in children are due to idiopathic failure of closure of processus vaginalis. Any condition that increases the intra-abdominal pressure can delay or inhibit this closure. The incidence of PPV decreases with age. In newborn 80-94% have a PPV, whereas in adults it is around 30%[4]. The risk of developing a symptomatic hernia during childhood in presence of PPV is relatively low[15]. Around 90% complications can be avoided if repair is done within 1 month of diagnosis. Open surgery is still practised in most of the centres as it has got a very low recurrence rate[9]. In this study, we operated all cases by open method. Routine contralateral exploration is not recommended now[3]. We also followed the same protocol. Outside neonatal period, inguinal hernia can be treated as day-case surgery[17]. In this study, all cases were admitted as day case surgery is yet to be popular in our country. Mesh or prosthetic materials are almost never required in children except recurrent hernias in children with connective tissue disorder or mucopolysaccharidoses[9]. In this study no patient required mesh or prosthetic material.

Conclusion

Inguinal hernias and congenital hydroceles are among the most frequent reasons for paediatric surgical referral. Most of the hydroceles resolve spontaneously with time. As such a period of watchful waiting is justified. Inguinal hernia will not resolve and surgery soon after the diagnosis is recommended to prevent potential complications.

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