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Hernias and Genital Anomalies among Primary School Pupils in Ikenne Local Government Area, Ogun State, Nigeria.

[1]Oluyemi, Olukayode Yinka, [2]Faturoti, Olubukonla I,
[3]Taiwo, Ogechukwu, [4]Adesina, Alaba, [5]Taiwo, Agboola,
[6]Jagun, Omodele FMCOph.
[1,2,3,4,5,]FWACS , Department Of Surgery, Ben Carson (Senior) School Of Medicine / Babcock University Teaching Hospital, Babcock University, Ilisan, Ogun State, Nigeria.

Abstract:
Introduction: *Hernias, anomalies of the external genitalia, including circumcision mishaps are common cases that we see in our health facility. We have recently seen an increase in paediatric patients presenting with these conditions. Hence we decided to find out their true incidence in the community.*
Objectives: *The specific objectives of the study were:*
1. To find out the types and incidence of ventral hernias and anomalies of the external genitalia that are common among primary school pupils in the area.
2. To find out if these disease conditions are associated with each other.
3. To find out where male circumcisions are performed and document common complications.
Methodology: *A multi-staged random sampling method was employed.*
Results: *Two hundred and eighty six (37.3%) children had umbilical hernia. Fifteen (2.0%) children had paraumbilical hernia. Nine children (1.2%) had right indirect inguinal hernia;three children (0.4%) had left indirect inguinal hernia and two (0.3%) had bilateral indirect inguinal hernia.*
Two boys (0.5%) had left undescended testis; there were no cases of right undescended testis or bilateral undescended testis. Only one boy (0.2%) had left retractile testis; there were no cases of right retractile testis or bilateral retractile testis.
Two boys (0.5%) had right hydrocele while 4 (1.0%) had left hydrocele.All male children had been circumcised and majority of them102 (24.3%) were circumcised at the primary health centres.
Conclusion: *Umbilical hernias,paraumbilical hernias, indirect inguinal hernias, undescended testes and hydroceles are not uncommon among children in Ikenne Local Government Area. Majority of the male circumcisions are performed at the primary health centres.*
Key words: *children, hernia, testis, anomalies, genitalia.*

I. Introduction

A hernia is described as the protrusion of an organ, or part of an organ, through the wall of the cavity that normally contains it. The most common types of hernia involve the organs of the abdomen which can herniate externally through the anterior abdominal wall, or internally usually through a defect in the thoracoabdominal diaphragm.

In children, herniation may occur through the umbilicus itself, which is a natural weak spot. A paraumbilical hernia arising just to the side of the umbilicus and an epigastric hernia in the midline above the umbilicus. Hernias may be acquired following abdominal surgical operations; they are called incisional hernias.

Inguinal hernias appear in the groin, less common are femoral hernias, which appear just below the groin; presenting as a painless soft reducible swelling. Inguinal hernias may present with groin pain, genital pain, urinary symptoms, abdominal pain, increased peristalsis and tenesmus.[1]Rarely, they may present with haematuria.[2]

Inguinal hernias in children are almost always indirect hernia. The embryology of development of inguinal hernias and hydrocele is similar, the processus vaginalis which is an outpouching of the peritoneum, extends through the internal inguinal ring, traverses through the inguinal canal and the external inguinal ring, to the scrotum. It is usually patent at birth and becomes a hernia when it contains abdominal viscera.

There is a dearth of knowledge of the true burden of inguinal hernias in the various communities in sub-Saharan Africa.[3]The literature contains many clinical hospital based studies on hernias but it is difficult to find community-based studies on the epidemiology of inguinal hernias in our environment and in Africa.In Nepal, South Asia, the community incidence of inguinal hernias is 1,144 per 100,000 persons among men aged 5-49years.[4]

Globally the incidence of inguinal hernias is 1-5% [5]in children. The incidence is evenhigher in premature 9-11%[5]. A similar study reviewed the prevalence of inguinal hernias and genital anomalies among 3,100 elementary school boys [6]; the prevalence rate of inguinal hernia was 2.6%, undescended testis 1.2%, hydrocele 0.8%, hypospadias 0.3%, micropenis 0.2%, varicocele 0.09% and epispadias 0.03%. Similar studies had prevalence rates of inguinal hernia as 2.4% and 4.2% respectively.[7;8]

If the content of the patent processus is only fluid it is an hydrocele. Hydroceles can be communicating, infantile, vaginal or hydrocele of the cord depending on if there is obliteration of the processus vaginalis and which part of it is obliterated. For example a communicating hydrocele is when the whole track of the patent processus is patent allowing the fluid in the tunica vaginalis to communicate freely with the peritoneal cavity. An infantile hydrocele occurs when the patent processus is obliterated at just the level of the internal ring, the vaginal hydrocele is when fluid envelopes the testis with obliteration of the rest of the processus vaginalis and finally the hydrocele of the cord occurs when there is obliteration proximal and distal to a cyst on the processus. The patent processus would usually close by age 1-2 years. However if it is patent thereafter, a high ligation of the patent processus vaginalis is advised.

The reproductive organs develop from a common embryonic structure, and disturbances in the hormone control of the developing genitalia may produce a child with varying congenital abnormalities such as undescended testes, hypospadias, epispadias, and ambiguous genitalia.

Undescended testis results as a failure of descent of the testis into the scrotum at birth.The undescended testis is usually seen along the path of descent, usually at the level of the internal ring, in the inguinal canal, external ring or the abdominal cavity.The incidence is 3% in full term male neonate and 33% in premature neonates.[9]Earlyorchidopexy at 3 to 6months of age, is advised as the risk of subfertility increases with delay in the surgical correction. . In a study the fertility of patients who had orchidopexy done at 2 yrs of age was 87.4%, this level dropped surprisingly to 14% if done at puberty.[10]

Male circumcision may be associated with complications, including redundant prepuce, degloved phallus, glanulo-preputial adhesion, inclusion cyst, iatrogenic chordee, penile torsion, amputation of the glans, amputation of the clitoris and mutilation. In a study[11]of 52 patients requiring circumcision revision, the indications for these revisions were redundant prepuce (14), meatal stenosis (9), circumcision for patients with hypospadis(7), concealed penis (7),complete or partial degloving of the penis(5), urethrocutaneous fistula(4), preputial glanular bridges(3), penile sebaceous cyst(1), and buried penis(1).

The authors also looked at the speciality of the persons who carried out the initial circumcision and noted that only 7 of the circumcisions were performed by physicians (paediatric surgeons, gynaecologists and paediatrician) and 86.5% was carried out by laymen.[11]This outcome has been the trend in similar studies. It is therefore very imperative to identify these elementary male pupils who are victims of circumcision mishap, to counsel the caregivers on the need for a circumcision revision, to know the qualification of the persons performing the circumsions and provide avenues for training and retraining of these lay circumcisors.

The overall aim of this study was to find out the varieties and incidence of ventral hernias and anomalies of the external genitalia, including circumcision mishaps, among primary school children in Ikenne Local Government Area of Ogun State, Nigeria; for prompt referral and early treatment, as well as to educate the populace about their risk and complications.

The specific objectives of the study were:
1. To find out the types and incidence of ventral hernias and anomalies of the external genitalia that are common among primary school pupils in the area.
2. To find out if these disease conditions are associated with each other.
3. To find out where male circumcisions are performed and document common complications of male circumcision in the area.

II. Methodology

The study was carried out among male and female pupils attending primary schools in Ikenne Local Government Area, Ogun State, Nigeria. Ikenne Local Government Area consists of ten administrative wards namely; Ikenne I, Ikenne II, Iperu I, Iperu II, Iperu III, Ogere I, Ogere II, Ilishan I, Ilishan II and Ilishan/Irolu. A multi-staged random sampling method was employed. In the first stage, five wards were randomly selected by balloting out of the ten wards.

In the second stage, two public and two private primary schools were selected from each ward by systematic random sampling. In the third stage, all pupils aged 1 to 18 years were given questionnaires and consent forms to take home to their parents; and all those whose parents gave consent were enlisted into the study.

The sections that bothered on demography were filled by the parents at home. When the questionnaires were returned to school, the other sections that bothered on physical examination findings were filled by the

researchers after conducting physical examinations on the pupils. The information in the questionnaires were extracted and inputted into a computer. The data was analysed using Statistical Package for Social Sciences (SPSS 16.0).

We obtained ethical approval from the Babcock University Ethical Committee. We obtained executive approval from the Ogun State Ministry of Health and the Ministry of Education.

III. Results

The results of our prospective study were as follows. Seven hundred and sixty seven children who returned signed consent forms and questionnaires were examined out of the 1,200 selected children. Four hundred and nineteen (54.6%) of the children were males while three hundred and forty eight (45.4%) were females.

Six hundred and nine participants(79.3%) responded to the question on age; 350 (45.6%) of the children were between the age range of 6-10 years, 136 (17.7%) were between the age range of 11-15 years, 121 (15.8%) were between 1-5 years while 2 (0.3%) were above 15years.***Figure 1.***

Umbilical hernia was found in 286 (37.3%) children; 128 (16.7%) were 6-10years old, 55 (7.2%) were 1-5years old, 41 (5.3%) were 11-15years old and none was above 15years. One hundred and sixty three (57.0%) males and 123 (43.0%) females were affected. The age of the pupils (P=0.094) and the gender (P=0.455) were not significantly associated with umbilical hernia.Fifteen (2.0%) pupils had paraumbilical hernia.

Nine children (1.2%) had right indirect inguinal hernia, which was not significantly associated with gender (P=0.313). Three children (0.4%) had left indirect inguinal hernia which was not significantly associated with gender (P=0.970). Two children (0.3%) had bilateral indirect inguinal hernia. There was no case of direct inguinal hernia.***Table 1.***

Two boys (0.5%) were diagnosed of left undescended testis; there were no cases of right undescended testis or bilateral undescended testis. Only one boy (0.2%) had left retractile testis; there were no cases of right retractile testis or bilateral retractile testis.

Two boys (0.5%) had right hydrocele, 4 boys (1.0%) had left hydrocele while none had bilateral hydrocele. There were no cases of hypospadias and ambiguous genitalia.

All the female children were not circumcised.All the males had been circumcised irrespective of the religion, educational status and level of income of the parents; 102 (24.3%) had it done at the primary health centre, 79 (18.9%) at a private hospital, 67 (16.0%) at a maternity and nursing home, 56 (13.4%) at the general hospital, 53(12.7%) at home, 40(9.6%) at the church/mission house, 17 (4.1%) at the traditional birth attendant's place, and 4(1.0%) at the teaching hospital.***Figure 2.***

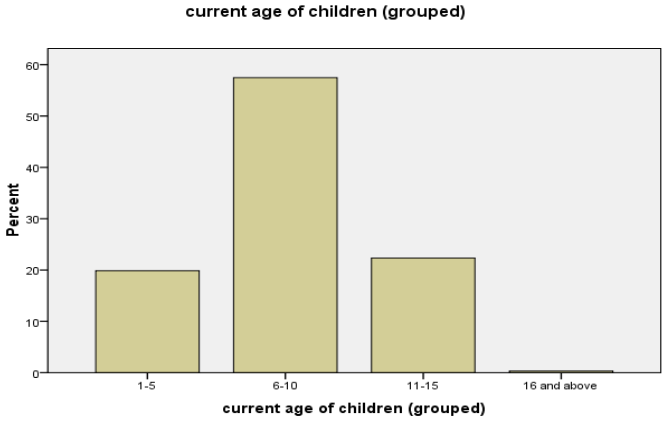
Irrespective of the religion of the fathers; within each religious stratum, the male children had their highest presentation at the primary health centre for circumcision.

Table 1.Incidence of groin hernias and anomalies of the external genitalia among 767 pupils.

LESION	RIGHT	LEFT	BILATERAL	TOTAL	PERCENTAGE
Inguinal hernia	9	3	2	14	1.9
Undescended testis	0	2	0	2	0.5
Retractile testis	0	1	0	1	0.2
Hydrocele	2	4	0	6	1.4

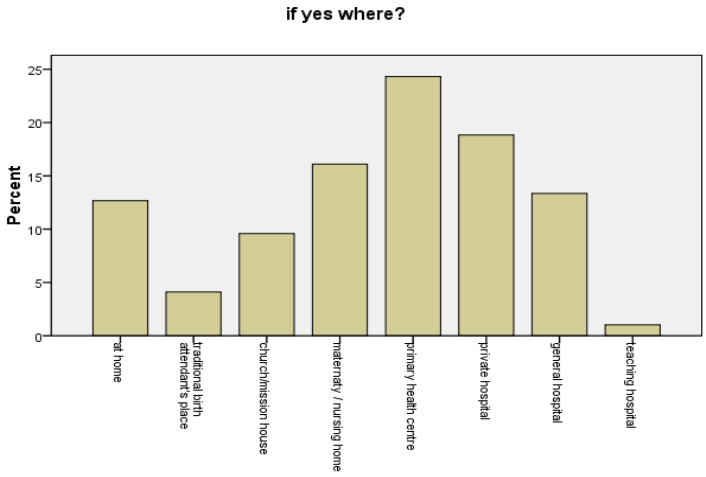
The inguinal hernias were commoner on the right side; while the hydroceles were commoner on the left side.

Figure 1.Age group of respondents.



The majority of the participants, 350 (45.6%) of them, were between the age range of 6-10 years.

Figure 2.The facilities where male circumcisions were performed.



All the male children had been circumcised; 102 children (24.3%) had circumcision done at the primary health centre.

IV. Discussion

The true community incidence of hernias and genital anomalies in this environment have not been published probably due to limited access to orthodox medical facilities and partly also due to inadequate documentation and record keeping in our hospitals. In our study 286 (37.3%) children had umbilical hernia, consisting of 163 (21.3%) males and 123 (16.0%) females; many of them, 128 (16.7%) were aged 6-10years. There was no significant association with age (P=0.094) but it was significantly associated with sex (P=0.001). Paraumbilical hernia was found in15 (2.0%) children only.

There were 9 (1.2%) children with right indirect inguinal hernia; 3 (0.4%) children with left indirect inguinal hernia and 2 (0.3%) children had bilateral indirect inguinal hernia in our study; giving a rate of 1.9%. Previously the incidence of inguinal hernia has been reported to be 1-5% [5]in children. The incidence is evenhigher in premature 9-11%[5].

A study reviewed the prevalence of inguinal hernias and genital anomalies in 3,100 elementary school boys [6]; the prevalence rate of inguinal hernia was 2.6%, undescended testis 1.2%, hydrocele 0.8%, hypospadias 0.3%, micropenis 0.2%, varicocele 0.09% and epispadias 0.03%. Similar studies [7;8] had prevalence rates of inguinal hernia as 2.4% and 4.2% respectively. The management of inguinal hernia is to surgically correct it as it does not resolve spontaneously. Due to the increased risk of incarceration, obstruction and strangulation, surgery must be done as soon as the diagnosis is made.

Increased incidence of inguinal hernia has been reported in patients with cystic fibrosis[12], congenital dislocation of the hip[13], chronic peritoneal dialysis[14], premature infants with intraventricular haemorrhage and children with ventriculo-peritoneal shunt[15]. Breast feeding has been reported to be associated with low incidence of inguinal hernia[16].

Two (0.3%) male children had left undescended testis; there were no cases of right sided or bilateral undescended testis. Generally the incidence of undescended testis is 3% in full term male neonates and 33% in premature neonates[9].The treatment of undescended testis is orchidopexy. In a study the fertility of patients who had orchidopexy done at 2 years of age was 87.4%, this level dropped surprisingly to 14% if done at puberty. This risk of increased subfertility also depends on if it is bilateral or unilateral. The other risks with undescended testis include increased risk of malignancy, testicular torsion, and trauma.[10]

There was 1 (0.1%) male child with left retractile testis. Retractile testis is very common in premature males and is often not considered as a pathological condition[17]. Two (0.3%) of the male children had right hydrocele; 4 (0.5%) children had left hydrocele; there was no case of bilateral hydrocele. Hydrocele is very common in new-born males, but usually resolves within 6-12months[18].

None of the female children was circumcised; probably because female circumcision has been abolished in this environment. However all the males had been circumcised irrespective of the religion, educational status and level of income of the parents; 102 (24.3%) children had it done at the primary health centre.

V. Conclusion

Umbilical hernias, paraumbilical hernias, indirect inguinal hernias, undescended testes and hydroceles are not uncommon among children in Ikenne Local Government Area; unfortunately presentation is late and treatment is delayed. Majority of the male circumcisions are performed at the primary health centres. Female circumcision has been abolished in this environment.

We recommend screening of pupils at the point of admission into primary schools, to diagnose these conditions early.

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