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UNILATERAL CRYPTORCHIDISM - A CASE REPORT

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ABSTRACT

Cryptorchidism is a common malady found in 30% of the premature babies and 3-5% of new born infants. It may be associated with the other developmental anomalies of the male reproductive system. During our routine dissection in one of the male cadaver we have recognized a mass on the right side inguinal region. Later the same was dissected and confirmed it as an undescended testis. The descent of testis is a time dependent phenomenon and the etiology of the undescended testis is a multifactorial phenomenon. Early recognition and correction of this condition can prevent the future consequences like malignancy, infertility, hernia etc. The details of its incidence, clinical consequences and some treatment aspects were considered for our case discussion. Such occasional practical findings are virtually creating awareness regarding structural anomalies in basic learners.

Key Words: *Undescended Testis, Malignancy, Leydig Cells, Sertoli Cells*

INTRODUCTION

Cryptorchidism is a medical term referring to absence of testis on one or both sides of the scrotal sac. During the fetal life, bodily organs are developing in destined regions by the cells which are genetically programmed to do so. The differential growth in the intrauterine life will influence the ascent or descent of certain organs for its functional purposes. This migration is influenced by the several factors in the intrauterine as well as postnatal life. During the course of its migration they may be trapped anywhere in the middle leading to a variable condition like cryptorchidism (Sadler, 2006).

The undescended testis can convert into a malignant tissue or it may be a causative factor for the infertility in an individual. During the routine dissection we have recognized a mass on the right side in the inguinal region, in one of the male cadaver. Later the inguinal region was dissected and confirmed the case as undescended testis.

Embryology

In humans testicular descent begins at the 28th week of the pregnancy. Testicular descent can be described in two phases, trans-abdominal and inguino-scrotalphase (Gaur, 1999; Olsen, 1989). The testes begin as an immigration of primordial germ cells into testicular cords along with the genital ridge in the abdominal wall of developing embryo. The interaction of several male genes directs this developing gonad into a testes rather than an ovary during the second month of gestation. During the second or third month, the cells in the testes differentiate into testosterone producing Leydig cells and antimullarian hormone producing Sertoli cells. The germ cells in this environment become fetal spermatogonia. The development of male external genitalia occurs during third and fourth month of gestation and further fetus continues to grow, develop and differentiate into a male (Datta, 2000).

The testes can deviate from normal path of its descent and migrate to other abnormal location called ectopic testes. It is relatively an uncommon condition (Norula, 2001) where Undescended testes may be truly cryptorchid or ectopic. Cryptorchid testes may be seen in inguinal or suprascrotal position. The ectopic testes can assume any position outside the path of its normal descent (Williams, 2001).

CASES

During the routine dissection in the department of Anatomy J.N. Medical College, Belgaum, a male cadaver aged 55 years showed a mass in the right side of lower abdominal region in the superficial inguinal ring area (Figure 1). The mass was carefully dissected and its coverings were removed. On exposure, a solid mass was connected to spermatic cord which was recognized as an undescended testis

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located in the superficial inguinal region (Figure 2). The size of the testis was normal without any gross changes. Its upper pole is attached to spermatic cord but the lower pole was free. The mass was firm in its consistency. Later the scrotum was palpated bilaterally and also by doing dissection we have confirmed the absence of testis only on the right side of the scrotum and left side was intact.



Figure 1: 1. Right sided Testis in the inguinal area 2. Exposed spermatic cord on the left side



Figure 2: 3. Testis of right side in the superficial inguinal ring area 4. Site of right spermatic cord support

DISCUSSION

Cryptorchidism is the commonest malady seen in new born male infants. The etiology of cryptorchidism is mostly idiopathic and multifactorial due to disturbances in the developmental equilibrium (Patrick, 2003). Boy with undescended testes are most likely to have other congenital abnormalities of the male external genitalia (Barraza, 2012). Male newborn with bilateral non-palpable testes should be considered to be genetically female with congenital adrenal hyperplasia until proved otherwise. Congenital adrenal hyperplasia is a genetic defect in androgen production (Wiener *et al.*, 1998). A person with this condition is unable to produce organs which are responsible for sexual dimorphism of developing fetus. By several studies it has been observed that the stimulation of hypophysiogonadal axis has its influence on the development of genital organs which can lead to condition like cryptorchidism (Gorlon *et al.*, 2002). Defect in androgen production and its improper metabolism often occurs due to mutations in the androgen receptor itself which play an important role (Ivell, 2003). But still some of the study reports contradict this statement. In some animals like mouse where there is absence of functional androgen receptors have shown variable conditions like cryptorchidism. Since the stimulation of the hypophysiogonadal axis appears to be an effective phenomenon for some cases of cryptorchidism, where the action of androgens can partially influence the descent of testes from the groin region to scrotal bag. This phase of descent seems to be more androgen dependent which is reflected by motivated success rate of hormonal therapy (Williams, 2001; Wiener *et al.*, 1998). Higher the position of testes the less effective is stimulation of HPG axis to induce the descent, this effect could be due to the limitation of influence of physiological barrier against the mechanical constraints. However exact role of androgen in testicular descent is still not clear. Maternal human chorionic gonadotrophin (HCG) which can also stimulate the fetal testes to secrete testosterone to influence the gonadal development and its descent. The normal male with descended testes shows state of transient increase in testosterone levels at 60 days after birth. This testosterone response seems to be blunted in children with undescended testes. Virtually testes that eventually descend by 6 months of age without any medical or surgical aid, therefore children with undescended testes after 6 months of age should be considered for surgical correction (Williams, 2001). Subsequent fertility and testicular tumor formation are the most common long consequences related to cryptorchid testes. The surgical intervention often performed to move an undescended testis into the scrotum is called orchipexy. It is usually performed in infants and young boys at the age between 6 months to 15 months old (Docimo, 2000). Some of the associated abnormalities like hypospadias and

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undescended testes are commonly seen with intersexuality, mixed gonadal dysgenesis and true hermaphroditism (Sadler, 2006).

The rationality of surgical treatment in the undescended testis for its prevention of potential sequel includes the most common problems like testicular neoplasm, infertility, testicular torsion and inguinal hernia. Seminoma of testes is also another threat for abdominal cryptorchid testes, where the testes are constantly associated with the core temperature of the body which may gradually influence changes in spermatogenesis (Docimo, 2000). Recently the experiments on mouse with transgenic insertional mutation have shown to cause high intra-abdominal cryptorchid testes (Gorlon *et al.*, 2002). Fifty percent of infants with cryptorchidism at birth may spontaneously correct themselves by the 3rd month of postnatal period. The most of the undescended testes are present at birth are usually seen in one third of premature male newborn infants. According to most comprehensive studies 21-23% of infants weighing < 2.5 kilograms are likely to be cryptorchid compared to less percentile incidence only up to 3-4%, where the birth weight of infants recorded more than >2.5 kilograms. Five percent cases of isolated cryptorchidism are having familial tendency (Patrick, 2003). Until recently molecular etiology of this syndrome was unclear, but recently role of insulin like factor-3 (INSL3 alternatively called relaxin like factor) has been highlighted where abolition of genes or INSL3 receptor have shown tendency to develop condition like cryptorchidism. INSL3 is produced by Leydig cells of the fetal testes which act upon the gubernacular ligament to retain the gonad in the inguinal region, from which it later descends into the scrotal sac. Receptor INSL3 expression in the fetal testes was initiated even by maternal exposure to estrogens (Docimo, 2000).

Conclusion

The knowledge of cryptorchidism is essential to decide the line of treatment to be initiated at the early. Right time handling of such cases can prevent the future adverse consequences in an individual. Though this is a small observation but need to be highlighted, to make students to be aware of such congenital abnormal findings through cadaveric dissections. Such virtual practical cadaveric dissections associated with anomalies or variations can't be replaced by any artificial models or manikins. Such observations will certainly create enthusiasm to understand the link between embryology, gross anatomy and histopathological changes in sequential and rational manner.

Conflict of Interest

The authors clearly states that they don't have any competing interests

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REFERENCES

- Barraza M (2012).** Common abnormalities of the male external genital [Internet]. Available: <http://www.dcmsonline.org/jaxmedicine/1998journals/january98/abnormalities.htm> [Cited 2012 June 6].
- Datta A K (2000).** Essentials of human embryology. Calcutta Current book international 4237-241.
- Docimo S G and Cromie W (2000).** The undescended testicle: Diagnosis and management [Internet]. Available: http://www.drplace.com/The_Undescended_Testicle_Diagnosis_and_Management.16.26125.htm [Cited 2000 Nov 1].
- Gorlov I P, Kamat A and Bogatcheva N V et al., (2002).** Mutations of the great gene cause Cryptorchidism. *Human Molecular Genetics* 2(19) 2309-2318.
- Gaur D D, Purohit K C, Joshi A S (1999).** Sub umbilical ectopic testes. *BJU International* 84(7) 887.
- Ivell R and Hurtung S (2003).** The molecular basis of cryptorchidism. *Molecular Human Reproduction* 9(4) 75-81.
- Nounla J, Trobs R B, Rolle U (2001).** Perineal ectopic testes: A rare case of empty scrotum. *Urologia Internationalis* 67 246-248.

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Olsen L H (1989). Inter observer variation in the assessment of undescended testis. Analysis of Kappa statistics as a coefficient of reliability, *BJU International* **64** 664-648.

Patrick FT, Peggy C and Roger M (2003). Cryptorchidism: Incidence, risk factors, and potential role of Environment, an update. *Journal of Andrology* **24** 155-162.

Sadler T W (2006). Langmans medical embryology, New Delhi: Lippincott Williams and Wilikins, Wolter Kluwer business **10** 229-256.

Williams E V, Appanna T and Foster M E (2001). Management of the impalpable testis: A six year review together with a national experience. *Postgraduate Medical Journal* **77** 320-322.

Wiener J S, Marcelli M and Gonzales E T et al., (1998). Androgen receptor gene alterations are not associated with isolated cryptorchidism. *Journal of Urology* **160**(3) 863-865.