Supernumerary Testis

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ABSTRACT

Polyorchidism is a rare congenital anomaly of the genital tract in which more than two testes are present, usually within the scrotum. Less than 100 cases of polyorchidism have been reported in medical literature till date. The most common form is the presence of three testis referred as triorchidism or tritestis. There are characteristic sonographic features of polyorchidism, and the diagnosis is often made on the basis of ultrasonography. Magnetic resonance imaging can be used for confirmation. We present a case of polyorchidism in a 13 yrs old adolescent.

CASE REPORT

INTRODUCTION

Polyorchidism is the incidence of more than two testes. It is a very rare congenital anomaly of the genital tract with fewer than 100 cases reported in medical literature (1,2). The condition is usually asymptomatic. A man who has polyorchidism is known as a polyorchid. Though the first histologically proven cases was reported by Ahlfeld in 1880, Arbuthnot Lane reported the first case found at surgery in 1895 (3,4,5). Transverse or longitudinal duplication of genital ridge and primordial gonad with two ridges are the possible explanations for the embryological pathogenesis (6). The most common form is the presence of three testis referred as triorchidism or tritestis (7). There are characteristic sonographic features of polyorchidism, and the diagnosis is often made on the basis of sonography. Magnetic resonance imaging can be used for confirmation. We present a case of polyorchidism in a 13 yrs old adolescent.

CASE REPORT

A 13 years old adolescent was referred from surgery department for scrotal scan with complaints of palpable painless mass in the left hemiscrotum. The patient had no history of trauma or any previous history of urogenital complaints. Physical examination of the left scrotum revealed two ovoid, non-tender, soft, mobile lumps. The right testis was normal in palpation. No lymphadenopathy was detected. Ultrasonogram showed a normal left testis which was measuring 2.2 x 2 cms. A mass measuring 1.8 x 1.6 cms was noted within the superior aspect with the same echogenicity (Figure 1) and vascularity (Figure 2- a & b) as the normal-appearing adjacent left testicle. Right testis measured 4.4 x 2.2 cms and was normal in size, shape and echogenicity. The sum length of both testes on the left side was 4cms. Further evaluation by MRI showed that the mass had the same signal characteristics as the normal testicles on T1and T2 -weighted images (Figure 3-a, b & c). Single spermatic cord was noted on both sides (Figure 4 - a & b).

DISCUSSION

Polyorchidism is a rare congenital anomaly of the genital tract in which more than two testes are present, usually within the scrotum. Triorchidism or tritestes, which refers to the presence of three testes, is the most frequent presentation and the supernumerary testis is often located in the left side of the scrotum (1). Other locations include inguinal and retroperitoneal region (7). Presence of supernumerary testis on both sides have also been reported (8,9,10). The most common location of the supernumerary testis is within the scrotum, superior or inferior to the ipsilateral testicle (11). Polyorchism

is diagnosed in adolescence or young adulthood, with a mean age of 15 to 25 years (12, 13).

In a normal embryo, at about 6 weeks of embryonic life, the primordial testis develops from the primitive genital ridge medial to the mesonephric ducts. At about 8 weeks, the primordial testis takes shape and the epididymis and vas deferens arise from the mesonephric (wolffian) duct (11). Duplication of the genital ridge and mesonephric ducts occurs in the horizontal or longitudinal plane resulting in various types of polyorchidism. Based on embryology, Leung has proposed 4 types (14). In type I, the supernumerary testis has no epididymis or vas. This is postulated to occur if the division separates from only a small part of the genital ridge that is not in contact with the rete testis. In type II, the supernumerary testis will have its own epididymis but shares a common vas with the lower testis. This occurs when there is complete transverse division through the genital ridge and the mesonephros. Depending on the degree of division, the supernumerary testis may be connected longitudinally to the epididymis of the normal testis and its vas deferens, or it may lack any connections to the normal testis. In type III, both testes share a common epididymis and a common vas. This is the commonest form and may result if the division of the genital ridge does not include the mesonephros (15). In type IV, there is complete duplication of the testis, epididymis, and vas. This occurs rarely and may result from simultaneous duplication of the genital ridge and mesonephric duct. Another classification based on the anatomic and functional classi?cation of polyorchidism was stated by Singer et al, in which the supernumerary testis having reproductive potential with a draining epididymis and vas is categorized as type I and the supernumerary testis which lacks reproductive potential without any attachment to the epididymis and vas as type II. These were further subclassified into A, if the supernumerary testis is located within the scrotum, or B, if it is ectopic (16).

Ultrasonography is the initial diagnostic tool for scrotal pathologies. In particular, the differentiation of intra and extratesticular masses has a sensitivity of 80%- 95% (17). The major sonographic feature of polyorchidism is a scrotal mass that has an echo texture identical to that of the ipsilateral testicle. The supernumerary testicle may be superior or inferior to the ipsilateral testicle. The supernumerary and ipsilateral testicles may appear attached or separated. The sum of the lengths of the supernumerary and ipsilateral testicles may approximate the length of the contralateral testicle. Color doppler sonography of the supernumerary testicle shows flow characteristics similar to those of the ipsilateral testicle (18). Scrotal MRI is not operator dependent and has the further advantage of multiplanar imaging with higher soft tissue resolution and contrast. MRI is also an effective non invasive method of accurately detecting polyorchidism. It reveals a round or oval structure with homogeneous intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images, which are typical signal characteristics of testicular tissue (19).

Polyorchidism is often associated with other urogenital anomalies. Common anomalies associated with polyorchidism include inguinal hernia, maldescended testis, testicular torsion, hydrocele, varicocele, hypospadias and anomalous urogenital union (20). Malignant transformation may occur within the supernumerary testis, irrespective of its location (21, 22). Current treatment of polyorchidism is conservative in the absence of complicating conditions. Orchiectomy and biopsy of the supernumerary testicle for diagnosis or follow up are not indicated. However, in the presence of coexisting conditions, such as testicular torsion, cryptorchism, and malignancy, surgical treatment is warranted. As in the adult population, testicular microlithiasis (TM) in the pediatric population is generally thought to be associated with a higher incidence of testicular malignancy. A study by Sanli O et al. showed a 19.7-fold increase in the detection rate of testicular cancer in patients with TM compared to patients without TM (23). Close sonographic observation in cases of testicular microlithiasis and polyorchidism is also advised.

We present a rare congenital anomaly of genital tract in a male adolescent who had one testis in the right and 2 testes within the left hemiscrotum. The supernumerary testicle showed same imaging findings in comparison with the adjacent normal testicle. Conservative management was proposed as the patient was asymptomatic.

TEACHING POINT

Polyorchidism is a rare congenital anomaly of the genital tract which can be easily diagnosed by ultrasound. MRI plays a confirmatory role in the diagnosis of polyorchidism and provides additional information about the conditions that may be associated with it, like neoplasms and cryptorchidism.

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FIGURES

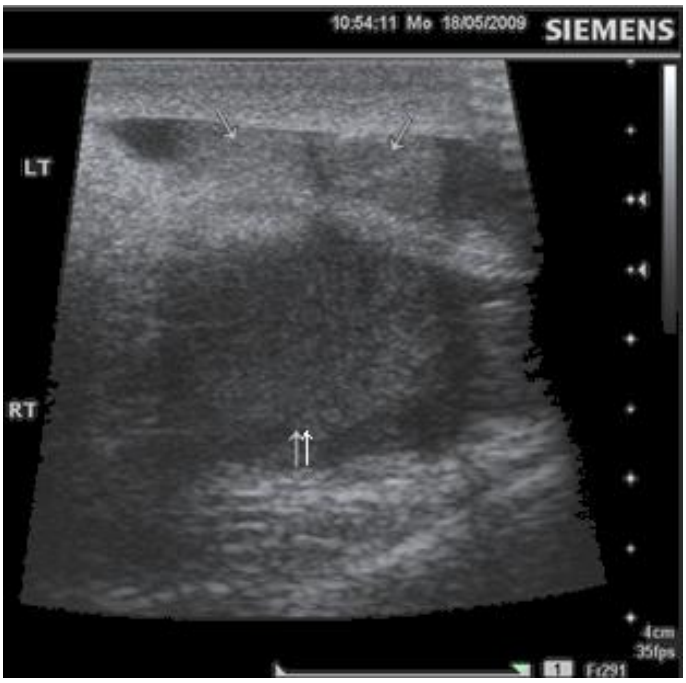

Figure 1. 13 year old patient with polyorchidism. Coronal view (linear probe, 10 MHz) of scrotal sac from left side showing two testicles in the left hemiscrotum (single arrows) and right testis (double arrows).

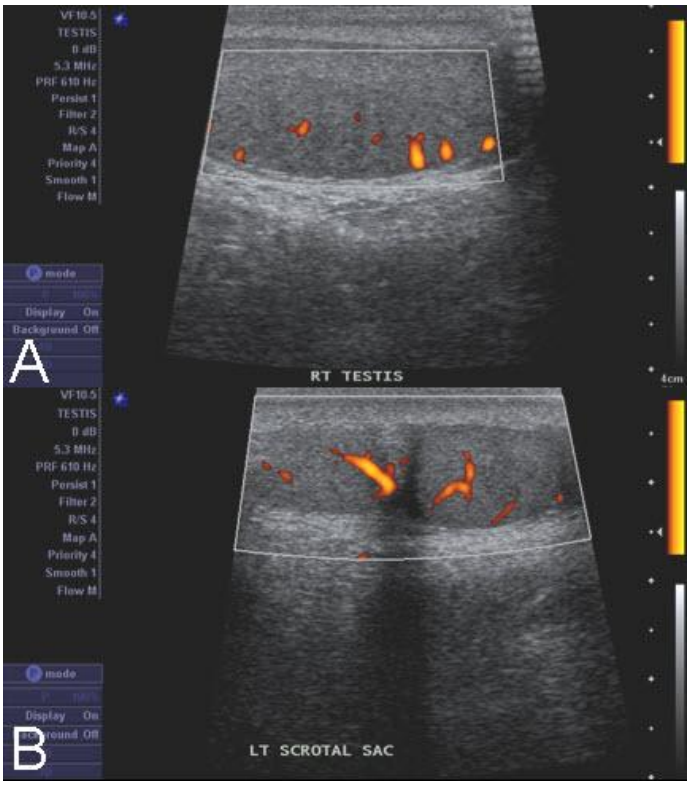

Figure 2. 13 year old patient with polyorchidism. (a) Power doppler (linear probe, 5.3 MHz) image of right testis. (b) Power doppler (linear probe, 5.3 MHz) of left hemiscrotum showing colour flow in both the testicles.

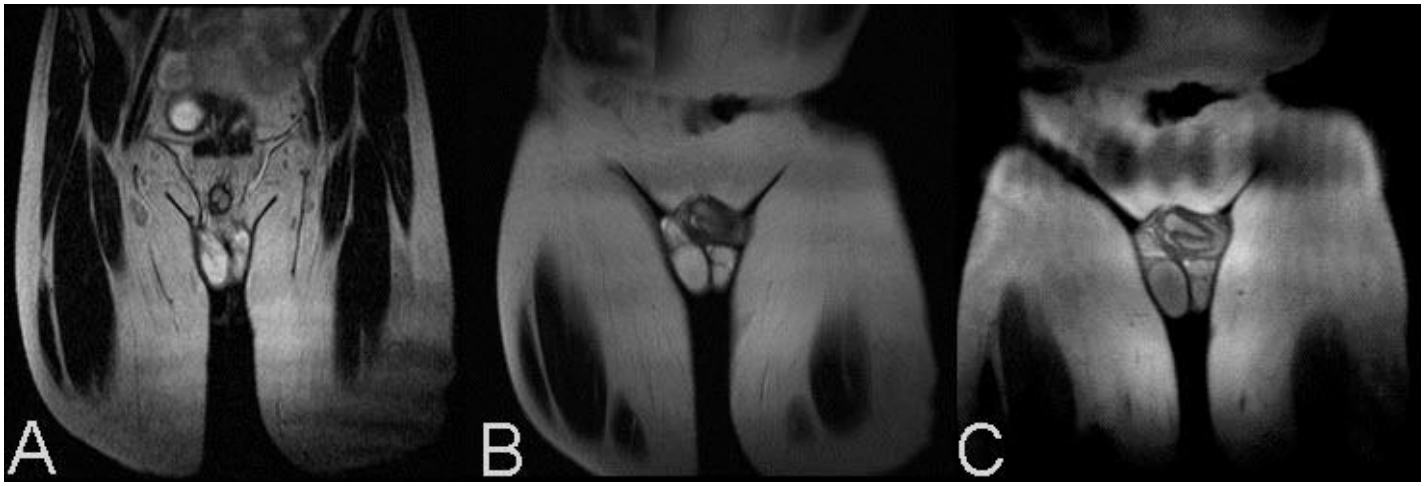

Figure 3. 13 year old patient with polyorchidism. (a) T1 weighted image (0.35 T, TR-583, TE-21), (b) T2 weighted image (0.35T, TR-4000, TE-118) & (c) Proton density coronal image (0.35 T, TR-2000, TE-17) showing same signal characteristics as the normal testicles.

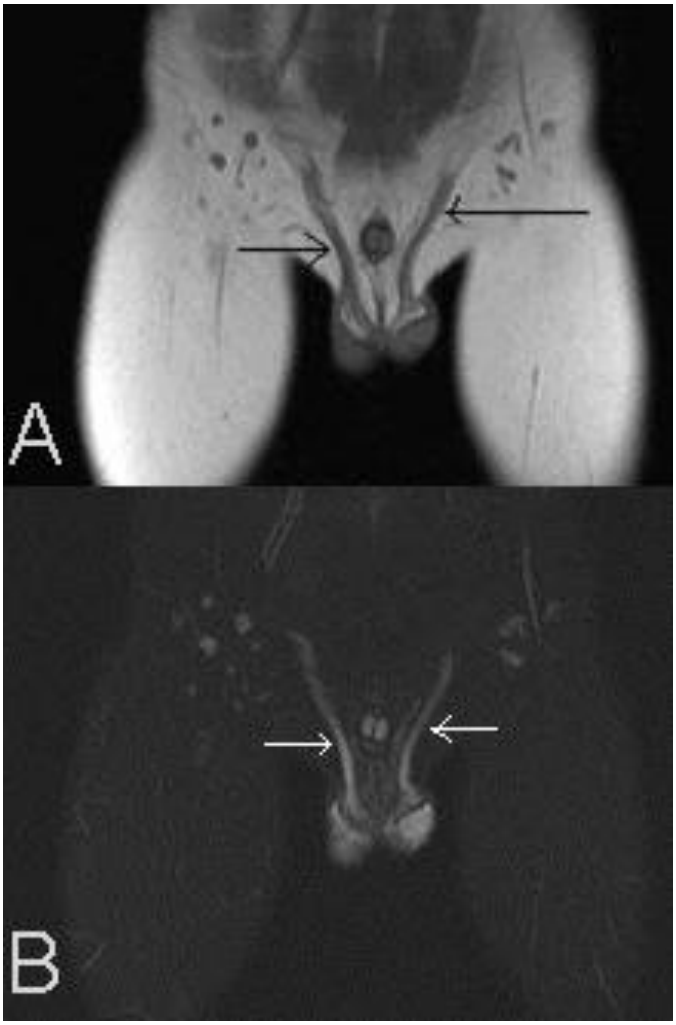

Figure 4. 13 year old patient with polyorchidism. (a) T1 weighted image (0.35T, TR-583, TE-21) & (b) Fat suppressed weighted image (0.35T, TR-4600, TE-64, TI-110) showing two separate spermatic cord.

ABBREVIATIONS

MRI = Magnetic Resonance Imaging
TM = Testicular microlithiasis

KEYWORDS

Urogenital anomaly, supernumerary testis, polyorchidism

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