

A one-year-old boy with cystic teratoma mimicking simple testicular cyst : A rare case report from Syria.

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Key clinical message:

In the differential diagnosis of testicular transilluminating masses in babies, testicular teratoma should be considered even in cases when ultrasonography reveals a completely cystic lesion.

Abstract:

Background : The first intraparenchymal testicular cyst in a human being was recorded by Copper in 1845, but it was subsequently shown to be a cystic teratoma, making simple testicular cysts an uncommon ailment.

Case presentation: A pediatricist sent a one-year-old child to the urology department with a diagnosis of right-sided

hydrocele.Under ultrasound guidance, we aspirated the cyst through the scrotum. The aspiration was a 2 ml clear serum-like fluid. Everything was normal during the first year of follow-up. After two years, the boy was brought back to the department due to recurrent testicular enlargement.Then it was discovered that it was a cystic teratoma.

Conclusion: In the differential diagnosis of testicular transilluminating masses in babies, testicular teratoma should be considered even in cases when ultrasonography reveals a completely cystic lesion. The initial tests that direct the subsequent course of treatment include ultrasonography and serum markers such as Alpha-1-Fetoprotein(AFP) and Human Chorionic Gonadotropin(HGC).

Keywords:

Cystic teratoma; testicular ; cyst; ultrasonography.

Introduction:

Simple testicular cysts are rare condition, as Copper reported the first human intraparenchymal testicular cyst in 1845, but it was later determined to be a cystic teratoma Less than 50 occurrences of simple

testicular cyst were recorded from 1966 to 2004. Prepubertal testicular tumors are uncommon, making between 1% 2% of all pediatric tumors and occurring in between 0.5 and 2.0 children per 100,000. Teratoma is the second most frequent testicular tumor in children, after yolk sac tumor, despite seminoma being the most common testicular tumor in adults. Individuals may exhibit either painless or painful scrotal enlargement ,particularly if the cyst's diameter is greater than 5 cm. simple testicular cyst usually ranges from 0.2 to 2 cm .1Testicular teratomas are often a firm mass in patients; however, occasionally they may feel cystic upon palpation because some of the mass is made up of cysts that are fluid or mucous-filled. At some point, it may transilluminate and be mistaken for a hydrocele. Ultrasonic imaging can rule out hydrocele and reveal a testicular tumor that is partly cystic and has patches of hypo- or anechoic tissue. Thus, even though testicular teratomas have no specific ultrasonographic pattern, the most typical feature is a nonhomogeneous echoic mass that frequently has calcifications. Unilocular, entirely cystic teratomas have not yet been documented in any patients .2the encysted hydrocele, which is loculated fluid between the inner surface of the visceral tunica vaginalis and the tunica albuginea that is not surrounded by a real wall.3 Children's scrotums can include cystic testicular dysplasia .4 The selection of the treatment plan should take into account the patient's age, symptoms, compliance with the surveillance, cyst size, and dynamic ultrasonographic changes. where, in prepubertal age patients with a testicular tumor with a benign ultrasonographic appearance and no serum markers, testis-sparing surgery by scrotal access is advised .2

Case history:

A one-year-old boy was brought by his parents to the urology departement with a complaint of right testicular enlargement(fig.1).on physical examination, He looks healthy, had no surgical, trauma history. The left testis and epididymis were normal.Scrotal ultrasound exposed a 2 cm simple testicular cyst(Video 1).Due to the low incidence of simple testicular cysts in infants and the sensitivity of testicectomy and its psychological consequences especially at this age so we did an aspiration to the cyst through the scrotum under ultrasound guidance. The aspiration was clear serum like 2ml fluid. The simple testicular cyst disappeared later, and with follow-up for months, no enlargement of the right testicle or recurrence of the simple testicular cyst was observed during this period. In the first year of following up everything was normal. After two years,the boy was brought to the department again because of the recurrence of the testicular enlargement. **Differential diagnosis, investigations and treatment:**

Physical examination shows a 1 cm in diameter solid irregular mass in his right testis, as well as in ultrasonography(fig.2).Tumor markers show normal beta-HCG, but alpha-fetoprotein higher than 1200ng/ml. Surgical inguinal exploration

was performed because the non-malignant part of the testicle does not exceed 5% of the entire testicle . Frozen section revealed Teratoma, so we did radical orchiectomy(fig.3A). The biopsy showed cystic formations with multilayered and keratinized epithelium, and beneath this epithelium there are glandular formations, which confirms the diagnosis of Mature Cystic teratoma 1 cm not invading tunica albuginea(fig.3B).

Outcome and follow-up:

After resection, AFP values returned to normal values .On follow up for two years later , no other masses were observed.

Discussion :

Copper reported the first intraparenchymal testicular cyst in humans in 1845, though it was later determined to be a cystic teratoma. In 1966, Schmidt reported the first case of a simple testicular cyst in a child under the age of 5 months. Tosi and Richardson reported the first adult case of a simple testicular cyst in 1975, involving a 58-year-old male. Less than 50 instances of simple testicular cysts were documented overall between 1966 and 2004. This indicates that a simple testicular cyst is a rare condition. Small testicular cysts can develop at any age, although the majority affect males over the age of 40. Güçer, Tanyel, and Calar (2007) found that 75% of patients with the infant type had a simple cyst in the left testis. Simple testicular cysts often have diameters between 0.2 and 2cm. Simple cysts seldom produce symptoms and are typically not palpable if they are modest in size. A cyst may show as suspected testicular torsion if there is spontaneous bleeding into the cyst cavity. Moreover, individuals may exhibit either painless or painful scrotal enlargement, particularly if the cyst's diameter is greater than 5 cm. 1 In children, benign testicular masses including testicular teratomas, epidermoid cysts, and tunica albuginea cysts are infrequently observed. There have only been 48 cases of simple cysts in the testicular parenchyma recorded in the literature, making them incredibly uncommon. Eight of the patients in these situations were under the age of two.4 A one-year-old child was brought by his parents to the urology department in our case with a right scrotal enlargement, which makes it a highly unusual case for the age and the location. Simple testicular cyst

etiology is still controversial, however in most cases, ectopic epithelium like that seen in the Wolffian duct is thought to be the cause. The pathological findings of the cyst wall in this instance matched those of the Wolffian duct. Testicular lymphoangiomas, dermoid and epidermoid cysts, epididymal cysts, hydrocele, cyst of tunica albuginea, cystic dysplasia, teratoma, and juvenile granulose cell tumor are among the other possible diagnoses for a simple testicular cyst. This difference is pathologically conceivable. 1,4,5,6 In fact, the pathognomonic ultrasonography characteristics described by Rifkin and Jacobs (1983) enable the preoperative diagnosis of a simple testicular cyst. A simple testicular cyst is distinguished on ultrasound by edge shadowing, posterior wall enhancement, lack of internal echoes, and cleanly defined walls. These preoperative ultrasonography requirements differentiate a simple testicular cyst from other diseases. Epidermoid cysts look uniformly solid. Lesions outside the testis are known as tunica albuginea cysts.⁵ The best way to identify a simple testicular cyst is through pathology. The pathological requirements for a simple testicular cyst are as follows: When a cyst is considered to be normal, it meets the following criteria: (a) it is located in the parenchyma of the testis, (b) the tunica albuginea is not involved, (c) it contains sperm-free clear fluid and is surrounded by a cyst wall lined entirely or partially by flat or cuboidal epithelial cells with a fibrous tissue wall, (d) it is free of teratomatous elements inside the cyst or testis, and (e) not having any fibrosis or persistent inflammation outside of the cyst wall.¹ Preoperative ultrasonography was first introduced in 1988 by Alta-Donna et al, who also promoted testis-sparing surgery. Following that study, ultrasonography has been used to identify all cases of simple testicular cysts, and the testes that were impacted have been saved.⁴ For simple testicular cysts, inguinal or scrotal methods have been documented. Some authors believe the inguinal method is unnecessary and the scrotal approach is recommended if clinical, ultrasonographic, and serologic criteria support a benign, entirely cystic mass.² Clearly, individuals with asymptomatic cysts of both the infant and adult types should choose for this "watch and wait" approach.¹ This is why we first chose to monitor

the lesion using follow-up ultrasonography. Surgery intervention is still necessary if any of the following conditions exist: (a) the cyst undergoes any change in ultrasonography while under surveillance; (b) the patient fails to respond to the surveillance program; (c) the cyst is painful, though it may not be the only cause of the pain; and (d) the cyst's diameter is greater than 3 cm for children or 5 cm for adults.¹ Thus, the normal course of prepubertal testicular teratoma is very different from that of adult testicular teratoma. Compared to approximately 90% of cases in the latter, the former is virtually invariably benign and seldom exhibits concomitant intratubular germ cell neoplasia. Because of this, metastatic assessment can be delayed until a histopathologic diagnosis is made. According to Shukla et al., therapy was based on testicular lesion ultrasonographic and intraoperative visual appearance, as well as preoperative AFP levels. They avoided frozen analysis and underwent testis-sparing surgery in the case of a prepubertal child who had a testicular tumor that was mostly cystic and had AFP levels that were appropriate for the child's age. They found that testicular cystic lesions, including epidermoid and dermoid cysts as well as simple cysts and teratomas, were always benign.² In our case, Inguinal exploratory surgery was done. Radical orchiectomy was performed after a frost section showed teratoma because the non-malignant part did not exceed 5% of the entire testicle. The biopsy confirmed the diagnosis of Mature Cystic teratoma 1 cm not invading tunica albuginea because it revealed glandular forms beneath the multilayered, keratinized epithelium that covered the cystic formations. Even when ultrasonography shows a fully cystic lesion, testicular teratoma should be included in the differential diagnosis of testicular transilluminating masses in infants. Ultrasonography and serum indicators like AFP and HCG are first-level tests that guide the following treatment.

List of abbreviations:

AFP: alpha-1-fetoprotein.

HCG: human chorionic gonadotropin.

Authors' contributions

MS was a major contributor in writing the manuscript and prepared all figures.

BS wrote a part of the manuscript.

HA wrote a part of the manuscript.

GA performed the histological examination and was a major contributor in writing the manuscript.

AS wrote a part of the manuscript.

Abdals wrote a part of the manuscript.

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Conflict of Interest Statement

Not applicable.

Key Clinical Message

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References:

1. Fang Y, Zhao L, Yan F, Cui X, Zhou F. Strategy for Treating Simple Testicular Cyst in Adults. *Am J Mens Health*. 2011;5(3):193-197. doi:10.1177/1557988310364055
2. Di Renzo D, Persico A, Sindici G, Lelli Chiesa P. Testicular teratoma, mimicking a simple testicular cyst, in an infant. *Urology*. 2013;82(3):701-703. doi:10.1016/j.urology.2013.03.022
3. Rifkin MD, Jacobs JA. Simple testicular cyst diagnosed preoperatively by ultrasound. *J Urol*. 1983;129(5):982-983. doi:10.1016/S0022-5347(17)52498-2
4. Honjo O, Uemura S, Murakami I. Simple testicular cyst in infants: A case report and review of the literature. *Eur J Pediatr Surg*. 2001;11(6):425-427. doi:10.1055/s-2001-19724
5. Upadhyay V, Holmes M, Kolbe A. Gonadal preservation in a simple testicular cyst. *Pediatr Surg Int*. 1998;13(5-6):445-446. doi:10.1007/s003830050365
6. Haber MM, Cohen MB. Simple cysts of testis. *Urology*. 1992;39(6):563-565. doi:10.1016/0090-4295(92)90019-S

Figures legends:

Figure1. : right testicular enlargement without hydrocele. The left testis and epididymis are normal.

Figure2.: Scrotal ultrasound exposes a 1 cm in diameter solid irregular mass in his right testis.

Figure3.: **A.** Radical orchiectomy was performed after a frost section showed teratoma. **B.** The biopsy shows cystic formations with multilayered and keratinized epithelium, and beneath this epithelium there are glandular formations, which confirms the diagnosis of Cystic teratoma 1 cm not invading tunica albuginea.

Video Legends :

Video1. : Scrotal ultrasound exposes a 2 cm simple testicular cyst.

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