Polyorchidism and rete testis adenoma: ultrasound and MR findings

T. J. Figler, M. C. Olson, G. J. Kinzler
Department of Diagnostic Radiology, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60153, USA
Department of Urology, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60153, USA

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Abstract
Polyorchidism is an uncommon congenital anomaly. It is associated with an increased frequency of testicular malignancy, cryptorchidism, inguinal hernia, and torsion. Sonography may be used to confirm the clinically suspected diagnosis. We present a case of polyorchidism in which a rete testis adenoma was present in one of the testicles. Sonographic and magnetic resonance findings are illustrated.

Key words: Polyorchidism—Rete testis adenoma, sonography—Magnetic resonance imaging.

Case Report
The patient is a 31-year-old father of several children who presented with a 1-month history of left testicular pain that had not responded to a 10-day course of tetracycline. The right hemiscrotum contained a normal testicle. The left hemiscrotum contained two solid masses, one superior and lateral, the other larger, inferior, and medial. Neither mass transilluminated. Urinalysis and white blood cell count were normal. Ultrasound performed with an Acuson XP128 (Mountain-View, CA) 5-MHz transducer demonstrated a normal right testicle and epididymis (Fig. 1). The left hemiscrotum contained two structures that had the appearance of testicles. Each had an epididymis. The medial testicle had a 1-cm area of increased echogenicity in its superior aspect, which was larger than the normal mediastinum testis (Fig. 2). A neoplasm could not be excluded. MR performed on a Signa 1.5-T magnet (General Electric Medical Systems Milwaukee, WI) demonstrated two testicles in the left hemiscrotum of smaller size than the normal-appearing right testicle. There was a focal area of abnormal signal intensity in the superior aspect of the medial left testicle. On T1-weighted images, the signal intensity was less than the adjacent normal testicle (Fig. 3). Signal intensity increased and was greater than the normal parenchyma on T2-weighted images. The extent of the lesion was best appreciated on gadopentetate dimeglumine-enhanced scans, where the lesion remained at low signal intensity and the normal testicles were enhanced (Fig. 4).

The lesion was felt to be suspicious for a neoplasm, and the patient underwent a left groin exploration. Preoperative alpha-fetoprotein and human chorionic gonadotropin levels were normal. Left inguinal orchietomies were performed. The vascular pedicles of the left testicles shared a common trunk. The lateral testicle was an accessory testicle without a spermatic cord. Both testicles had an epididymis. The medial testicle contained a 6 × 5 × 5-mm ill-defined yellowish tumor in the upper pole, 2 mm from the tunica. On microscopic examination, the tumor consisted of a collection of channels lined by a cuboidal-to-flat single-cell epithelium with round nuclei, eosinophilic cytoplasm, and occasional cilia. No mitoses or anaplasia was identified. The lesion merged with the rest of the testicle without a capsule or well-limited margin and was consistent with a rete testis adenoma. Spermatogenesis was present in both testes but less active than expected for the age of the patient.

Discussion
Polyorchidism is believed to be secondary to abnormal division of the embryonic genital ridge. Many classification systems have been proposed to explain the anatomical differences described in the literature [1–5]. The varying types of polyorchidism include duplication of the testicles with duplication of the epididymis and vasa deferentia, duplication of the epididymis with a common vas deferens,
common epididymis and common vas deferens, and a grossly normal testicle, epididymis, and vas deferens with an accessory testicle within the scrotum, inguinal canal, peritoneum, or retroperitoneum [1–5].

Polyorchidism can be associated with indirect inguinal hernia, maldescent or torsion of the testicle, epididymitis, a varicocele, infertility, a hydrocele, dysplasia or a neoplasm [1–4]. These associations are similar to those seen with cryptorchidism [3, 4]. Preoperative sonography and, if indeterminant, preoperative MR can confirm polyorchidism and identify associated abnormalities [6]. When imaging shows uncomplicated polyorchidism in asymptomatic patients, surgical exploration may be avoided [1].

Any testicle with evidence of a neoplastic lesion should be resected. Adequate preoperative assess-

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**Fig. 1.** Transverse sonogram demonstrates three testicles (asterisks). The medial left testicle has a focal area of increased echogenicity (arrows) in its superior aspect, which is thicker than the normal mediastinum testis and is abnormal.

**Fig. 2.** Transverse sonogram through the left scrotum demonstrates two left testicles (asterisks). There is a focal area of increased echogenicity (arrows) in the cephalad aspect of the medial left testicle. A small hydrocele (H) is present.

**Fig. 3.** Coronal fast spin-echo MR image (TR = 450, TE = 12) demonstrates three testicles (asterisks). The two left testicles are smaller than the right testicle. The medial-inferior left testicle contains a 1-cm area of decreased signal intensity (arrows) in its superior aspect. A neoplasm cannot be excluded.

**Fig. 4.** Coronal fast spin-echo gadopentadate dimeglumine-enhanced MR image (TR = 450, TE = 12) demonstrates enhancement of all three testicles (asterisks). There is increased conspicuity of the area of abnormal signal intensity (black arrows) in the medial-inferior left testicle. White arrow = hydrocele.