

Radiology Corner

Testicular Torsion

Guarantor: MAJ Robert A. Jesinger, USAF, MC*[†]

Contributors: MAJ Robert A. Jesinger, USAF, MC*[†]; CAPT James B. Odone, USAF, MC*

Note: This is the full text version of the radiology corner question published in the July 2009 issue, with the abbreviated answer in the August 2009 issue.

We present a case of testicular torsion in the deployed setting. Our 33 year old active duty male deployed troop presented to the base emergency department (ED) with acute right testicular pain of 6 hours duration. On physical examination, the right scrotum was exquisitely tender, and the right testicle was laterally oriented. Ultrasound demonstrated absence of Doppler flow to the right testis. Intraoperative salvage was attempted but was unsuccessful. This case demonstrates an important example of the utility of scrotal ultrasound in the deployed setting.

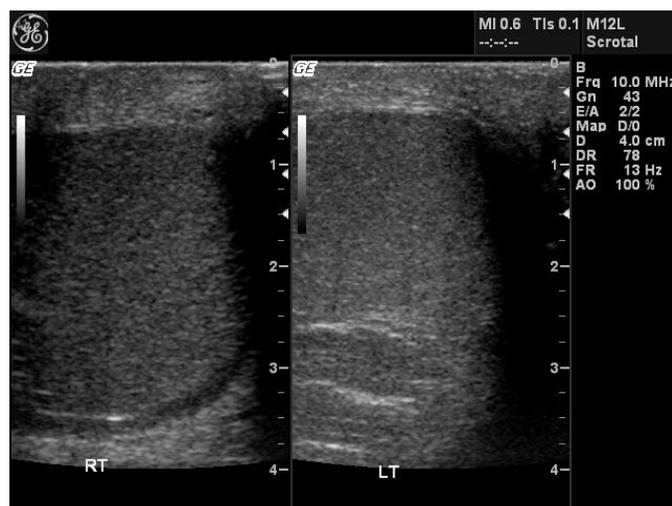


Fig. 1a Grayscale ultrasound (transverse plane, mid testis) of the testes revealing an edematous right testis.

Summary of Imaging Findings

On ultrasound (US) of the scrotum, the right testicle was noted to be hypoechoic relative to the left, suggesting testicular edema (Fig. 1a). Color Doppler evaluation revealed no flow in the right testis (Fig. 1b).

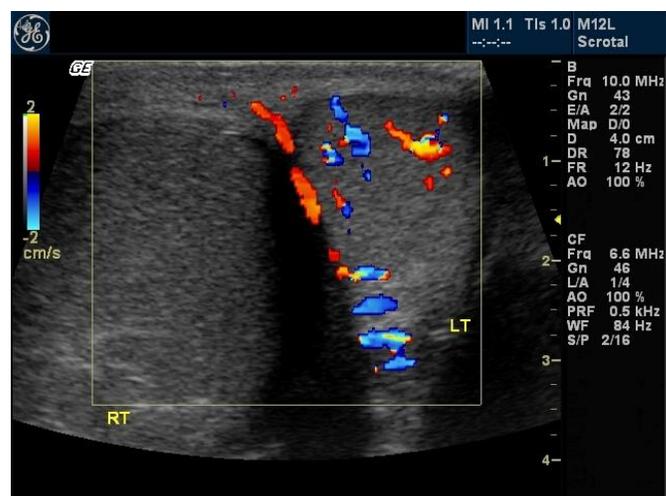


Fig. 1b Color Doppler ultrasound (transverse plane, mid testis) showing no detectable flow in the right testis.

The patient was taken to the operating room for exploration, and the initial intraoperative finding (Fig. 2) was torsion of the right testis with a twisted right spermatic cord.



Fig. 2 Intraoperative photograph demonstrating a devascularized appearance to the right testis with twisting of the right spermatic cord.

* Department of Radiology (60 MDOS); David Grant USAF Medical Center, Travis AFB, CA 94535.

[†] Department of Radiology and Radiological Sciences; Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, Maryland 20814

Reprint & Copyright © by Association of Military Surgeons of U.S., 2009.

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE AUG 2009		2. REPORT TYPE		3. DATES COVERED 00-00-2009 to 00-00-2009	
4. TITLE AND SUBTITLE Testicular Torsion				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Uniformed Services University of the Health Sciences, Department of Radiology and Radiological Sciences, 4301 Jones Bridge Road, Bethesda, MD, 20814				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Intraoperative treatment (detorsion) was performed, but the right testis failed to normalize (Fig. 3).



Fig. 3 Intraoperative photograph of both testes (“buddy shot”) after untwisting of the right testis. There is a persistent devascularized appearance to the right testis despite treatment. The normal appearance of the left testis is visible for comparison.

The nonsalvageable right testicle was surgically removed.

Discussion

Deployed male military members may develop testicular pain for a number of reasons including infection, repetitive microtrauma from lack of supportive underwear, and from occupational work (e.g. driving vehicles on convoy duty). As a consequence, they often seek medical care while deployed. When presenting to the ED, one potential cause for their symptoms includes testicular torsion.¹ Any adult male service member can be affected regardless of age,² and recurrent scrotal pain can occur before acute torsion. As most medical facilities have ultrasound capability, the ability to assess the scrotum with ultrasound becomes important.

Torsion often results in the setting of an underlying anatomic anomaly (“bell clapper deformity”). The inferior testis lacks an attachment to the inferior scrotum, and as a consequence, a twisted spermatic cord and testis may result. Grayscale ultrasound is helpful in assessing asymmetric testicular size, testicular edema, reactive fluid collections, and spermatic cord twisting; however, a normal grayscale exam does not exclude torsion. The key assessment is of testicular blood flow (both venous and arterial) with Doppler imaging.³ Venous obstruction is often the first hemodynamic change, followed by arterial obstruction and testicular ischemia. Intermittent torsion and detorsion can also occur, which makes excluding the diagnosis of torsion unreliable with US alone. When torsion-detorsion is suspected based on clinical presentation, comparison of the testicular echotexture and Doppler waveforms of the affected testis with the asymptomatic testis may be beneficial.

When diagnosed within 6 hours, the testicular salvage rate is good (often > 75%). Figures 4 and 5 demonstrate a second example in the deployed setting of torsion that was successfully treated surgically. The patient had bilateral orchiopexy as the “bell clapper deformity” is often bilateral.

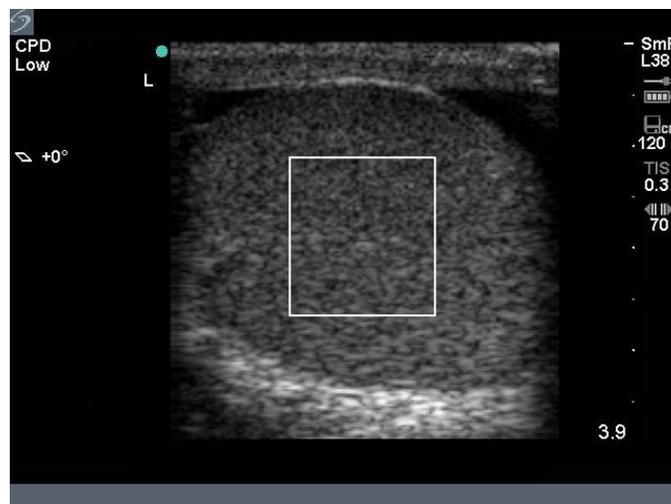


Fig. 4 Color Doppler ultrasound (longitudinal plane, mid testis) revealing no detectable flow in the left testis.



Fig. 5 Intraoperative photograph (“buddy shot”) in left testicular torsion; the image was obtained 20 minutes after untwisting of the left spermatic cord.

Operative intervention is not entirely excluded in patients with pain duration greater than 24 hours, but salvage rates are low. Occasionally patients can present days after torsion with subacute testicular infarction. Figures 6 and 7 demonstrate an example of subacute (“missed”) torsion with testicular infarction encountered in the deployed setting.

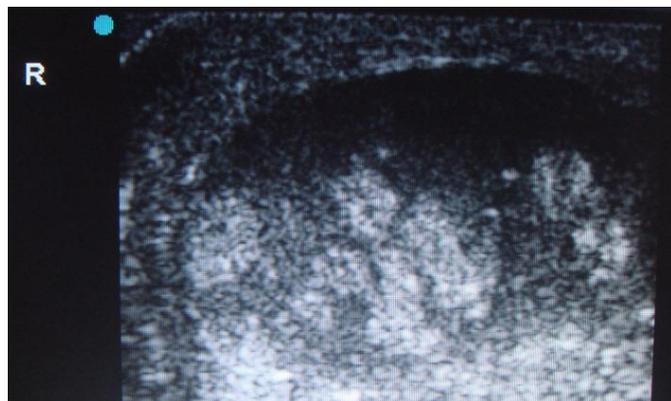


Fig. 6 Grayscale ultrasound (longitudinal plane, mid testis) of the right testis in a case of subacute (“missed”) torsion demonstrating hyperechoic foci consistent with necrosis. The patient had ongoing right scrotal pain.



Fig. 7 Intraoperative photograph (“buddy shot”) in a case of subacute (“missed”) torsion demonstrating a necrotic right testis correlating with the sonographic findings in figure 6. The painful right testicle was surgically removed.

Occasionally, subacute (“missed”) torsion may go untreated and can be encountered years later (chronic torsion). Figure 8 demonstrates an example of chronic torsion in a military member stateside.

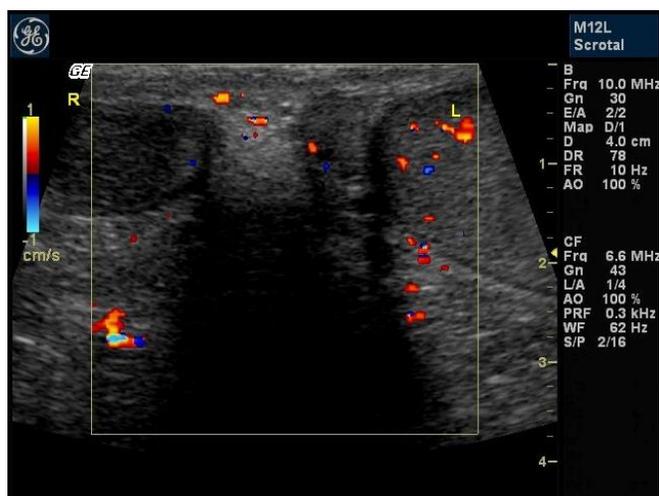


Fig. 8 Color Doppler ultrasound (transverse plane, mid testes) in a case of chronic torsion displaying near absence of flow in the right testis. Notice the small scarred appearance of the right testicle. The patient reported severe right scrotal pain (suggestive of torsion) one year prior for which he did not seek medical care. His pain slowly resolved. No surgery was performed.

Summary

The spectrum of testicular abnormalities that can be encountered is broad. In the deployed setting, acute testicular torsion is an important diagnosis to consider in male military members of all ages. Ultrasound is an important tool in the assessment of torsion. Surgical treatment consists of detorsion and bilateral orchiopexy. If not treated in a timely manner, the testicular loss rate can be high. The untreated testicle may become necrotic and painful (subacute torsion), and may scar and involute over time (chronic torsion).

Category 1 CME or CNE can be obtained on MedPix™ digital teaching file on similar cases on the following link Many radiology corner articles are also MedPix™ cases of the week where CME credits may be obtained.

<http://rad.usuhs.mil/amsus.html>

References

1. Jones DJ, Macreadie D, Morgans BT. Testicular torsion in the armed services: twelve year review of 179 cases. *Br J Surg* 1986; 73(8): 624-6.
2. Cummings JM, Boullier JA, Sekhon D, Bose K. Adult testicular torsion. *J Urol* 2002; 167(5): 2109-10.
3. Middleton WD, Melson GL. Testicular ischemia: color Doppler sonographic findings in five patients. *AJR Am J Roentgenol* 1989; 152: 1237-39.

Acknowledgements: The authors would like to express their thanks to Maj Ann Fenton, urologist, for her photographic work.