AMSER Case of the Month August 2021

31 year old male presenting with acute left scrotal swelling & pain radiating to left groin

John Nestler, MS4
Virginia Commonwealth University SOM

Dr. Ryan Clayton & Dr. Peter Haar
Virginia Commonwealth University SOM

Patient Presentation

- 31 year old African American male
  - PMH: schizoaffective disorder, bipolar type
- 1 day of left testicular swelling and pain radiating to left groin
- No history of trauma
- Visited OSH ER day prior and diagnosed with orchitis
  - Pain improved with IV morphine
  - Pt prescribed oral antibiotic, but did not fill prescription
- Patient afebrile, denies dysuria, discharge, hematuria
- ROS otherwise negative
- BP 147/106, otherwise vitals WNL
- PE: left testicle tender to palpation, no palpable hernia

Pertinent Labs

- CBC
  - WBC 13, otherwise WNL
- Urinalysis
  - 5 RBC/HPF
  - Few bacteria
  - Urogenital flora in culture
- Testing negative for chlamydia, gonorrhea, trichomonas

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: **Adult or child. Acute onset of scrotal pain. Without trauma, without antecedent mass. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler scrotum	Usually Appropriate	O
MRI pelvis (scrotum) without and with IV contrast	May Be Appropriate	O
Nuclear medicine scan scrotum	Usually Not Appropriate	☢☢☢
MRI pelvis (scrotum) without IV contrast	Usually Not Appropriate	O

This imaging modality was ordered by the ER physician

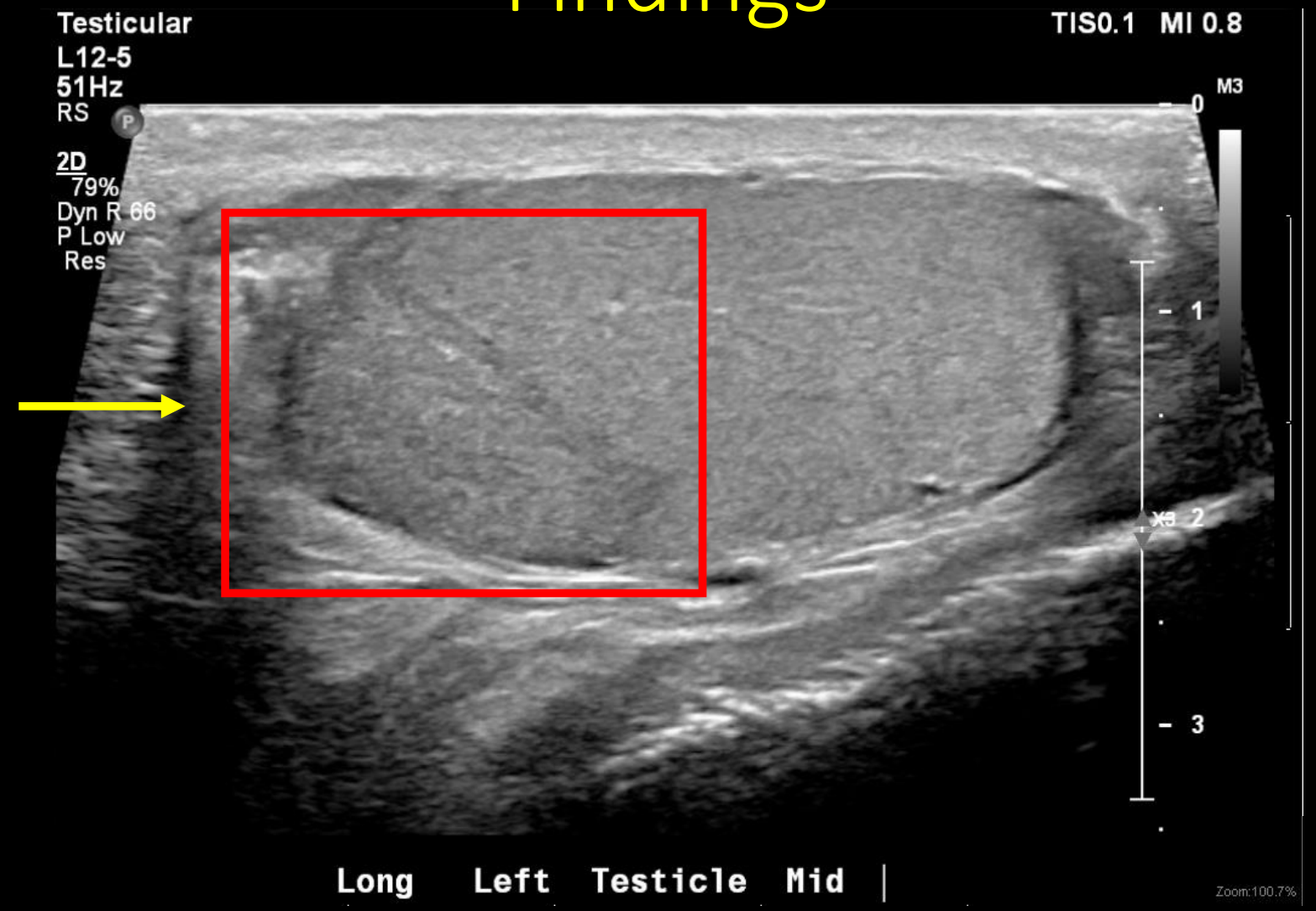
AMSER

Findings

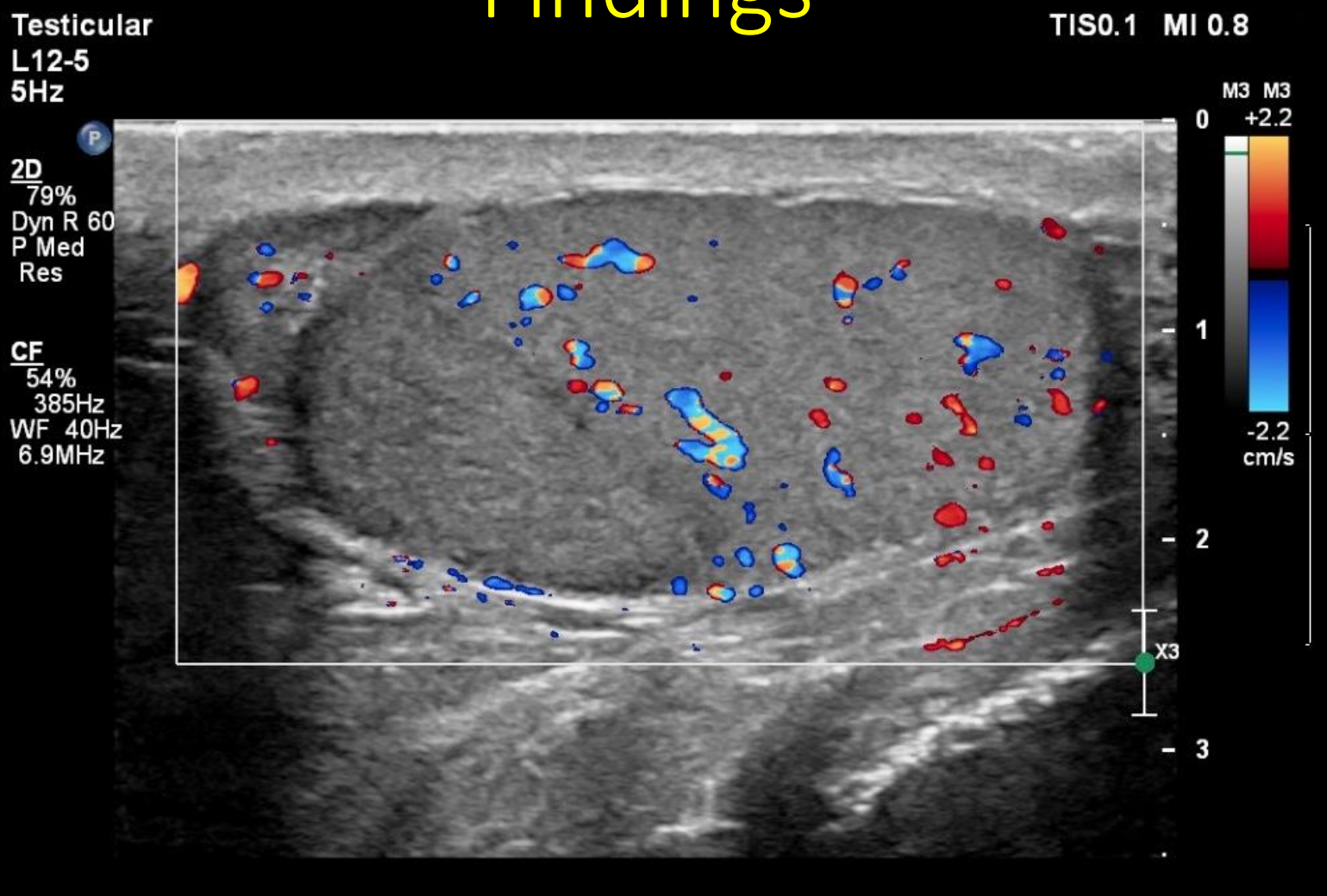

Testicular
L12-5
51Hz
RS
2D
79%
Dyn R 66
P Low
Res
TIS0.1 MI 0.8
M3
0
1
2
3
Long Left Testicle Mid
Zoom:100.7%

Findings

Heterogenous echogenicity in the superior left testicle with hypoechoic rim

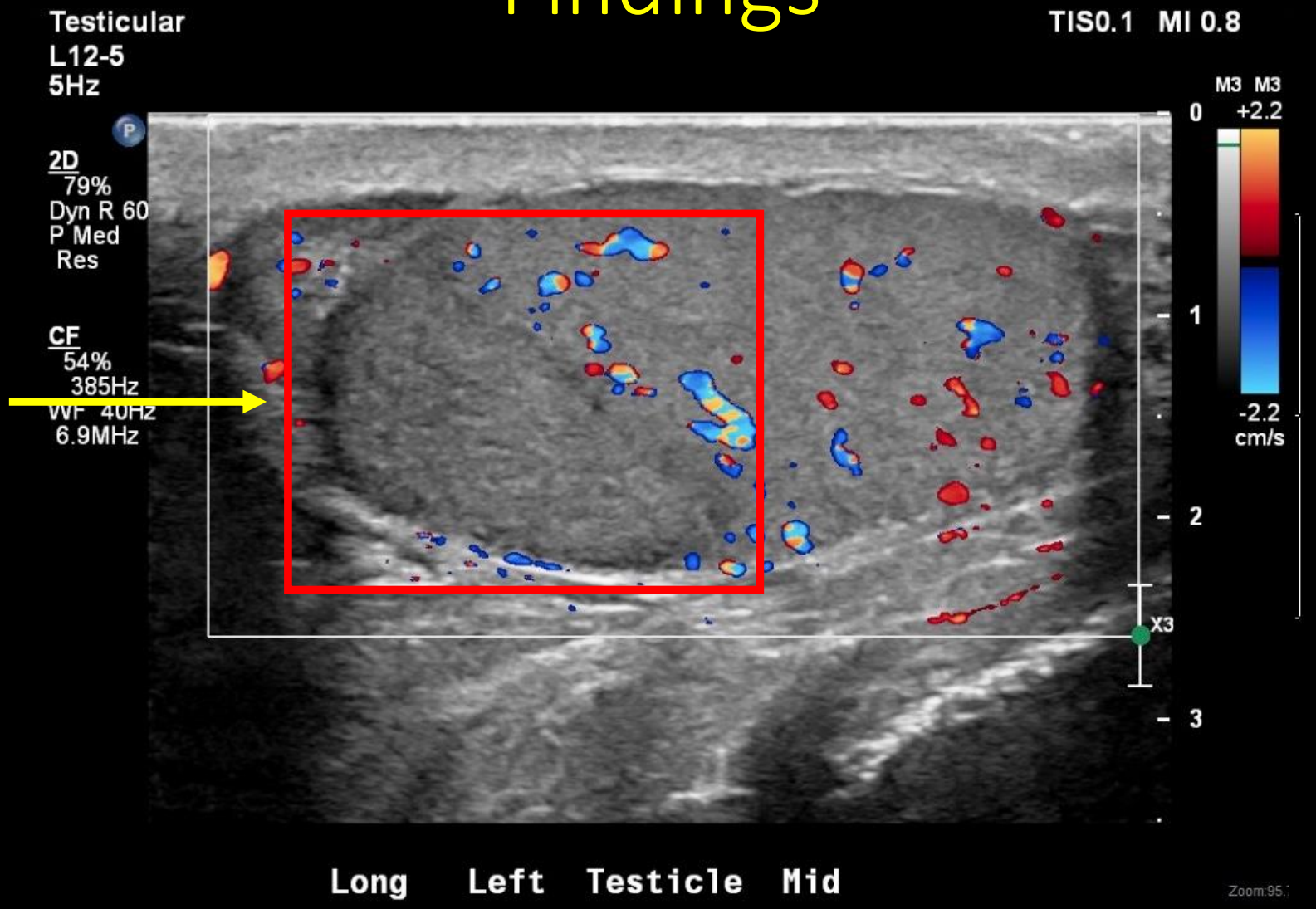


Findings


Testicular
L12-5
5Hz
TIS0.1 MI 0.8
2D
79%
Dyn R 60
P Med
Res
CF
54%
385Hz
WF 40Hz
6.9MHz
M3 M3
+2.2
-2.2
cm/s
0
1
2
3
X3
Long Left Testicle Mid

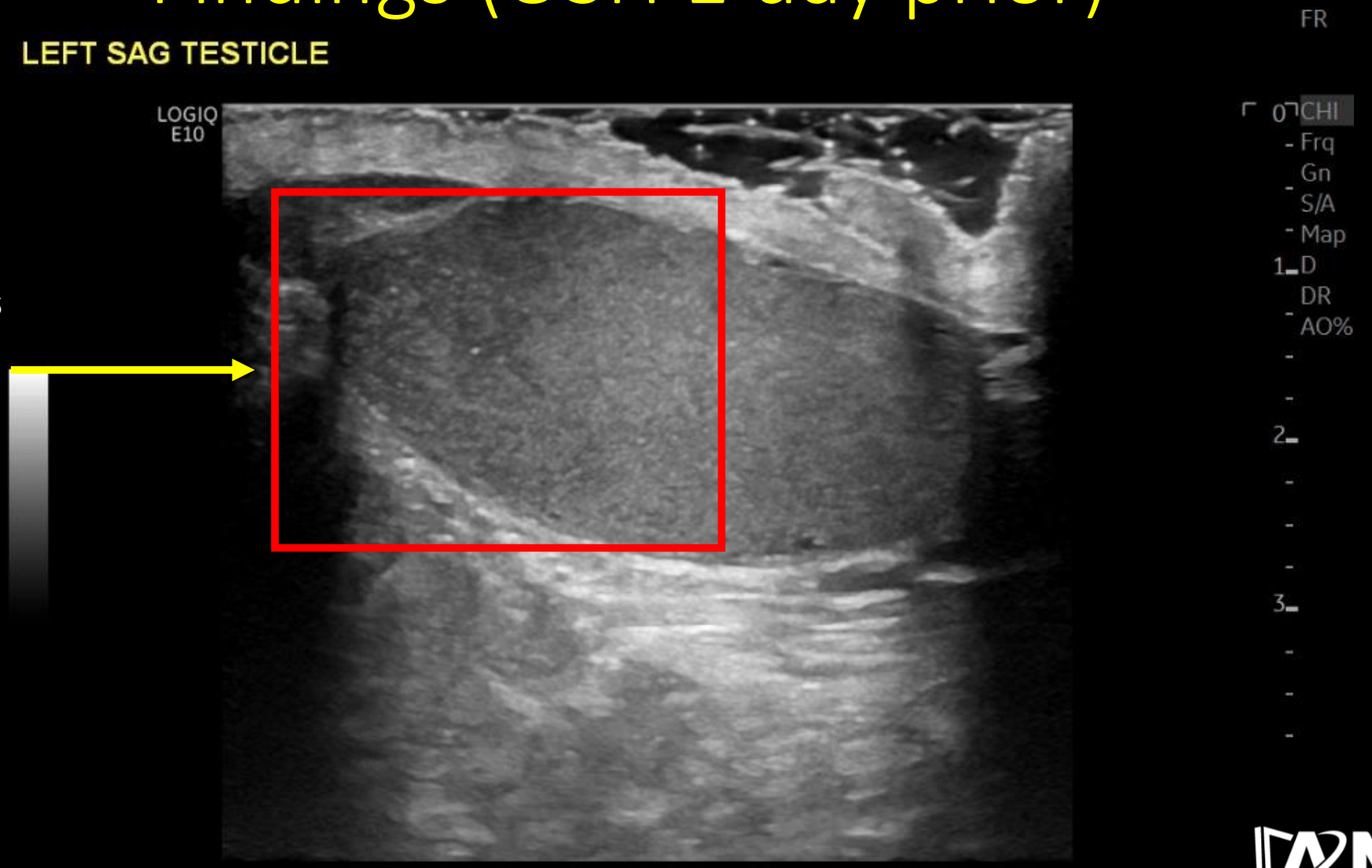
Findings

Absent vascular flow within this area of heterogenicity on Color Doppler imaging



Findings (OSH 1 day prior)

Heterogeneic area is less defined, suggesting an acute, evolving process



Final Dx:

Acute segmental testicular infarction

Case Discussion

- Epidemiology
  - Relative rare condition, often diagnosed following orchiectomy
  - Most often presents in 2nd-4th decades of life
- Presentation
  - Majority of patients have acute scrotum, but may be chronic or asymptomatic
- Predisposing conditions
  - Idiopathic (up to 70% of cases)
  - Acute epididymo-orchitis (associated with round lesion)
  - Hematologic conditions (sickle cell disease, vasculitis, polycythemia vera)
  - Autoimmune conditions
  - Trauma
  - Pelvic surgery

Case Discussion

- Differential Diagnosis:
  - Testicular neoplasm
    - Must rule out as 95% of intratesticular masses are malignant
    - 4.3% of acute scrotum cases are associated with testicular cancer
  - Granulomatous disease of testicle
  - Testicular hematoma
  - Testicular developing abscess (in the setting of epididymo-orchitis)

Case Discussion

- Imaging Diagnosis
  - Scrotal Color Doppler Ultrasound
    - “Usually Appropriate” first study by ACR Appropriateness Criteria
    - Reduced or absent vascular flow
- Further workup if necessary
  - MRI w/ contrast
    - Has been proposed to further differentiate infarction vs a neoplasm with low flow
    - Features favoring infarction over neoplasm:
      - enhancing halo surrounding infarction
      - hemorrhagic signal (also can be seen with hematoma)
  - Tumor markers to further exclude neoplasm
  - Surgical exploration with testis sparing intent may be used for excisional biopsy

Case Discussion

- Clinical Significance
  - Segmental testicular infarction is a rare entity best diagnosed by lack of vascular flow on scrotal color Doppler ultrasound
  - Testicular neoplasm must be excluded as a differential diagnosis
- Our Patient
  - Low suspicion for neoplasm given lack of segmental infarction on prior study at OSH
  - Discharged with levofloxacin x 2 weeks & urology follow-up
  - Sickle cell workup negative
  - 2-week f/u scrotal ultrasound revealed slight decrease in size of infarct with continued absence of local vascular flow

References:

Akin EA, Khati NJ, Hill MC. Ultrasound of the scrotum. *Ultrasound Q*. 2004;20(4):181-200. doi:10.1097/00013644-200412000-00004

Bilagi P, Sriprasad S, Clarke JL, Sellars ME, Muir GH, Sidhu PS. Clinical and ultrasound features of segmental testicular infarction: Six-year experience from a single centre. *Eur Radiol*. 2007;17(11):2810-2818. doi:10.1007/s00330-007-0674-2

Fernández-Pérez GC, Tardáguila FM, Velasco M, et al. Radiologic findings of segmental testicular infarction. In: *American Journal of Roentgenology*. Vol 184. American Roentgen Ray Society; 2005:1587-1593. doi:10.2214/ajr.184.5.01841587

Palmisano F, Serrago M, Gallioli A, et al. Segmental testicular infarction: Case series and brief literature review of a great mime. *Urol Ann*. 2019;11(3):334-337. doi:10.4103/UA.UA_125_18

Roth B, Giannakis I, Ricklin ME, Thalmann GN, Exadaktylos AK. An accurate diagnostic pathway helps to correctly distinguish between the possible causes of acute scrotum. *Oman Med J*. 2018;33(1):55-60. doi:10.5001/omj.2018.10

Smith ZL, Werntz RP, Eggener SE. Testicular Cancer: Epidemiology, Diagnosis, and Management. *Med Clin North Am*. 2018;102(2):251-264. doi:10.1016/j.mcna.2017.10.003

Sommers D, Winter T. Ultrasonography evaluation of scrotal masses. *Radiol Clin North Am*. 2014;52(6):1265-1281. doi:10.1016/j.rcl.2014.07.014

Wang CL, Aryal B, Oto A, et al. ACR Appropriateness Criteria ® Acute Onset of Scrotal Pain-Without Trauma, Without Antecedent Mass. *J Am Coll Radiol*. 2019;16(5):S38-S43. doi:10.1016/j.jacr.2019.02.016

AMSER