

AMSER Case of the Month

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A 33 year-old male with bilateral testicular pain

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Patient Presentation

- The patient is a 33-year-old male with a PMHx of T1DM and polysubstance abuse presenting to the ED with a one-day history of left sided testicular pain that is now bilateral.
- There is associated episodes of nausea and vomiting.
- There has been no trauma to the area.
- Patient has not taken his insulin for the past 2 days.
- On physical exam, there is notable swelling and tenderness of bilateral high riding testes with absent cremasteric reflex.

Pertinent Labs

CMP

Sodium: 131 (L)
Potassium: 5.2 (H)
BUN: 19
Creatinine: 1.31 (H)
Glucose: 388
Calcium: 10.2
Chloride: 96 (L)
Total Bilirubin: 0.6
Total Protein: 10.7 (H)
Albumin: 5.3 (H)
AST / ALT: 51 (H) / 39

Bedside glucose: 374 (H)

CBC

WBC: 10.1 (H)
Hemoglobin: 16.5
Hematocrit: 51.4
Platelet Count: 610 (H)
Neutrophils %: 83.6 (H)
Lymphocytes %: 11.1 (L)
ANC: 8.47 (H)
Monocytes #: 0.42

UA Reflex Culture:

	Ref Range & Units	1 mo ago
Source, UA		Urine, Clean Catch Midstream
Color		Yellow
Appearance, UA	Clear	Clear
Specific Gravity, UA	1.005 - 1.030	1.024
pH, UA	5.0 - 8.0	5.0
Leukocytes Esterase, UA	Negative	Negative
Nitrite, UA	Negative	Negative
Protein, UA	Negative mg/dL	100 !
Glucose, UA	Negative, Trace mg/dL	>=500 !
Ketones, UA	Negative mg/dL	80 !
Urobilinogen, UA	<2.0 mg/dL	Negative
Blood, UA	Negative	Small !
Bilirubin, UA	Negative	Negative

(H) = Abnormally High (L) = Abnormally Low

What Imaging Should We Order?

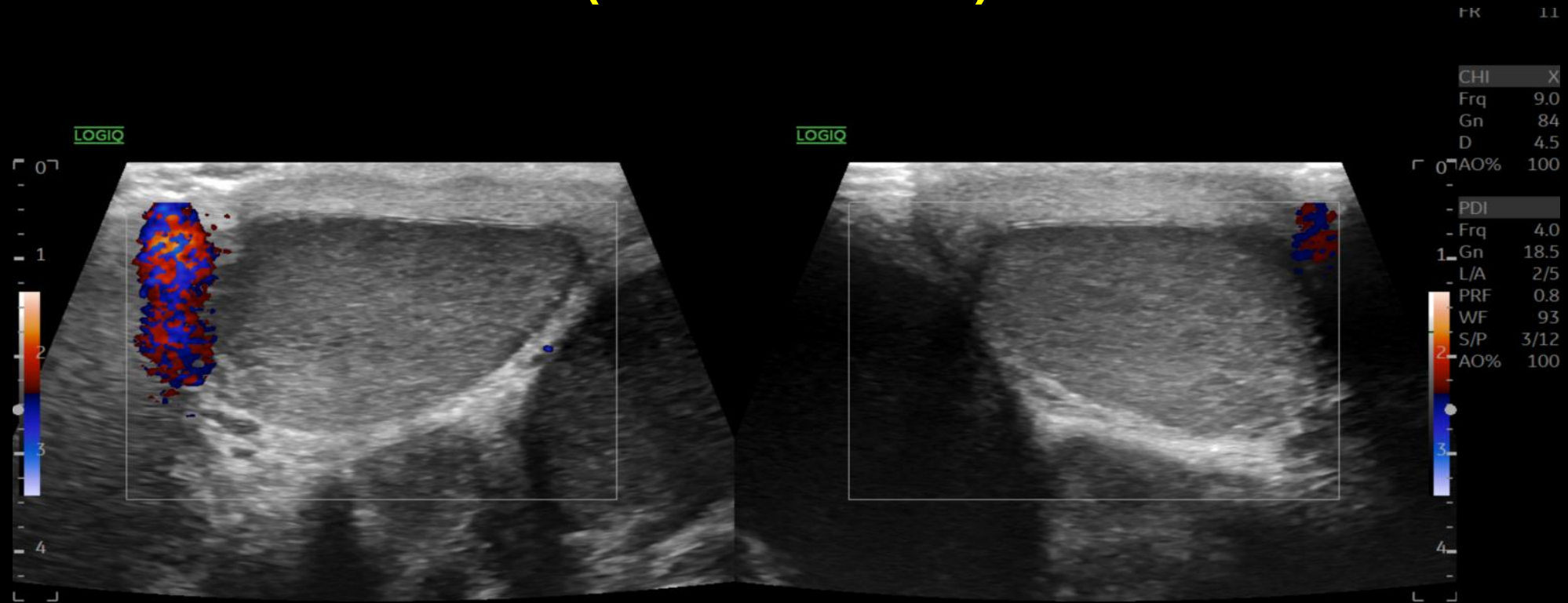
ACR Appropriateness Criteria

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

Procedure	Appropriateness Category
US duplex Doppler scrotum	Usually Appropriate
US scrotum	Usually Appropriate
MRI pelvis (scrotum) without and with IV contrast	Usually Not Appropriate
MRI pelvis (scrotum) without IV contrast	Usually Not Appropriate
CT pelvis with IV contrast	Usually Not Appropriate
CT pelvis without IV contrast	Usually Not Appropriate
Nuclear medicine scan scrotum	Usually Not Appropriate
CT pelvis without and with IV contrast	Usually Not Appropriate

Ordered by ED physician in this case: US scrotum and testes with Doppler (first-line)

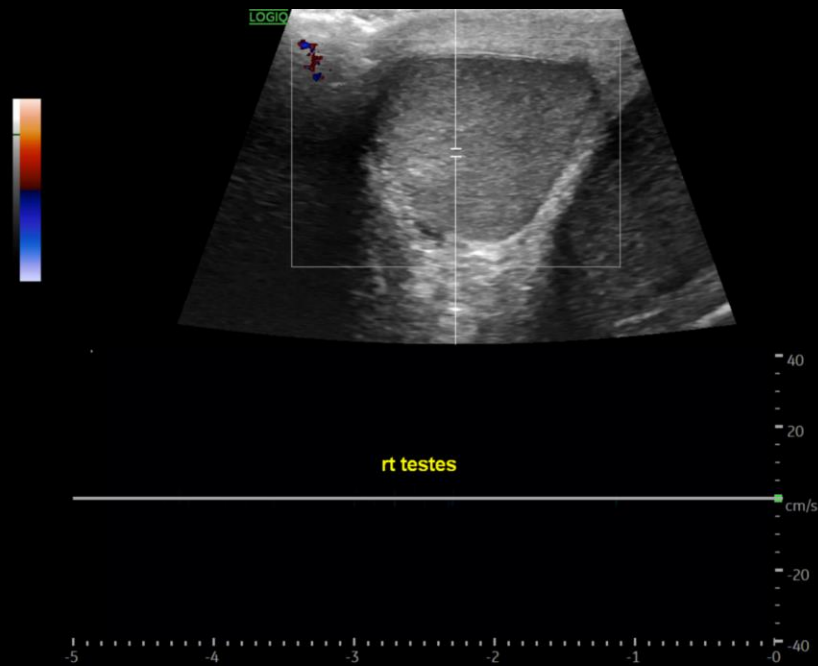
US Scrotum and Testes With Doppler (unlabeled)



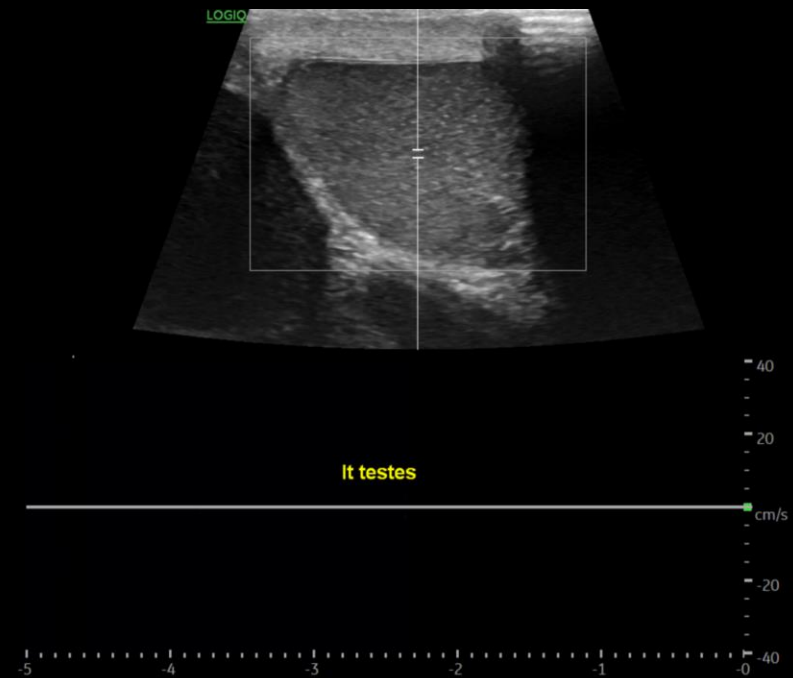
Right Testicle

Left Testicle

US Scrotum and Testes With Doppler (unlabeled)

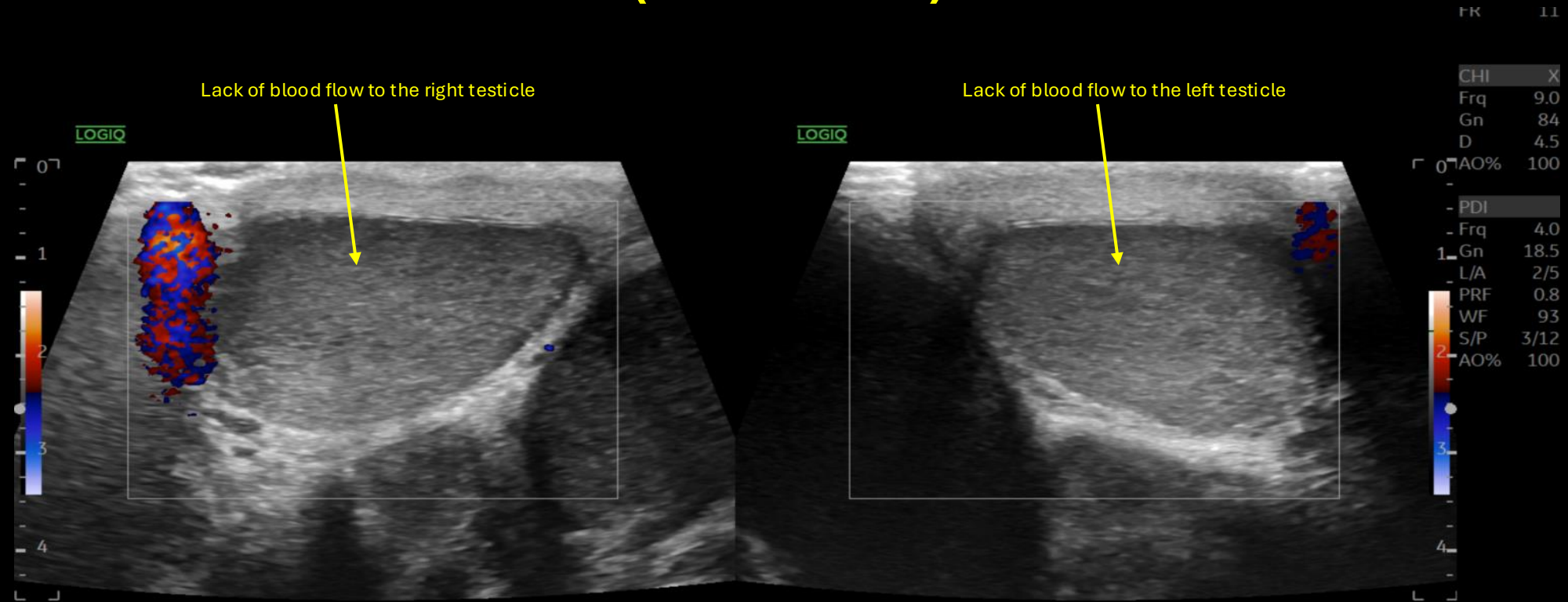


1	CHI	X
-	Frq	9.0
-	Gn	84
-	D	4.5
2	AO%	100
-	PDI	
-	Frq	4.0
3	Gn	18.5
-	PRF	0.8
-	WF	93
-	AO%	100
4	PW	
-	Frq	4.2
-	Gn	50
-	PRF	4.5
-	WF	98
-	SV	1.0
-	SVD	1.9
-	AO%	100



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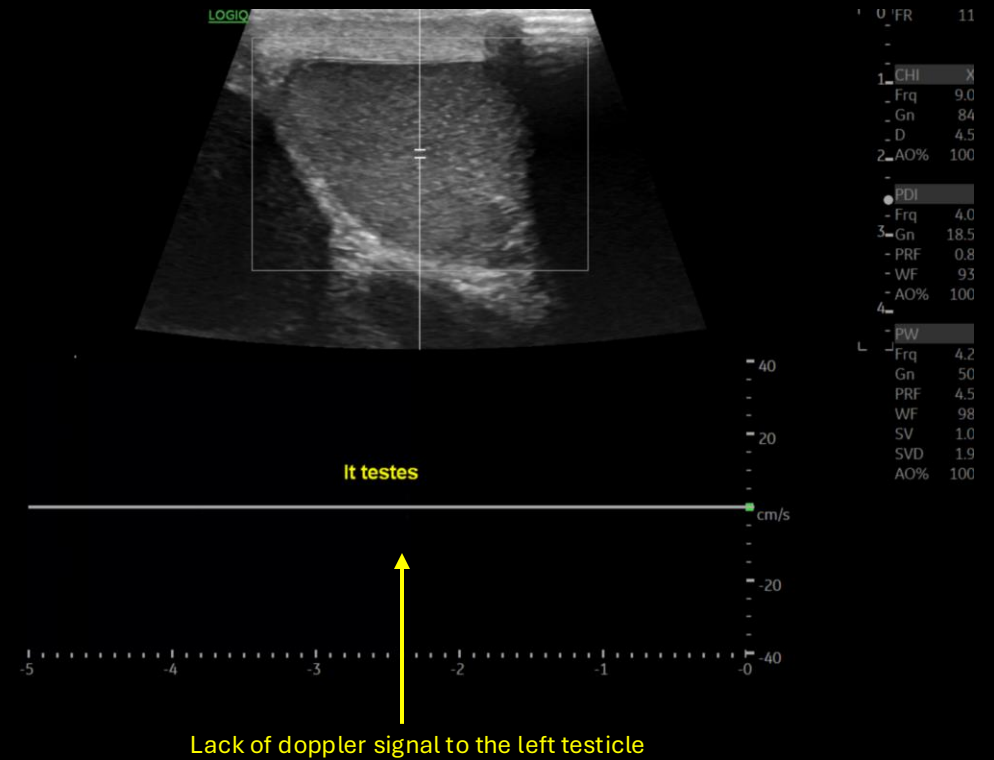
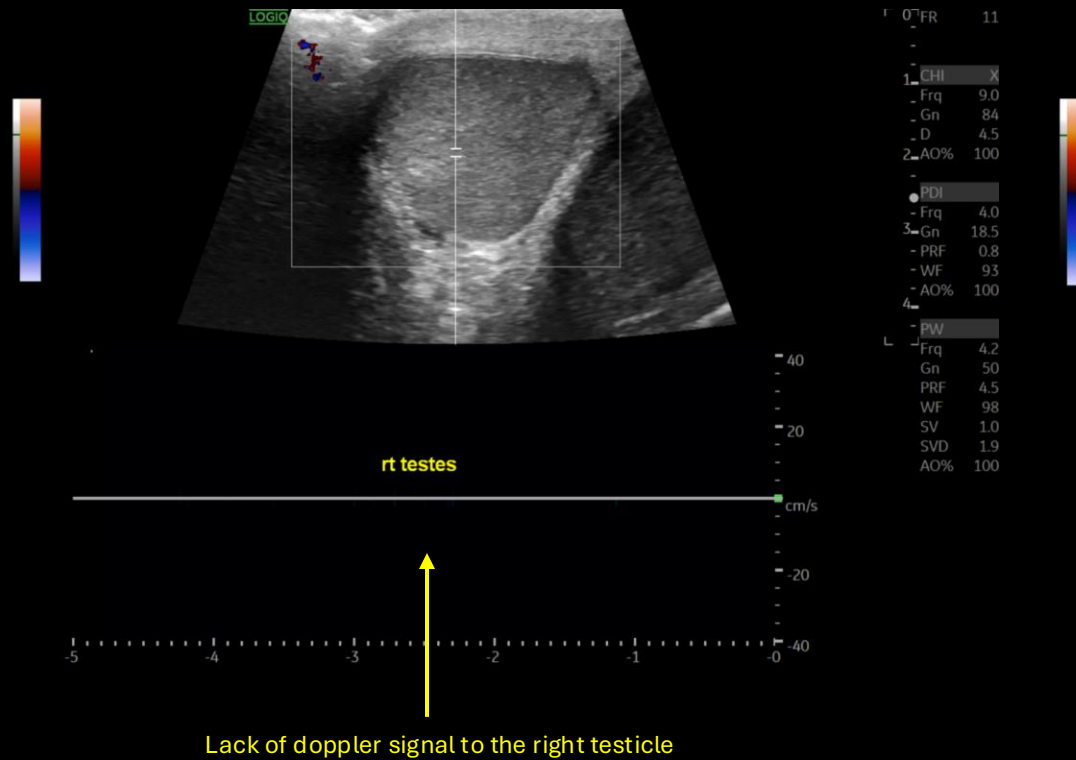
US Scrotum and Testes With Doppler (labeled)



Right Testicle

Left Testicle

US Scrotum and Testes With Doppler (labeled)



Final Dx:

Bilateral Testicular Ischemia

Case Discussion

- Urology was consulted for acute surgical intervention of suspected testicular torsion
 - Determined a TWIST score of 5 (no hardness appreciated) on physical exam
 - Underwent scrotal exploration to determine bilateral testicular ischemia likely secondary to Diabetic Ketoacidosis with no evidence of torsion
 - Bilateral orchiopexy was performed
 - Admitted to ICU
 - Symptoms were resolved within 2 days post op

Case Discussion

- Testicular ischemia occurs due to compromised blood flow
- Testicular torsion is the most common cause of ischemia but other, rarer, causes include epididymitis, vascular compromise, inguinal hernia repair, or spontaneous thrombosis of funicular vessels¹
- Complications include loss of testis, infection, infertility, loss/diminished endocrine and exocrine function²
- Only about thirty cases are described of testicular infraction without torsion³
 - Can present as either segmental or total; usually at the age of 16 and 35 years³
 - Ischemia is usually unilateral but can also present as bilateral³
 - Risk factors include hypercholesterolemia, protein S or antithrombin III deficiency, sickle cell anemia, malakoplakia, lymphoid leukemias, familial Mediterranean fever, Wegner's granulomatosis, and diabetes³
 - Presents as acute testicular pain with normal clinical examination findings³
 - Can simulate a testicular tumor with normal tumor markers³

Case Discussion

- Diagnostic methods:
 - Color Doppler is 86% sensitive and 100% specific for testicular ischemia⁴
 - There will be absent or diminished arterial and venous blood flow with venous flow often obstructed first⁴
 - Common sonographic findings of testicular ischemia may include:
 - Homogeneous hypoechoic pattern early on. After >24 hours the echotexture becomes heterogeneous⁵
 - Absence of a whirlpool sign as seen in torsion related cases
 - Benefits of US in diagnosis:
 - High accuracy⁵
 - Real time blood flow evaluation⁵
 - No radiation exposure⁵
- Treatment: Treat the underlying cause with possible surgical intervention
 - Orchidotomy, orchiectomy, or extemporaneous examination to rule out cancer

References

1. Burks DD, Markey BJ, Burkhard TK, Balsara ZN, Haluszka MM, Canning DA. Suspected testicular torsion and ischemia: evaluation with color Doppler sonography. *Radiology*. 1990 Jun;175(3):815-21. doi: 10.1148/radiology.175.3.2188301. PMID: 2188301.
2. Schick MA, Sternard BT. Testicular Torsion. [Updated 2023 Jun 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK448199/>
3. Ibrahimi A, Ziani I, Bellouki O, El Sayegh H, Benslimane L, Nouini Y. Epididymo-testicular ischemia without torsion. *Urol Case Rep*. 2020 Jun 26;33:101324. doi: 10.1016/j.eucr.2020.101324. PMID: 33102026; PMCID: PMC7573822.
4. Dellabianca C, Bonardi M, Alessi S. Testicular ischemia after inguinal hernia repair. *J Ultrasound*. 2011 Dec;14(4):205-7. doi: 10.1016/j.jus.2011.10.004. Epub 2011 Oct 20. PMID: 23396995; PMCID: PMC355824
5. Kühn AL, Scortegagna E, Nowitzki KM, Kim YH. Ultrasonography of the scrotum in adults. *Ultrasonography*. 2016 Jul;35(3):180-97. doi: 10.14366/usg.15075. Epub 2016 Feb 24. PMID: 26983766; PMCID: PMC4939719.