Use of point-of-care ultrasound in a low-resource setting to identify testicular malignancy: a case report

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Introduction

- Among men ages 15-34 years, testicular cancer is the most common solid malignancy with over 8,000 new cases each year in the United States[1]
- Despite increasing incidence of disease, testicular cancer has a >95% 5-year survival rate with effective treatment involving radical orchiectomy[1]
- Germ cell tumors account for 95% of all testicular cancers[1]
- Initial presentation of testicular cancer can include scrotal swelling and firmness, painful or painless testicular mass, and in rare cases, hematuria[1,2]
- Ultrasound is the primary imaging modality used to identify testicular pathologies and rule out torsion/hydrocele[3]
- Signs of malignancy on ultrasound include cystic components, calcification, and heterogeneous echogenicity.[3]

Case Presentation

Agape Clinic

July 2024
- 21-year-old male with no PMH presented for routine health screening and lab work
- Urinalysis showed microscopic trace hematuria, patient asymptomatic
- Urology referral- CT urogram unremarkable

September 2024
- 2 month f/u urinalysis showed 1+ occult blood
- Patient endorsed 2 month history of left scrotal swelling and pain in left inguinal area that began 1 day after his CT urogram
- POCUS showed 9.0 x 8.0 cm cystic mass in left scrotum without hydrocele or torsion
- Instructed to go to Baylor University Medical Center (BUMC) ED next day

BUMC ED

- US scrotum/testicular duplex- 9.9 cm complex cystic mass with thick, vascular septations replacing the left testicle, highly concerning for a primary testicular malignancy
- CXR: No abnormalities
- CT chest/abd/pelvis: Large left testicular mass without evidence for metastatic disease in the chest, abdomen, or pelvis
- Abnormal LDH, B-HCG, AFP tumor markers
- Referred to urology

Outpatient Urology

- left radical orchiectomy with left testicular prosthesis insertion via left inguinal incision
- Mixed germ cell tumor with teratoma (approximately 10%), Embryonal carcinoma (approximately 85%) and Yolk sac carcinoma (approximately 5%)
- Tumor size: 9.8 x 8.0 x 7.0 cm. Confined to testis
- Spermatic cord margin free of tumor. No lymphovascular invasion. No perineural invasion.

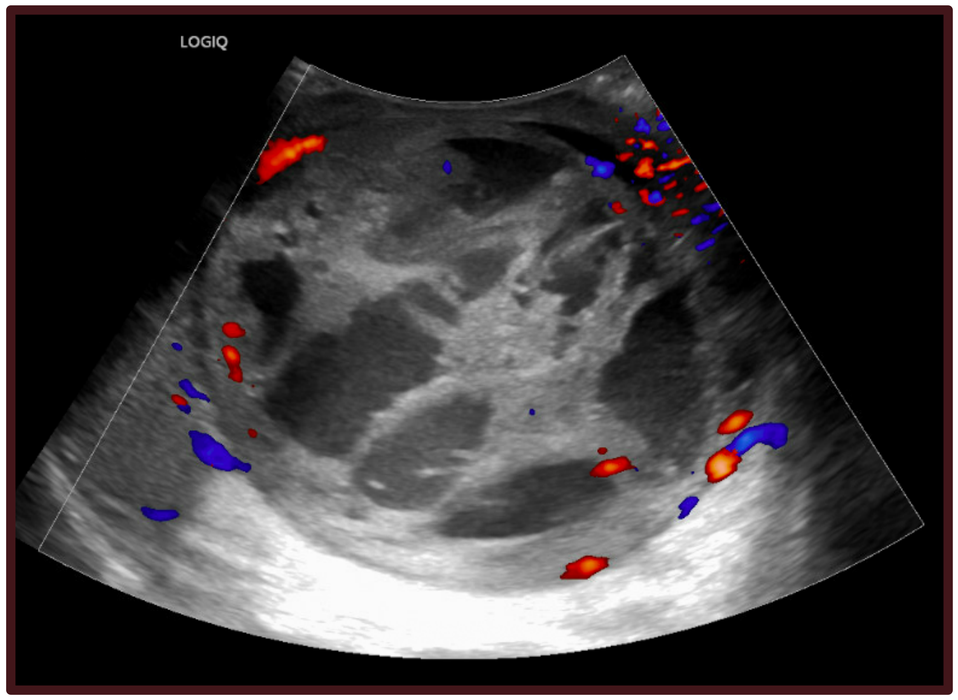

Figure 1: Ultrasound of Left Testicle showing cystic mass

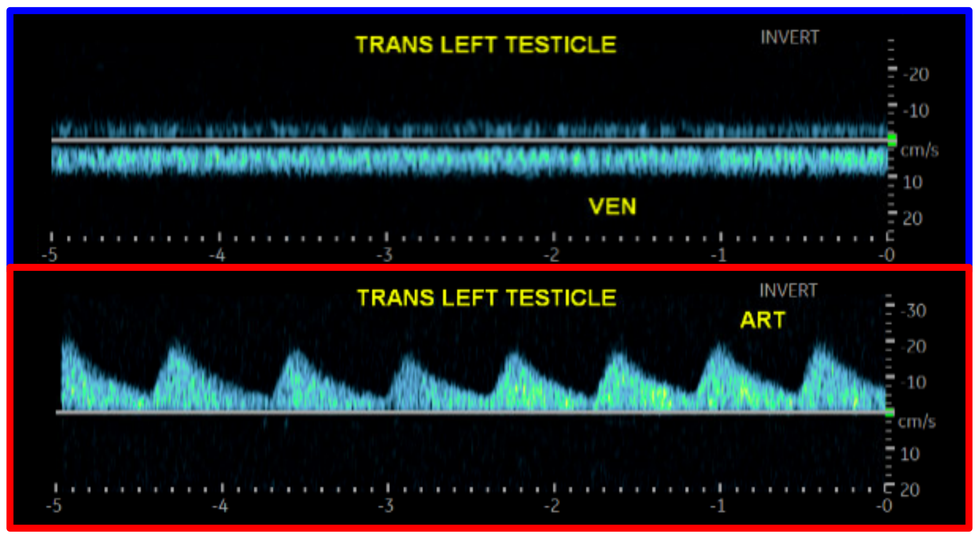

Figure 2: Left testicle duplex ultrasound

	Latest Ref Rng & Units	9/27/2024
Lactate Dehydrogenase (LDH)	135 - 225 U/L	284 ^
Beta HCG Tumor Marker	0 - 3 IU/L	39 ^
Alpha Fetoprotein, Tumor Marker	<6.1 ng/mL	73.8 ^

Figure 3: Tumor marker labs

Objectives

- Emphasize the importance of ultrasound as the initial imaging modality to assess scrotal masses
- Highlight the quick timing in escalation of care made possible by immediate ultrasound results

Discussion

- The initial presentation of this patient with asymptomatic microscopic hematuria did not raise alarms for testicular cancer or necessitate a testicular exam.
- CT urograms do not include the scrotum or testicles in the imaging window, and are not the first line imaging modality to assess the scrotum.
- Lack of abnormality on the CT urogram likely contributed to the delay in diagnosis
- Recognition of alarm signs on scrotal ultrasound like cystic components, calcification, and heterogeneous echogenicity necessitates urgent urology referral.[3]
- Orchiectomy remains the first line treatment for testicular cancer[1]
- Although there is no USPSTF recommended testicular cancer screening, men ages 15-40 are encouraged to perform a self-exam of their testicles monthly, and seek medical care if they notice any lumps, bumps, or changes to testicle size

Conclusion

- Point-of-care ultrasound proved to be an effective imaging modality to diagnose a suspected testicular malignancy
- Strong handheld ultrasound skills are essential for primary care physicians in low-resource settings, as it can provide immediate results that enable quick escalation of medical care
- While tools like ultrasound are helpful, the importance of open dialogues and safe environments for patients to share their concerns cannot be understated

References

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3. Sharbidre KG, Lockhart ME. Imaging of scrotal masses. *Abdom Radiol (NY)*. 2020;45(7):2087-2108. doi:10.1007/s00261-019-02395-4