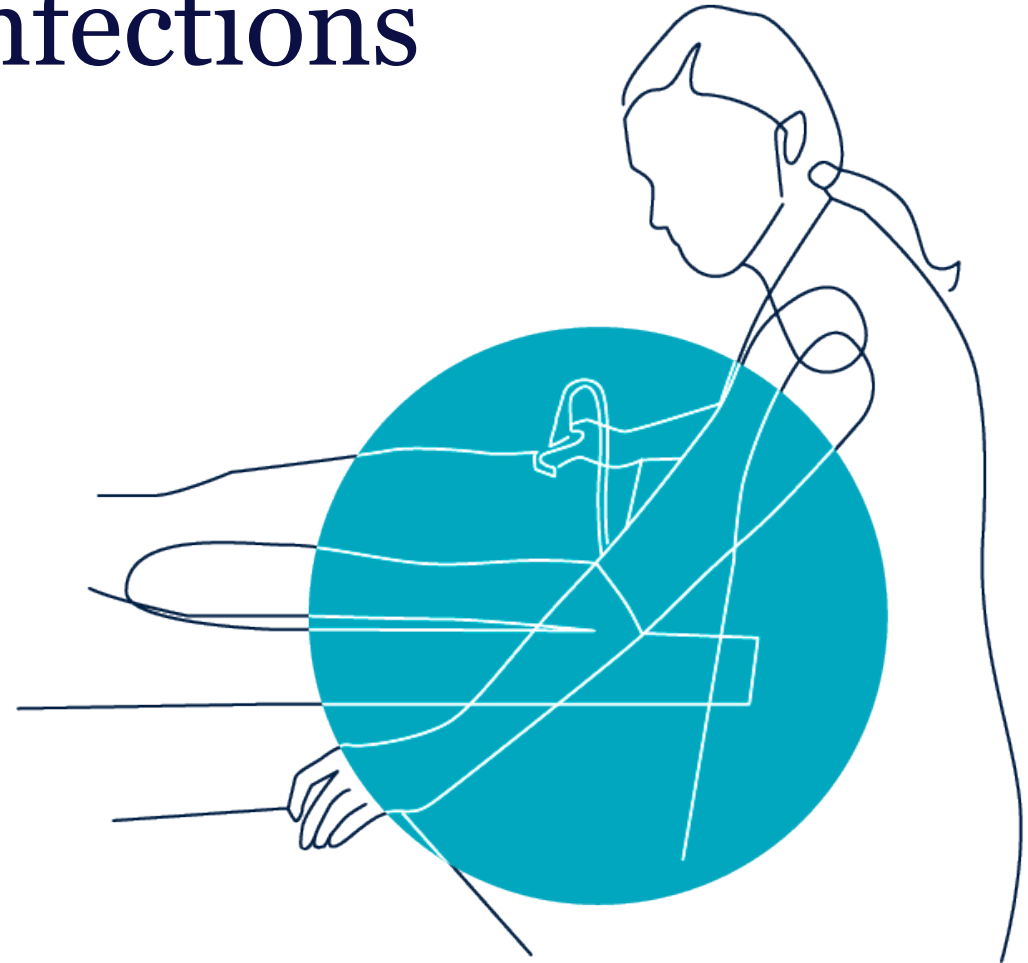


Skin and Soft Tissue Infections

Dr. Virginia Robinson
Sept 15, 2023



THE UNIVERSITY OF BRITISH COLUMBIA

Continuing Professional Development

Faculty of Medicine

I acknowledge that I work on the traditional, ancestral and unceded territory of the K'tunaxa Nation.



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

PRESENTER DISCLOSURES

Name: Dr. Virginia Robinson

Relationships with commercial interests:

- Speakers Honoraria: RCCBC, Divisions of Family Practice, SRPC, and Clarius



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

MITIGATION OF BIAS

- Relationships do not affect my choices in developing content.
- Financial relationships are unrelated to presentation.
- Not speaking about any products or medications.



UBC CPD
Medicine
**CONTINUING
PROFESSIONAL
DEVELOPMENT**

LEARNING OBJECTIVES

- Demonstrate how to perform and interpret ultrasound for skin and soft tissue
- Differentiate cellulitis from other diagnoses: abscess, necrotizing fasciitis, angioedema, thrombophlebitis, and DVT
- Review pitfalls of POCUS for SSTI's
- Review the appearance and usefulness of POCUS for foreign bodies.



HIGH FREQUENCY LINEAR PROBE



POLL QUESTION:

How Often is Cellulitis Misdiagnosed?

1. 20%
2. 30%
3. 40%
4. 50%



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

REVIEW

Prevalence and Risk Factors for Cellulitis and Its Noninfectious Mimics: Approach to the Red Leg

**Todd S
Brian K**

Briana M. Garcia, BS^a, Carla Cruz-Diaz, MD^b,
Ritesh Agnihothri, MD^b, Kanade Shinkai, MD, PhD^{b,*}



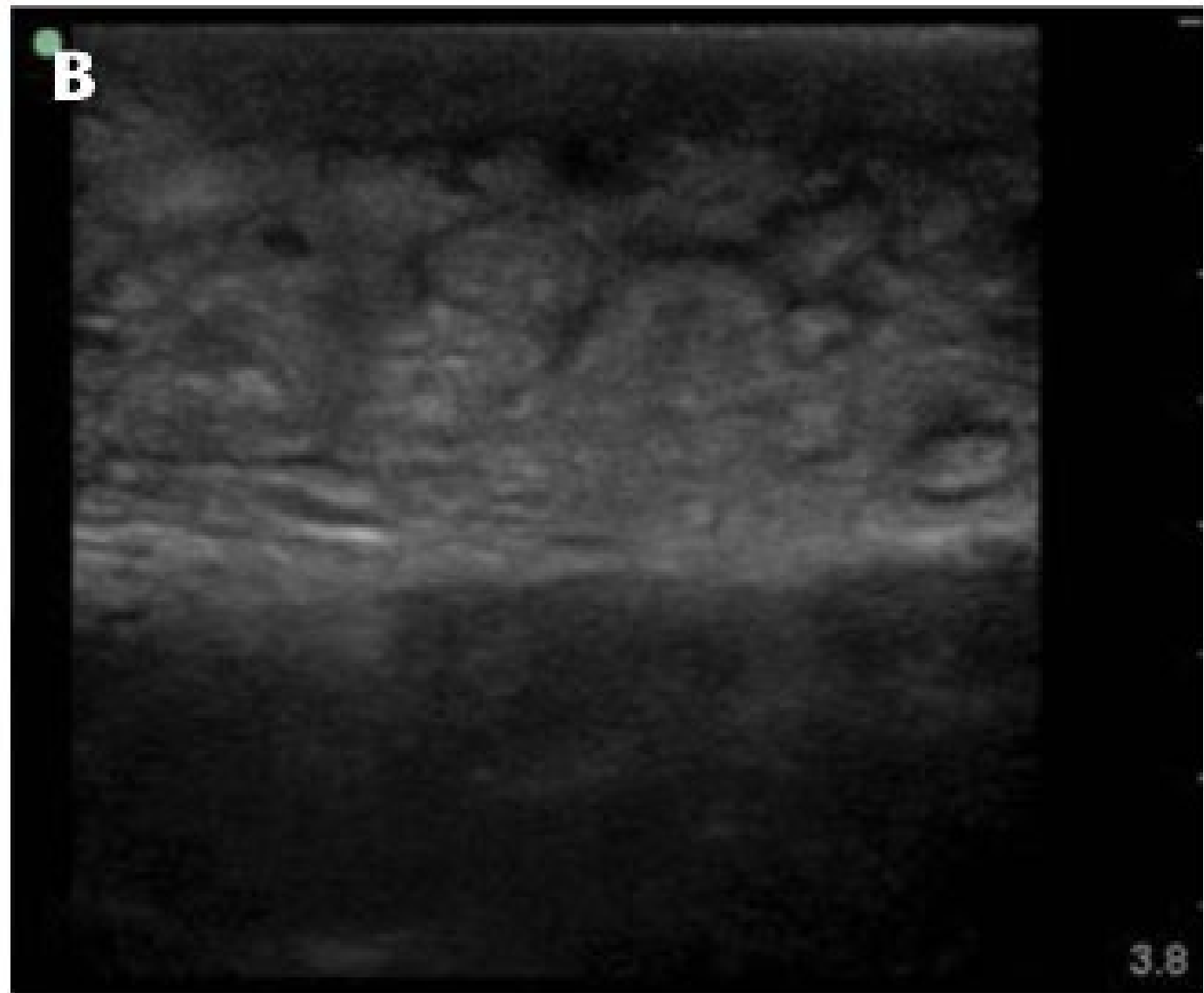
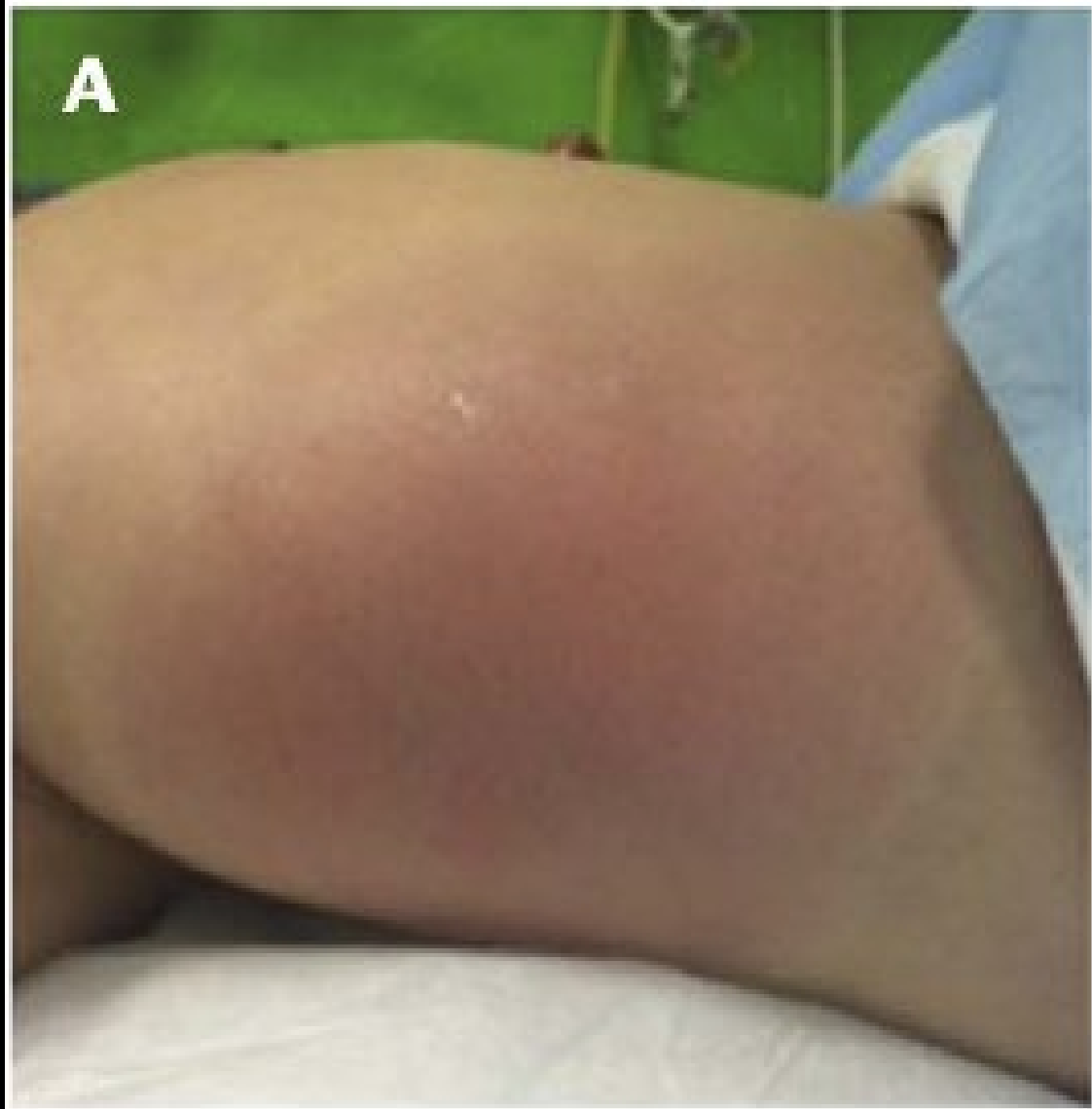
Review

ns MD, MPH¹



PREDICTION RULES FOR CELLULITIS

1. **ALT -70**: Asymmetry,
Leukocytosis,
Tachycardia and Age >70
2. **NEW HAvUN**: New onset,
Erythema,
Fever,
History of Trauma,
Tenderness,
Unilateral,
Leukocytosis



Z

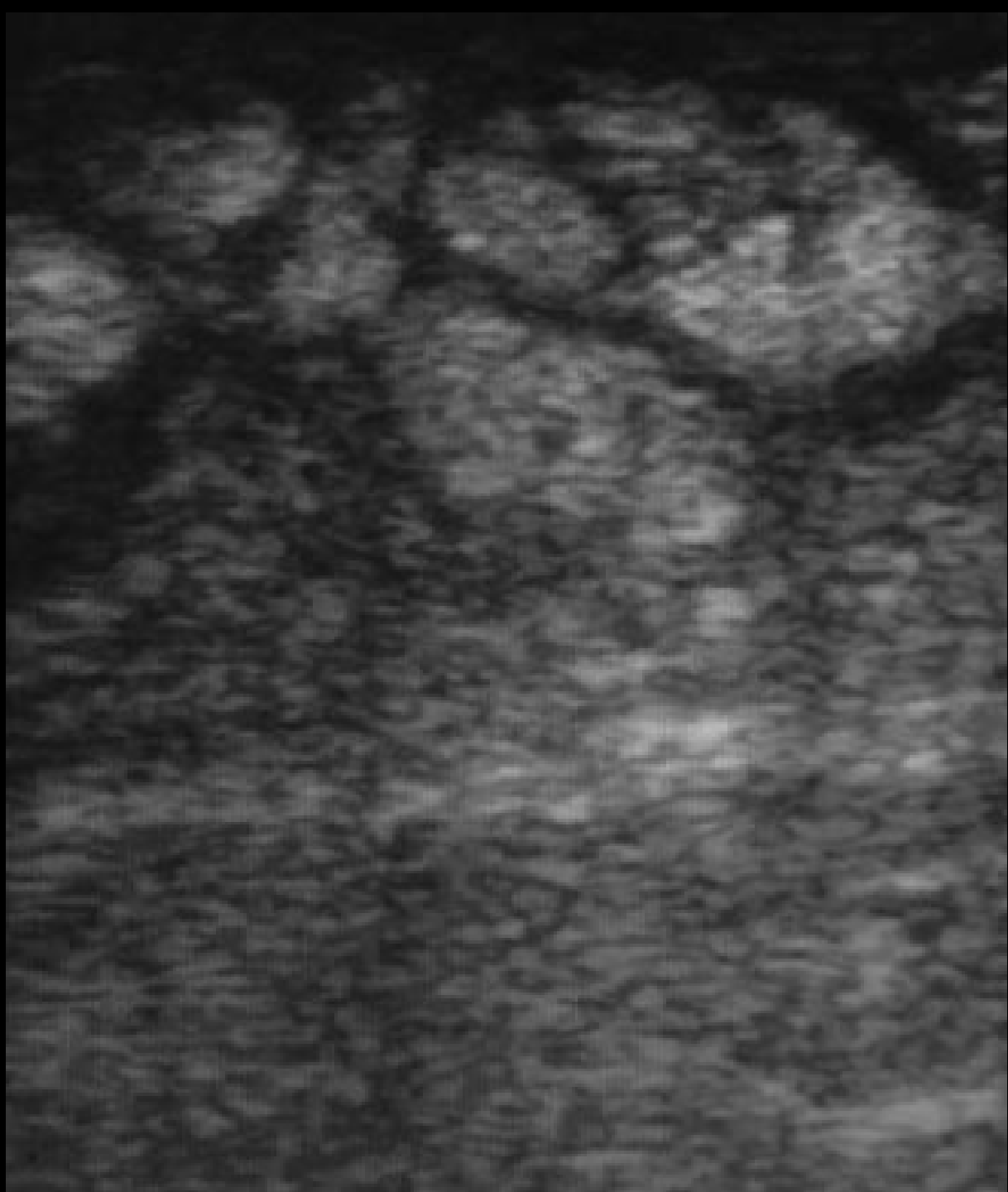
RLOWER EXTREMITY

SP/MuscSkel
L10-5/CSH8
DR75/M3/P1
G76/E2/100%
MI1.1 TIs0.2
3.0 cm
20/20 Hz
ZSI 20
Image

-1

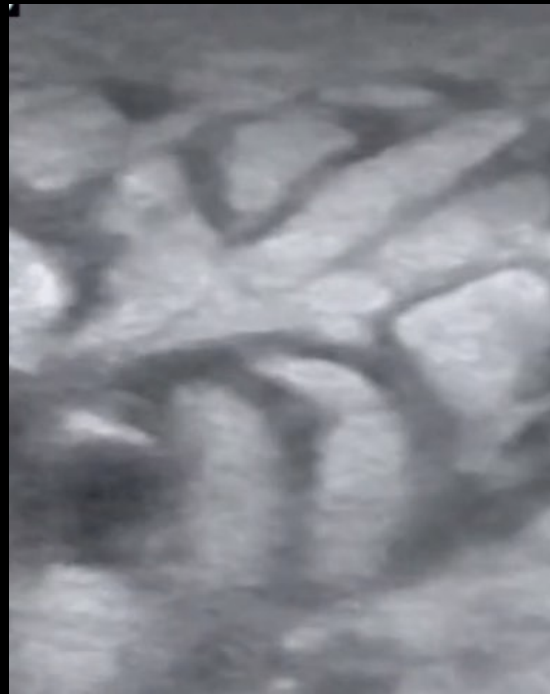
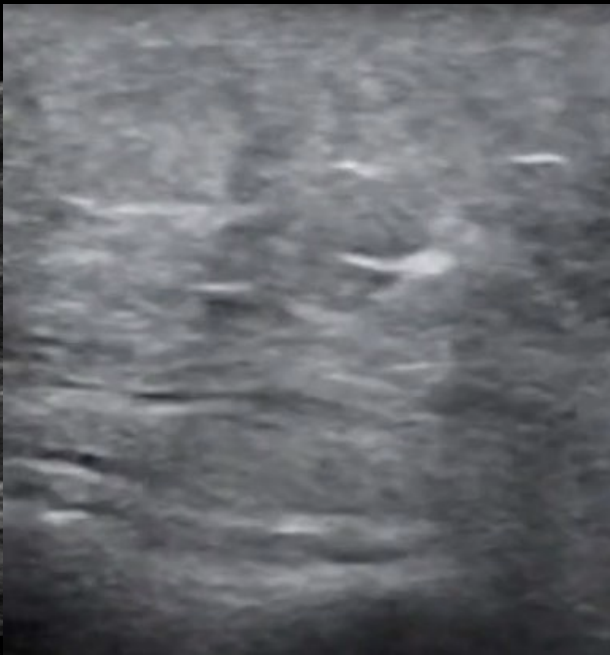
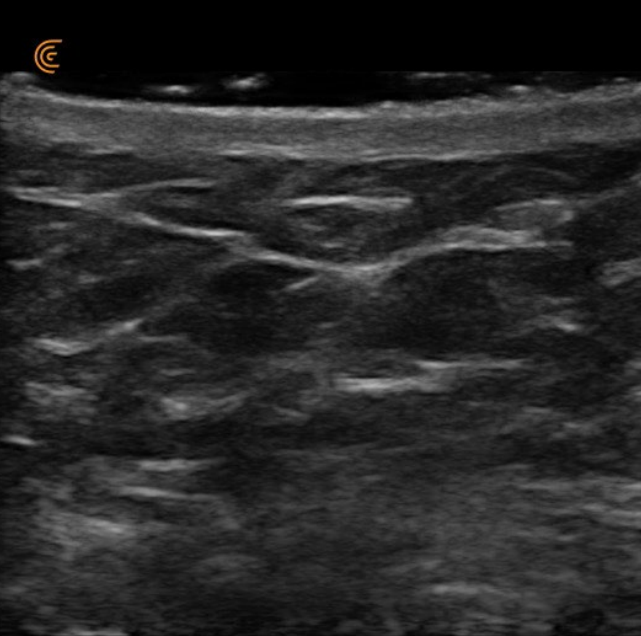
-2



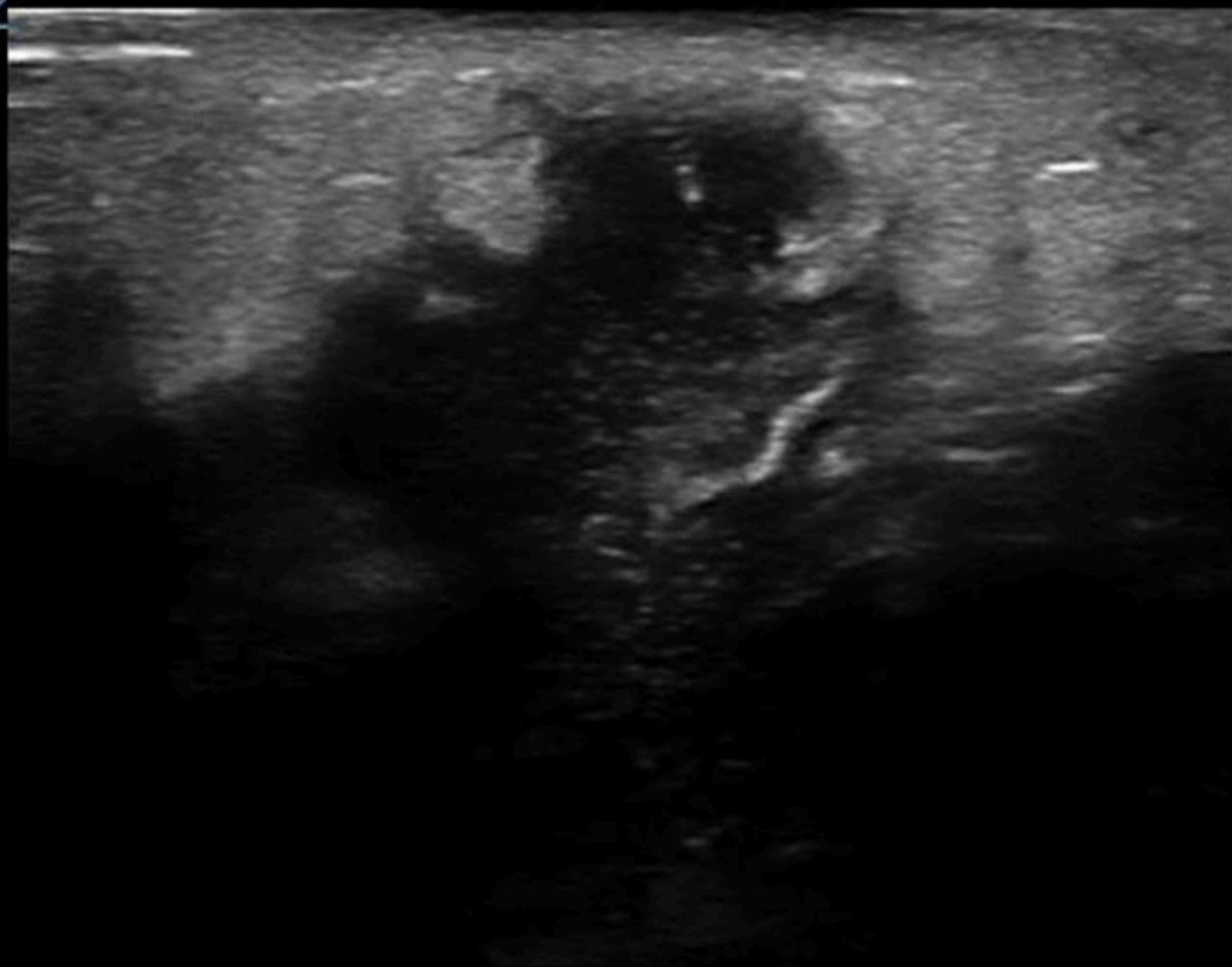








Z



VASCULAR ACCESS

L10-5/CSH8

DR70/M2/P2

G70/E2/100%

MI1.1 TIs0.2

4.0 cm

18/18 Hz

ZSI 0

-1

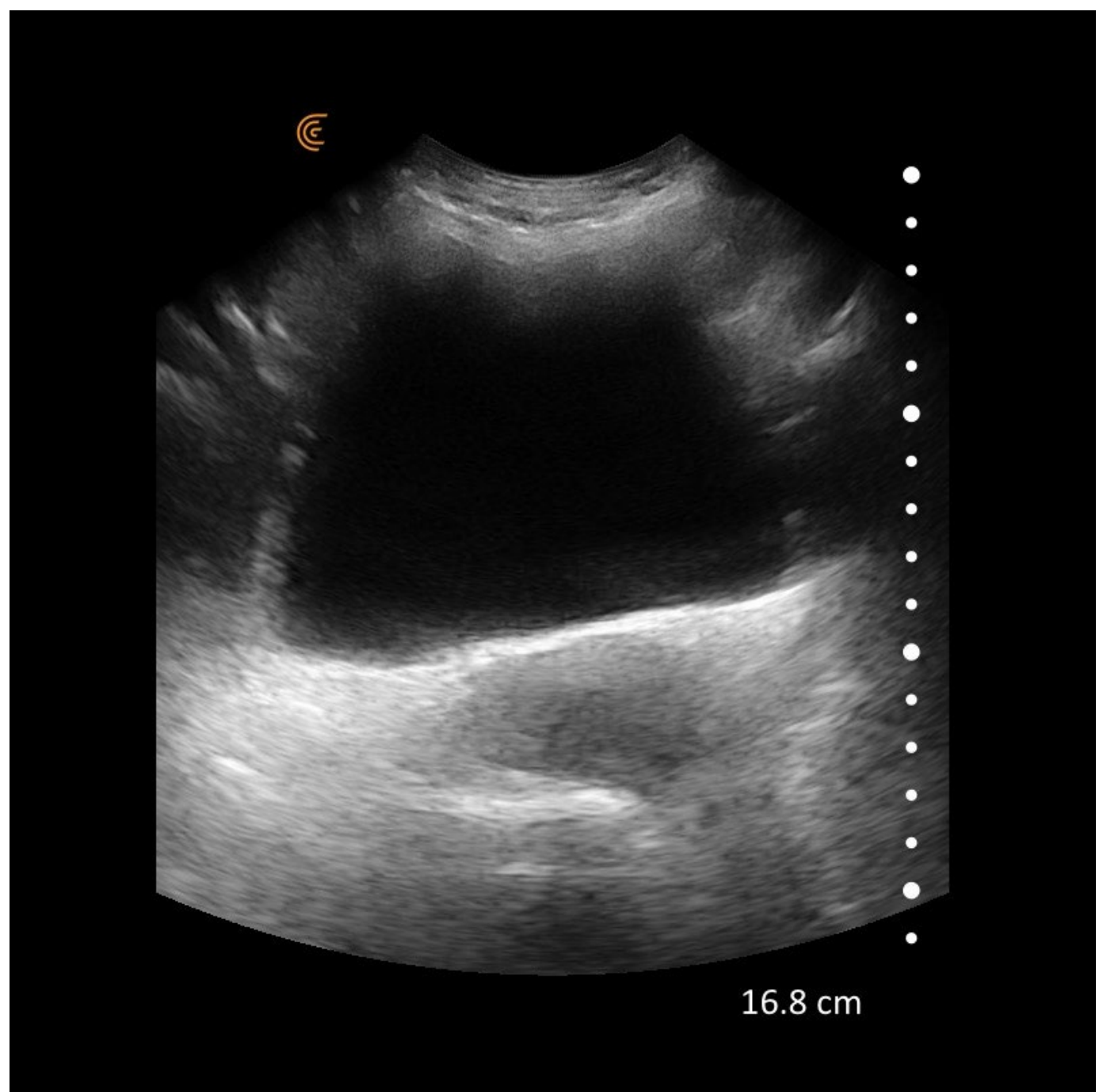
Image

-2

-3



POSTERIOR ACOUSTIC ENHANCEMENT



COMPRESSION TO DIFFERENTIATE LYMPH NODES





Original Contribution

The effect of bedside ultrasound on diagnosis and management of soft tissue infections in a pediatric ED ☆, ☆ ☆

**Katrina Iverson MD^{a,*}, Demetris Haritos MD^b, Ronald Thomas PhD^c,
Nirupama Kannikeswaran MD^d**

CASE #1:

35 y.o male

New onset, this morning, R leg swelling

No trauma, no insect bites, no DVT risk factors

Non-tender, not warm, mild erythema



UBC CPD
Medicine

CONTINUING
PROFESSIONAL
DEVELOPMENT





?CELLULITIS

WBC: 11.3

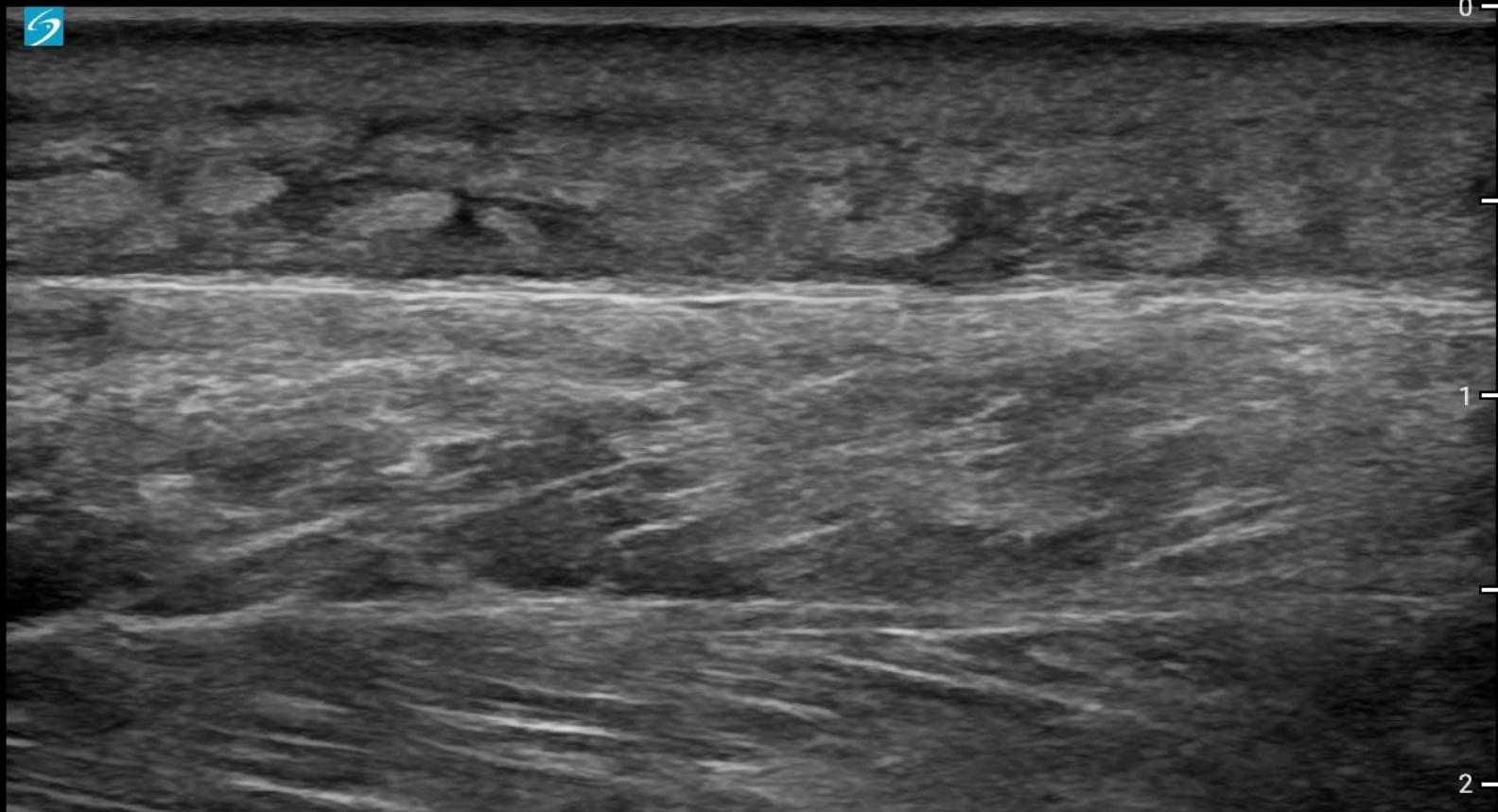
D-Dimer <500



UBC CPD
Medicine

CONTINUING
PROFESSIONAL
DEVELOPMENT





2.1 cm

Emerg
Elk Valley Hospital

L12-3
Superficial
MI: 1.3 TIS: 0.1

2D: G: 50
Res DR: 0
MB
THI

CASE#2

36 yo woman, 7 days postpartum
Erythema and pain in her R forearm
extending up to antecubital fossa



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT



3.2 cm

CASE#3

71yo male, Cirrhosis NYD

Present “localized swelling/redness”



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT



© 2009 VisualDx



NECROTIZING FASCIITIS

It's hard to diagnose: CT 80% sensitive

High Mortality

Hallmark: pain out of proportion with findings
+ fever



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

“STAFF”

Subcutaneous irregularity or Thickening, Air and Fascial Fluid

Proposed by Castleburg 2014, Validate Lineham 2022

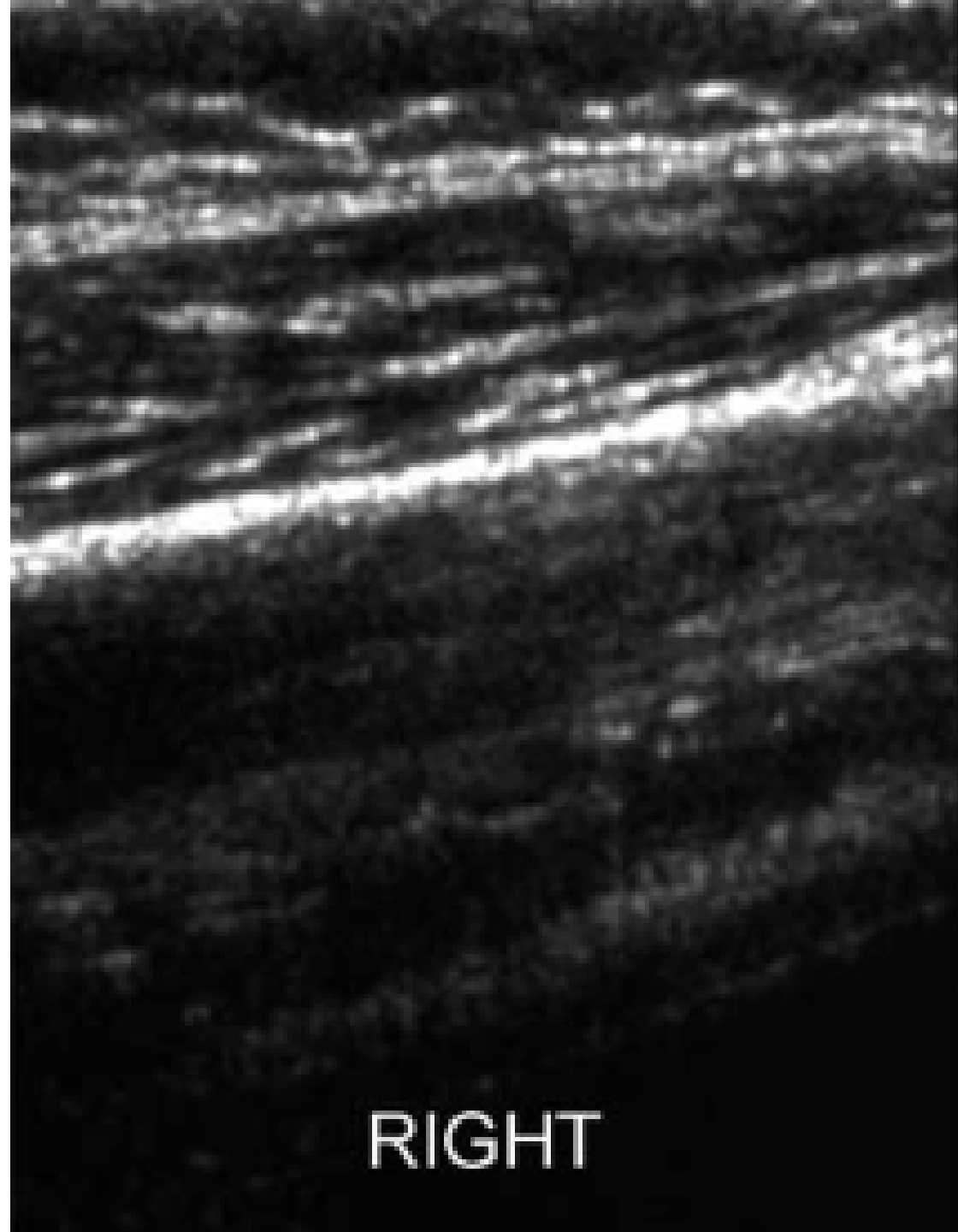


UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT









RIGHT



LEFT

	Patients	Diagnostic criteria	Gold standard	Sensitivity	Specificity
Yen 2002 PMID: 12460854	62	Diffuse thickening of the subcutaneous tissue accompanied by a layer of fluid accumulation more than 4 millimeters in depth along the deep layer	Surgical findings	88.2%	93.3%
Lanham 2021 PMID: 34837886	64	Presence of thickened fascial planes with fluid accumulation in the facial layers, distortion of facial planes and presence of subcutaneous gas with dirty shadowing	CT scan or surgical consult	100%	98.2%



Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem



Ultrasound for the diagnosis of necrotizing fasciitis: A systematic review of the literature



Amy Marks, MD^{*}, Daven Patel, MD, Tina Sundaram, MD, Jordan Johnson, DO, Michael Gottlieb, MD

Department of Emergency Medicine, Rush University Medical Center, Chicago, IL, United States of America

ORIGINAL ARTICLE



POINT-OF-CARE ULTRASOUND IN THE EARLY DIAGNOSIS OF NECROTIZING FASCIITIS

DOI: 10.36740/WLek202210129

Ihor V. Stoianovskyi¹, Sergii D. Khimich², Orest M. Chemerys¹

¹DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY, LVIV, UKRAINE

²NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY, VINNYTSIA, UKRAINE

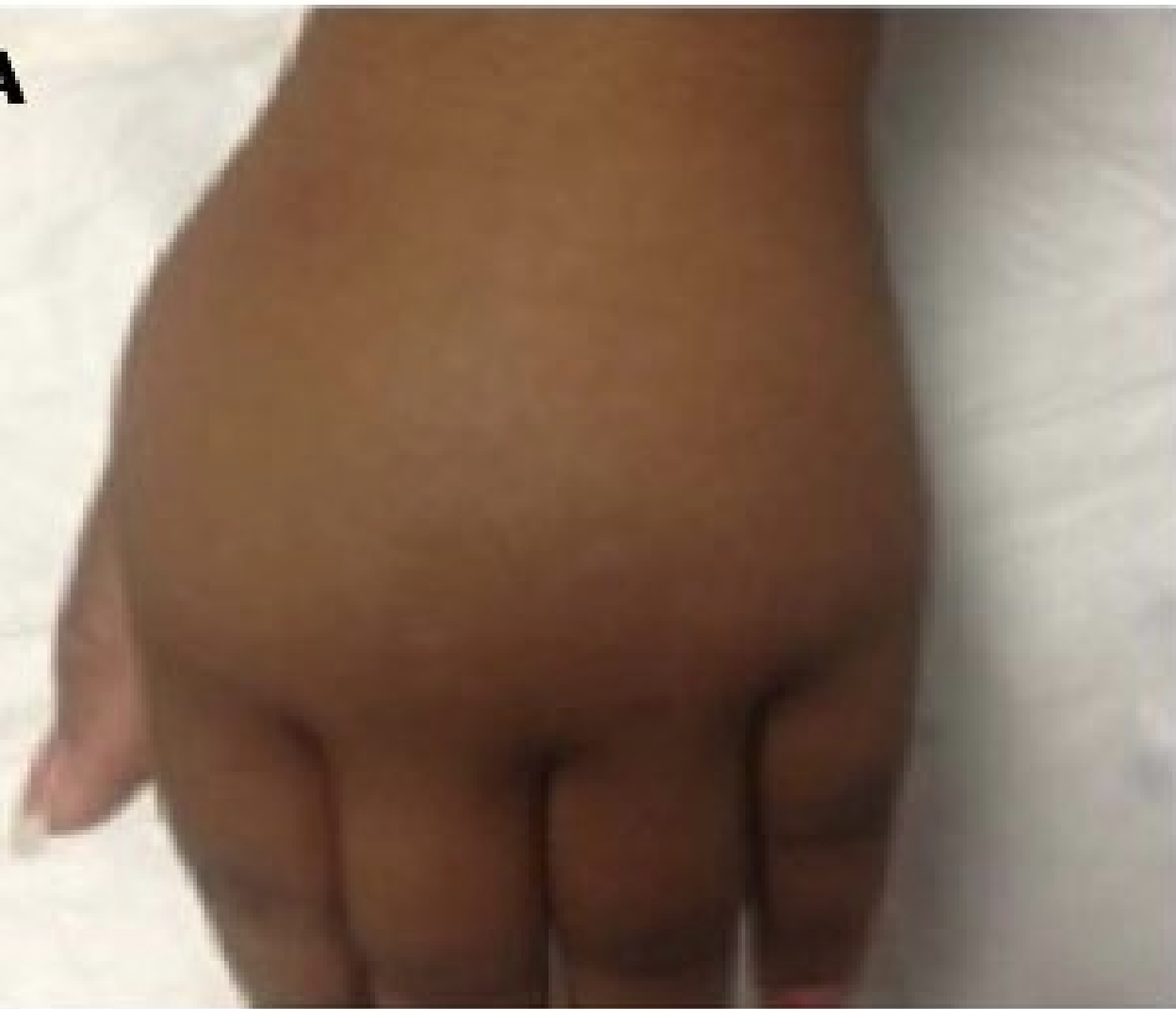


Point-of-Care Ultrasound on Management of Cellulitis Versus Local Angioedema in the Pediatric Emergency Department

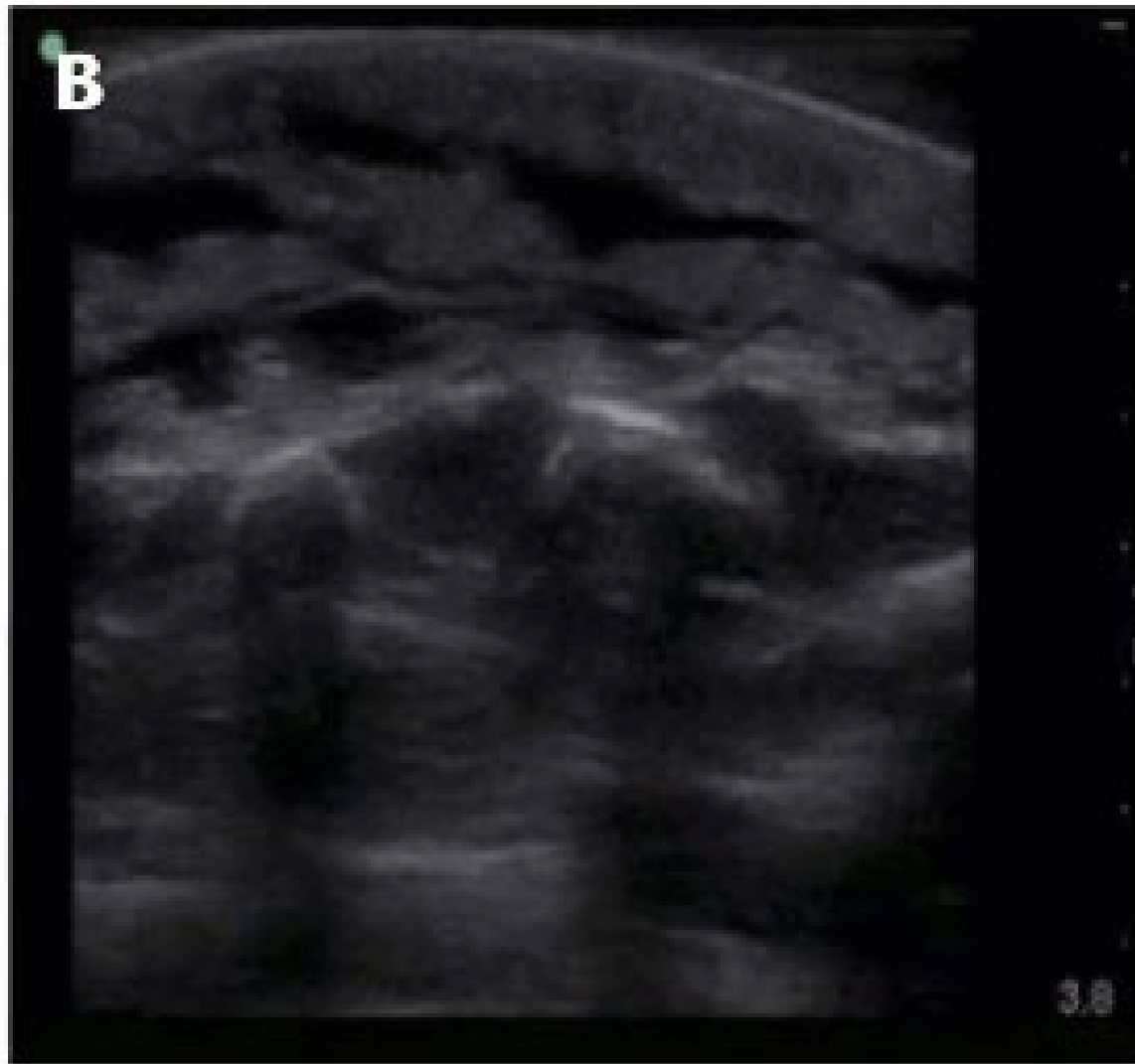
Ee Tein Tay, MD, Ka Ming Ngai, MD, MPH,† James W. Tsung, MD, MPH,‡ and Jennifer E. Sanders, MD‡*

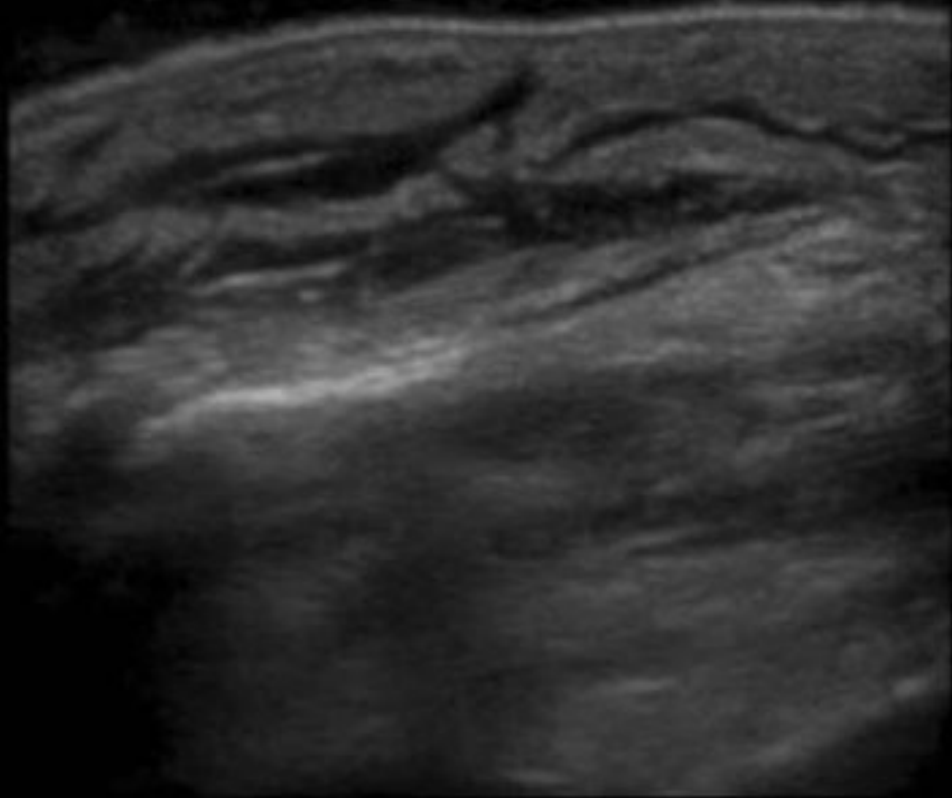
Pediatric Emergency Care • Volume 38, Number 2, February 2022

A



B

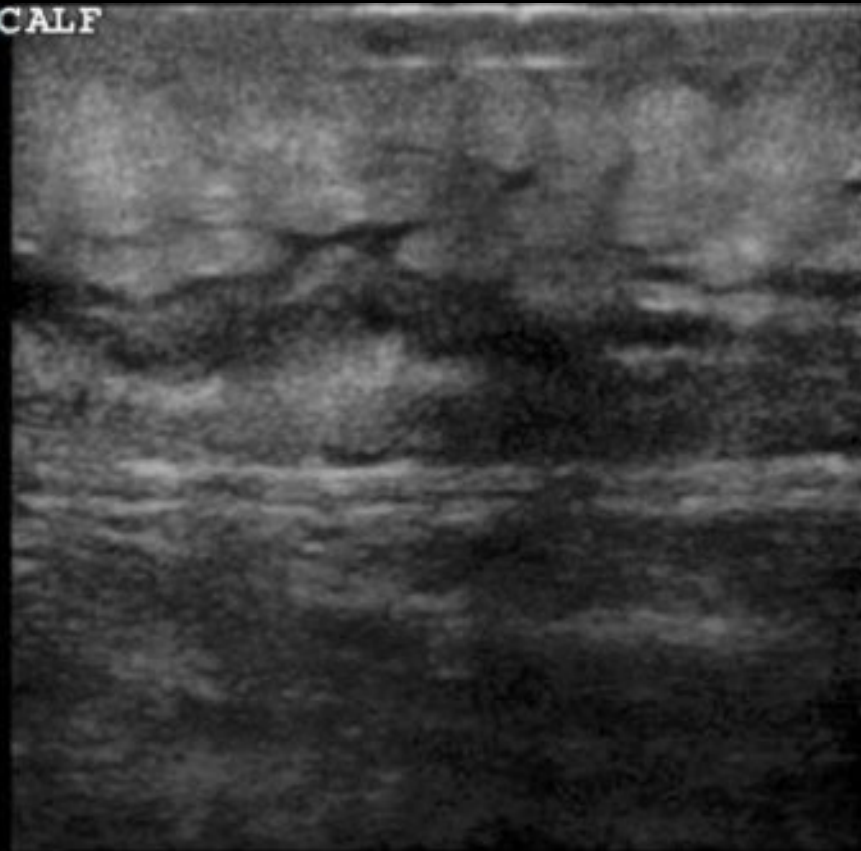




Angioedema

3.8

R CALF



Cobblestoning =cellulitis

3.8

FOREIGN BODIES



UBC CPD
Medicine

CONTINUING
PROFESSIONAL
DEVELOPMENT

p



SAG LT HAND

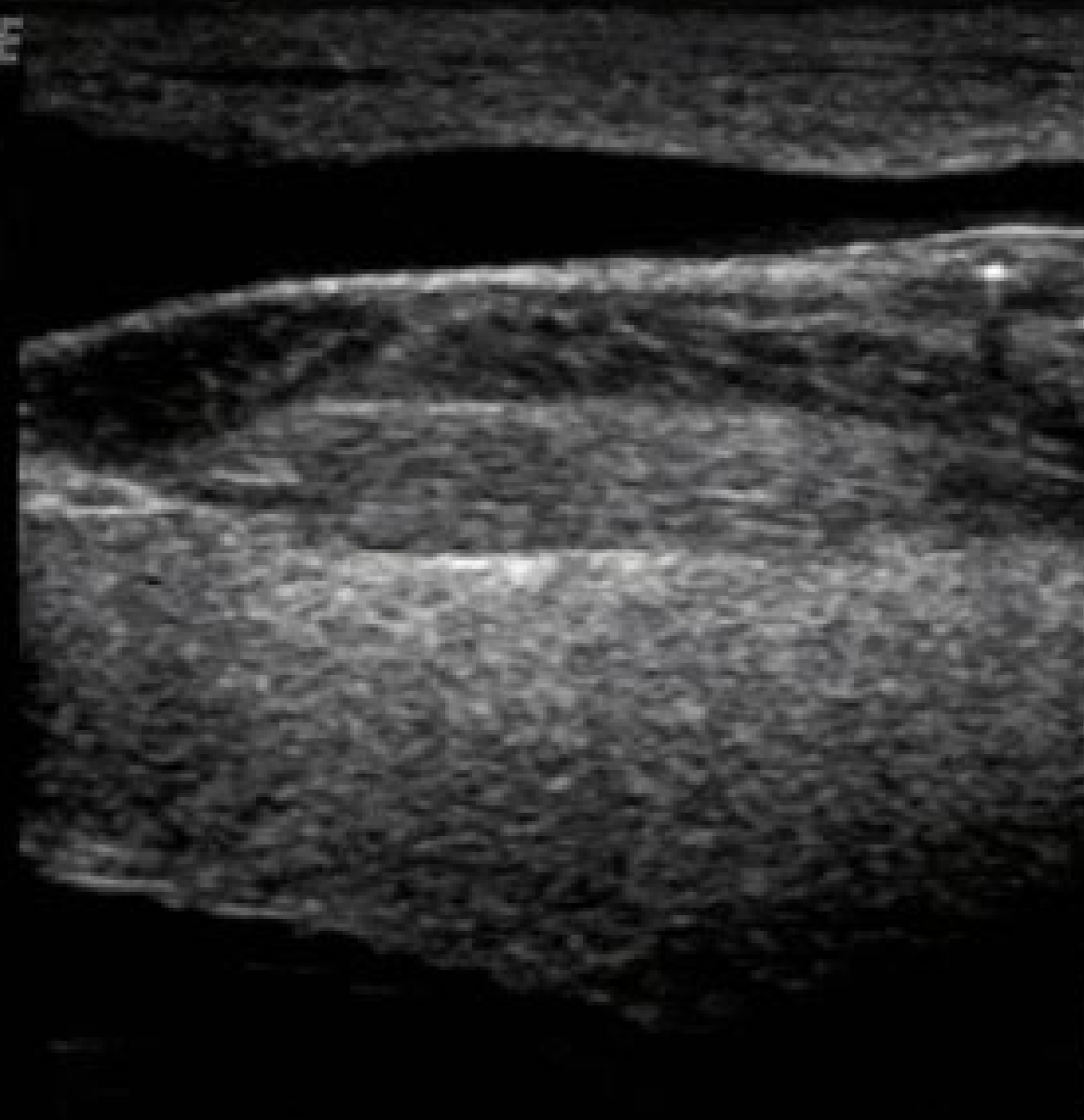
saith Medical Center

P80

11MHz

LA3

GE



55
00

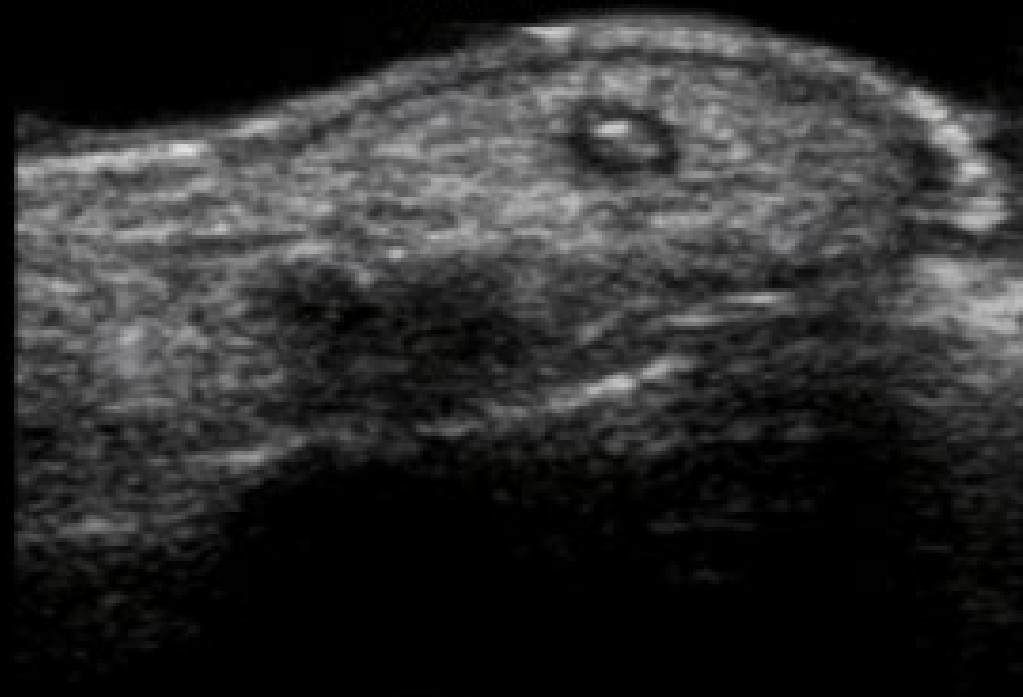







GE

WOOD FB_



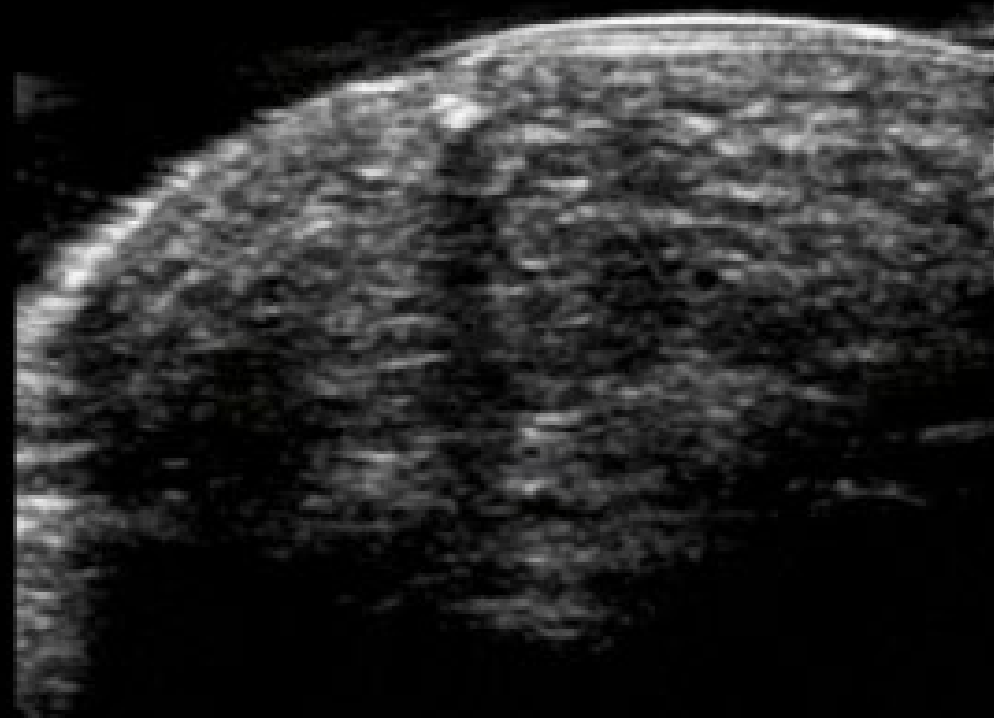
27
80

MI=1 

Health Medical Center

GE

WOOD FB



16
00

M1=1 

FOREIGN BODIES

- LOOK IN TWO PLANES
- DON'T FORGET THE WATER BATH FOR EXTREMITIES
- WOOD AND GLASS WILL SHADOW
- METAL WILL SHOW REVERBERATION ARTEFACT



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

KEY POINTS FOR SSTI POCUS:

- Use a linear, high frequency probe
- Look in two planes
- Compare with the other side
- Use colour doppler to differentiate vessels
- Use compression to differentiate a LN
- Don't forget the water bath for extremities
- Archive your Images!!



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

REFERENCES

1. Point of Care Ultrasound in the Diagnosis of Necrotizing Fasciitis. Gan, R et al. Journal of Ultrasound.. January 2023
2. Distinguishing Cellulitis from it's mimics. Garcia et al. Infectious Disease Clinics North America. 35(2021). 61-79
3. Prevalence of Misdiagnosis of cellulitis. Cutler et al.
4. Core Ultrasound. Jacob Avilla. 5 Minute Sono. "Necrotizing Fasciitis"
5. The effect of bedside ultrasound on diagnosis and management of soft tissue infections in paediatrics. Iverson
6. Ultrasound for the diagnosis of necrotizing fasciitis. A systemic review of the literature. Marks, A et al. American Journal of Emergency Medicine
7. The use of ultrasonography in the diagnosis of necrotizing fasciitis. Gan et al. Journal of Ultrasound
8. Point of care ultrasound in the early diagnosis of necrotizing fasciitis. Stoainovisky.
9. Point of care ultrasound on management of cellulitis vs. local angioedema in the pediatric emergency department. Tay et al. Pediatric Emergency Medicine Journal.





THE UNIVERSITY OF BRITISH COLUMBIA

Continuing Professional Development

Faculty of Medicine

THE UNIVERSITY OF BRITISH

CASE #1 Q&A

POST YOUR QUESTIONS IN THE CHATBOX



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT



TIPS & TRICKS

- Scan the entire area in perpendicular planes
- Visualize all borders
- Colour doppler
- Look for FB
- Look for air and fascial plane fluid
- Nec fas - "STAFF", but cannot rule out

SickKids

Lianne McLean

virginia robin...

Michelle Lee

Gili soffer

Dani Holmes

Joel Gupta

POLL QUESTION



UBC CPD
Medicine

CONTINUING
PROFESSIONAL
DEVELOPMENT





UBC CPD
Medicine

**CONTINUING
PROFESSIONAL
DEVELOPMENT**

CASE #1 KEY TAKEAWAYS



UBC CPD
Medicine

CONTINUING
PROFESSIONAL
DEVELOPMENT