

CARDIOLOGY
2025 

Challenging Cases:
Lessons from
Lymphatics:
A Case of
Chylopericardium

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Saturday, February 22, 2025



HOPE. HEAL. LEARN.



DISCLOSURES

- None

LYMPHATICS?



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IN THE NEWS...



Brazilian Lymphatic Drainage



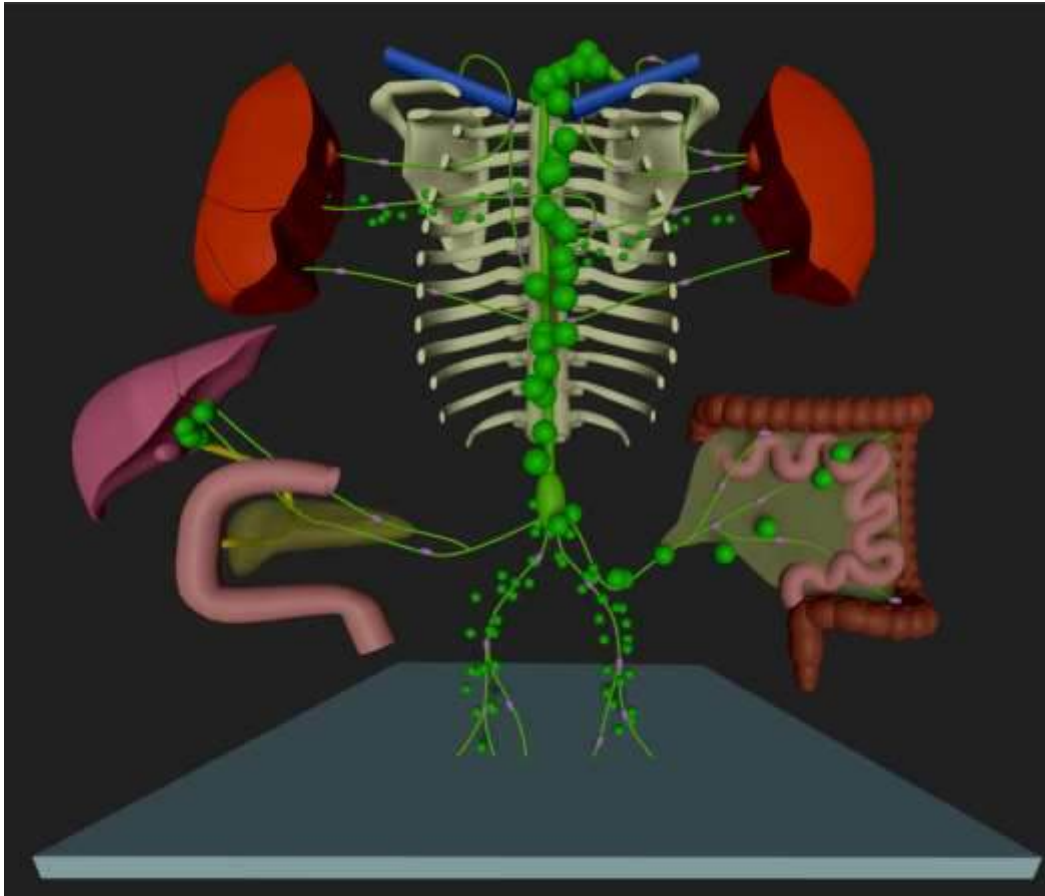
Key Benefits

- Reduce scar tissue
- Boost your immune system
- Prevent acne & breakouts
- Combat fine lines & premature aging
- Minimize dark circles & puffiness



supermodel-worthy glow.

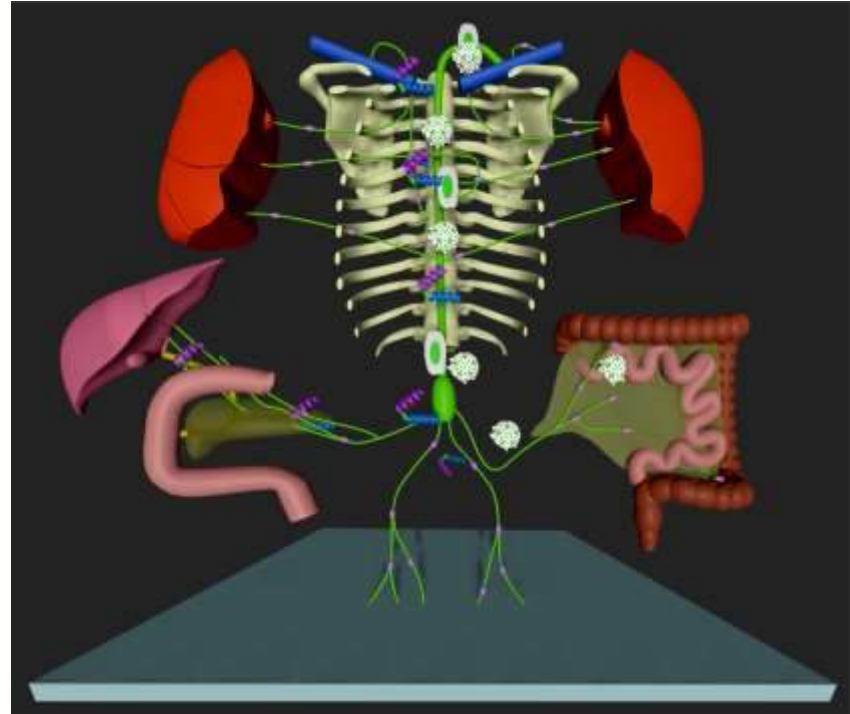
LYMPHATIC SYSTEM 101



WHAT EXACTLY IS IN LYMPHATIC FLUID?

Lymph contains a variety of substances:

- Proteins
- Salts
- Glucose
- Fats
- Water
- White blood cells
- Coagulation factors
- Chylomicrons

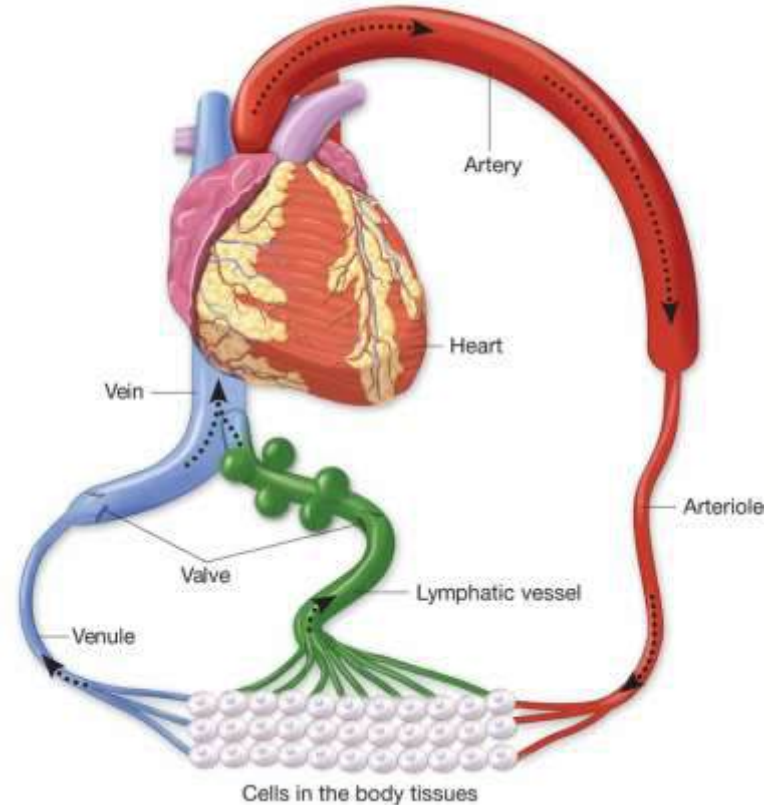


LYMPHATIC SYSTEM FUNCTIONS

Defense – key role in immune system

Transport - cells, fatty acids, protein, macromolecules

Circulatory - returns excess interstitial fluid to veins



CASE EXAMPLE

- 11yo male with a hx of tricuspid atresia, transposition of the great arteries, restrictive atrial septum and aortic arch hypoplasia s/p staged palliation, most recently s/p subaortic membrane resection, repair of mitral valve cleft, and epicardial lead placement with a hx of pleural effusions and now pericardial effusion.

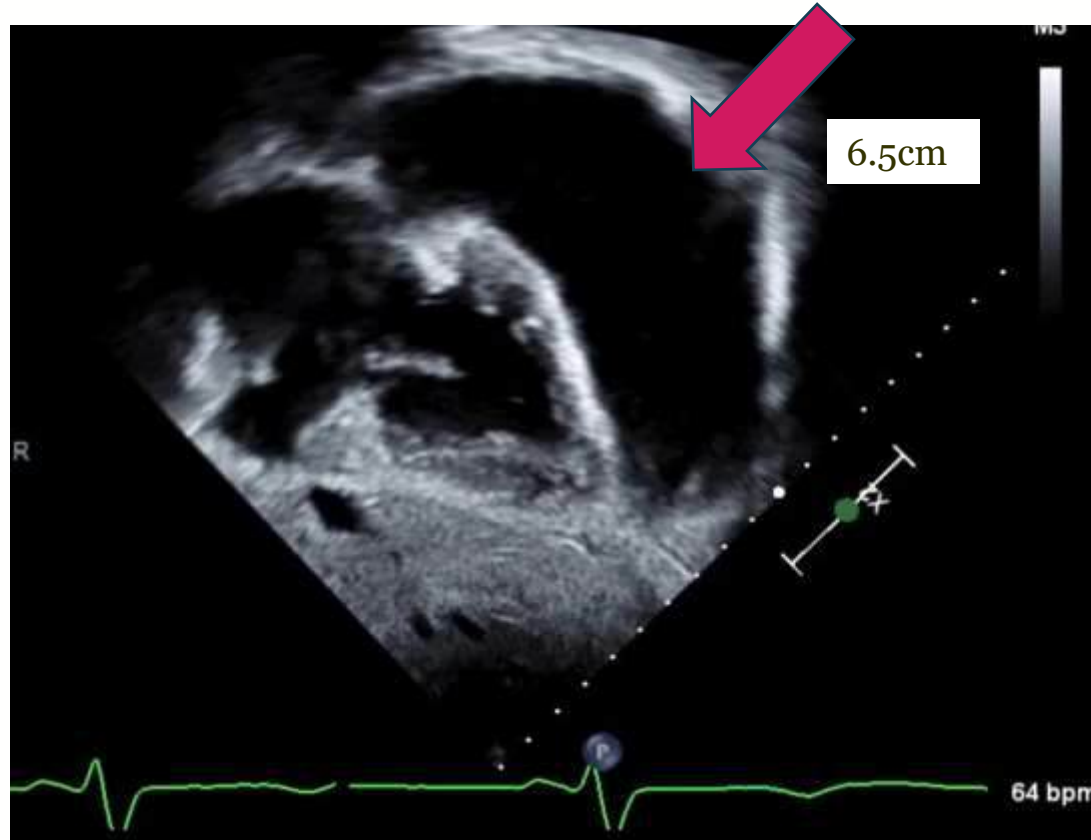
HPI

- s/p subaortic membrane resection, mitral cleft repair and placement of epicardial pacer lead
- ~2 months later had pericardial effusion noted on echo
- Sent to cath lab where pericardial drain was placed and >1L of chylous fluid was drained
- Lymphocytes 94% Triglycerides 133 (on low fat diet)
- Fontan hemodynamics slightly higher than in 2018 and started on sildenafil
- Started on Low-fat diet
- Started on colchicine trial for inflammation
- Significant weight loss and decreased appetite

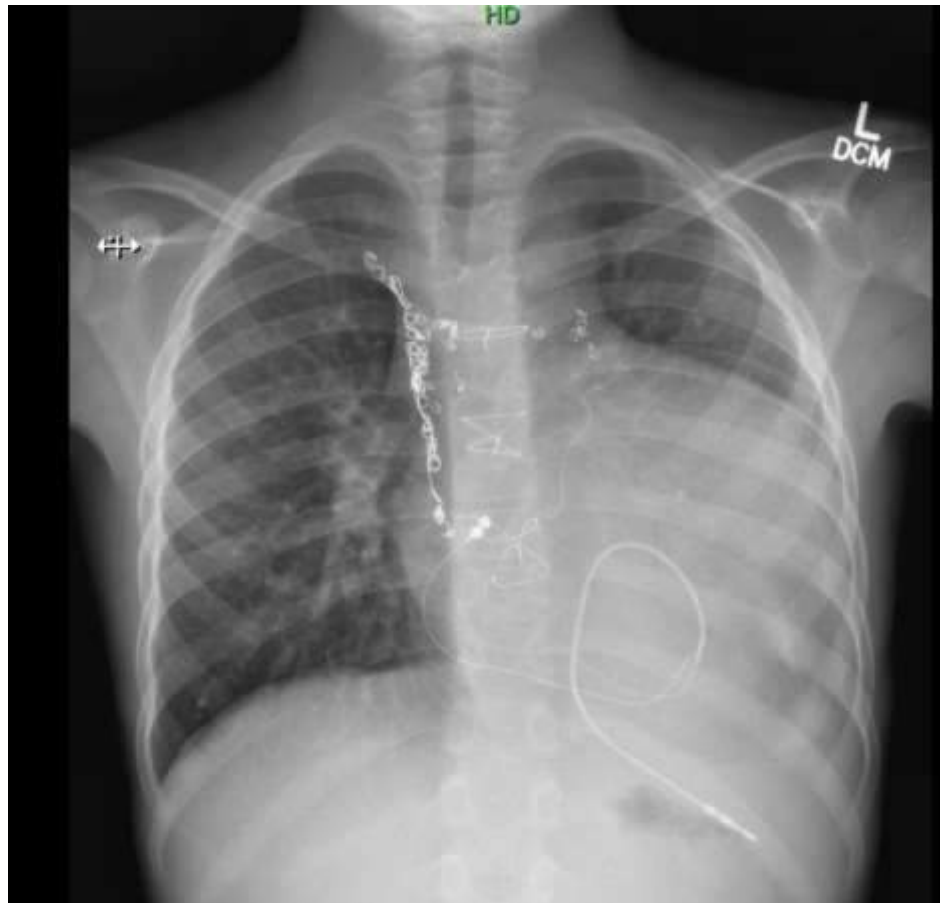
PRE-PROCEDURAL DATA

- Normal Serum Albumin @4.6
- BUN/Cr 12/0.58 (due to diuretics)
- Lasix 20mg BID
- Sildenafil 5mg TID
- Shortness of breath with exertion
- Cyanosis with exertion
- Lethargic
- Decreased appetite
- Weight loss
- Echo day before procedure with “very large pericardial effusion located predominantly apically and leftward; the effusion depth measures ~6.5cm and echocardiographic signs of early tamponade physiology with early diastolic compression of the systemic ventricle.”

ECHOCARDIOGRAM



CXR



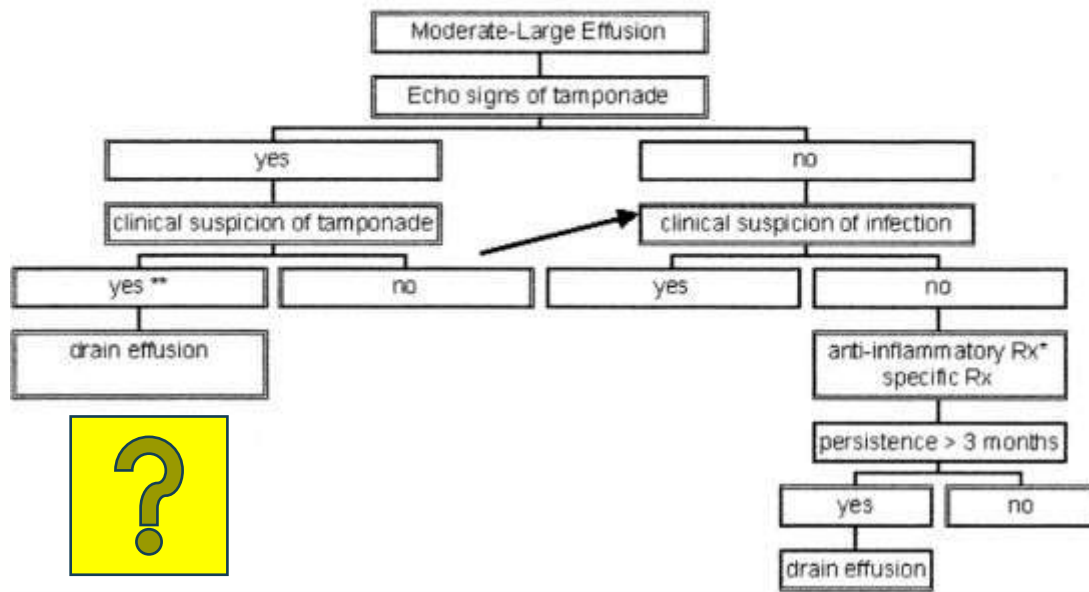
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PRE PROCEDURAL CATH DATA

- Fontan pressure 19 mmHg→17 mmHg (s/p 1L fluid removal)
- RVEDP 13 mmHg
- LPCWp 14 mmHg
- Sat 94%

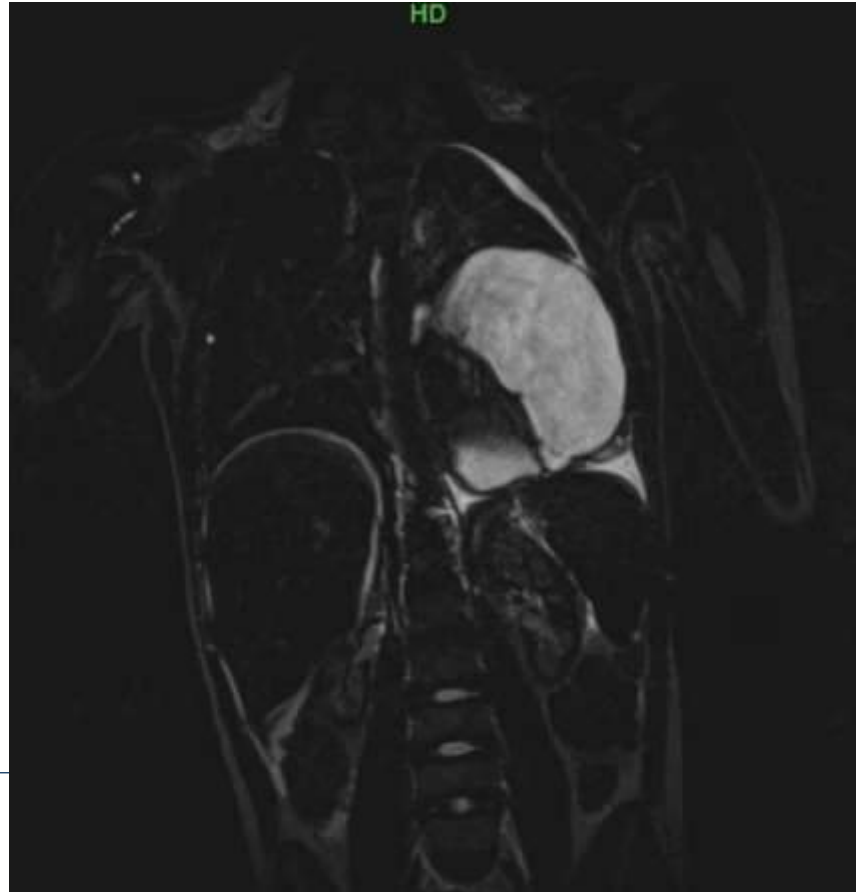
WHAT TO DO NEXT?

Management of Moderate-Large Pericardial Effusions

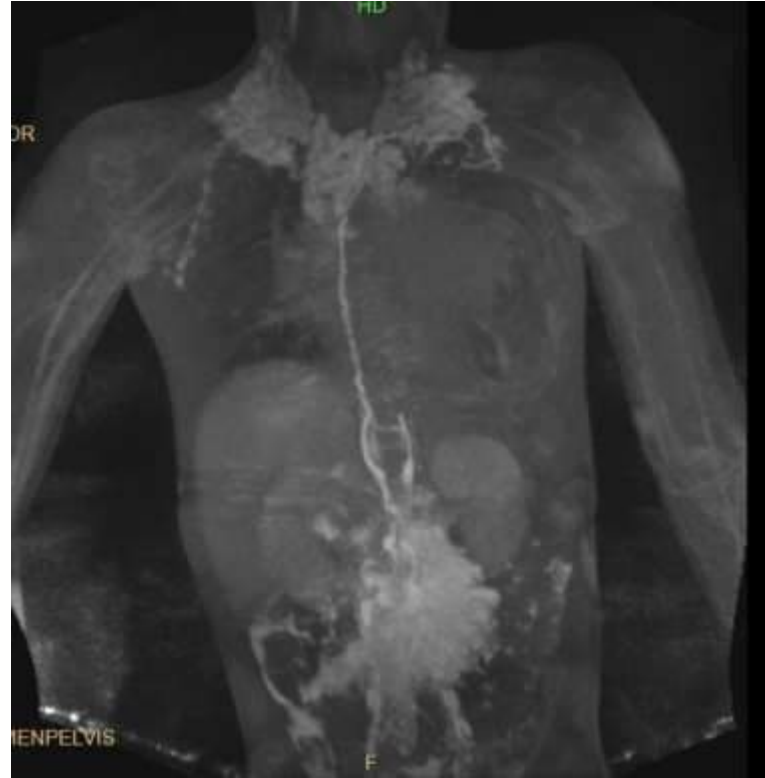
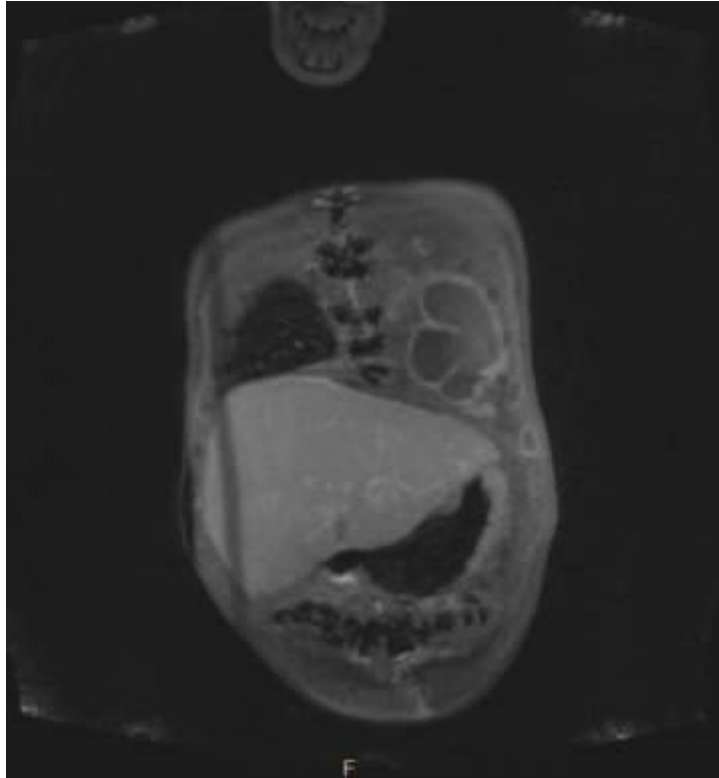


Algorithm for Management of Moderate to Large Pericardial Effusions, AHA (2002)

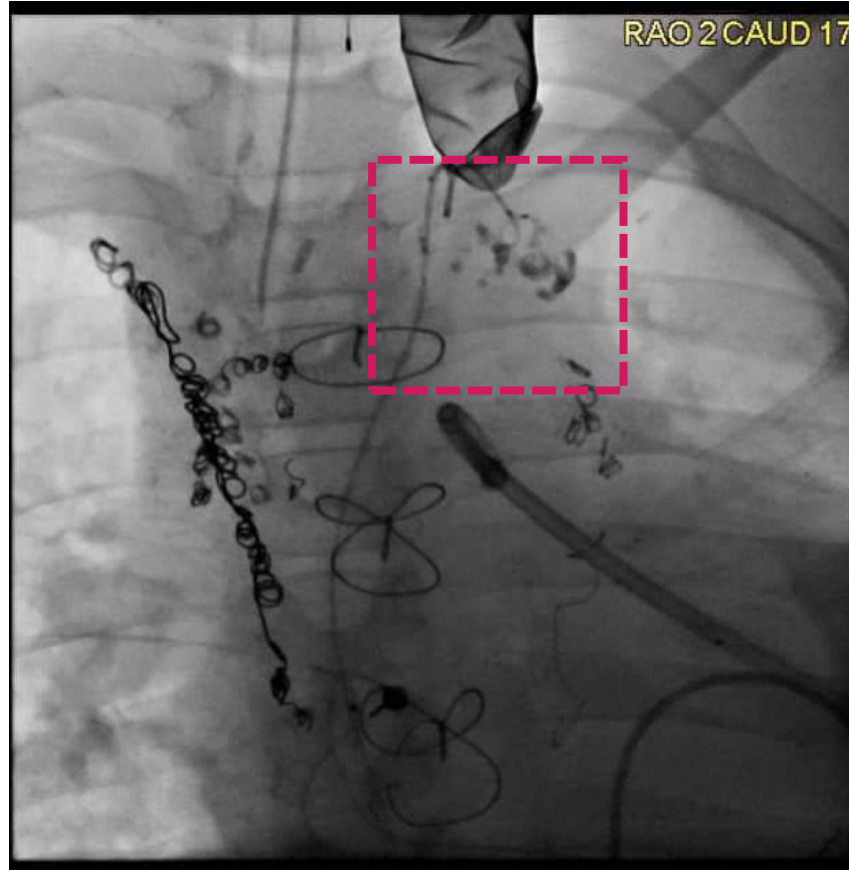
MR LYMPHANGIOGRAM-T2 SPACE



MR LYMPHANGIOGRAM-DCMRL



INTERVENTION PERFORMED: SELECTIVE LYMPHATIC CHANNEL EMBOLIZATION

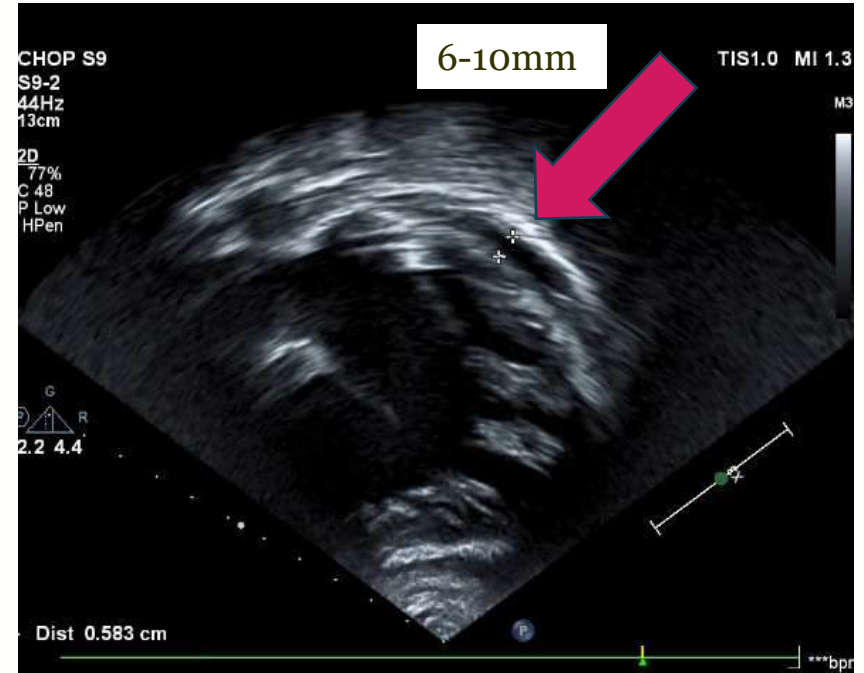


POST INTERVENTION COURSE

- 9 total days in the hospital s/p selective lymphatic channel embolization
- Pericardial drain clamped post procedure day #4
- Fat challenge with high fat food for 1 meal after clamping tube
- s/p Fat challenge cell count sent → Lymphocytes 28% and triglycerides 25
- Pericardial drain removed post procedure day #8



ECHO PRIOR TO DISCHARGE



CURRENT STATE (~3 YEARS LATER)

- Wrestling for school and went to states!
 - Running back for the football team and were undefeated and won Championship!
 - Enjoys hunting, fishing, snowboarding
 - Starting flag football soon also!
 - No recurrence of pericardial effusion on echo in 3+ years
 - Eating regular diet
 - Energy level back to baseline
 - No exertional dyspnea
 - No significant exertional desaturation
- BID Lasix
 - TIF on low dose with only mildly elevated with no clear clinical benefit
 - BID furo
 - Low fat diet

CURRENT STATE



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 Children's Hospital
of Philadelphia
Cardiac Center

TAKE HOME POINTS: PERICARDIAL EFFUSIONS

- The etiology of all pericardial effusions are not the same→initial work up may be similar
- Medical management first:
 - Anti-inflammatories (NSAIDs, colchicine)
 - Corticosteroids
 - Diuretics
 - Low fat diet
 - Intermittent pericardiocentesis—SEND FLUID FOR CELL COUNT & TRIGLYCERIDES
- Cardiac Catheterization to rule out any hemodynamic drivers for recurrent pericardial effusion
- Surgical intervention may be considered—pericardial window?
- T2 SPACE sequence on Cardiac MRI can be done without lymphatic interventionalists to assess for any obvious lymphatic abnormalities
- Refer out to a specialized lymphatic center for targeted lymphatic evaluation/intervention if fluid is lymphocytic and recurrent.

THANK YOU

- Dr. Yoav Dori
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- Diane Garofalo
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<https://www.chop.edu/centers-programs/jill-and-mark-fishman-center-lymphatic-disorders>

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