Milza

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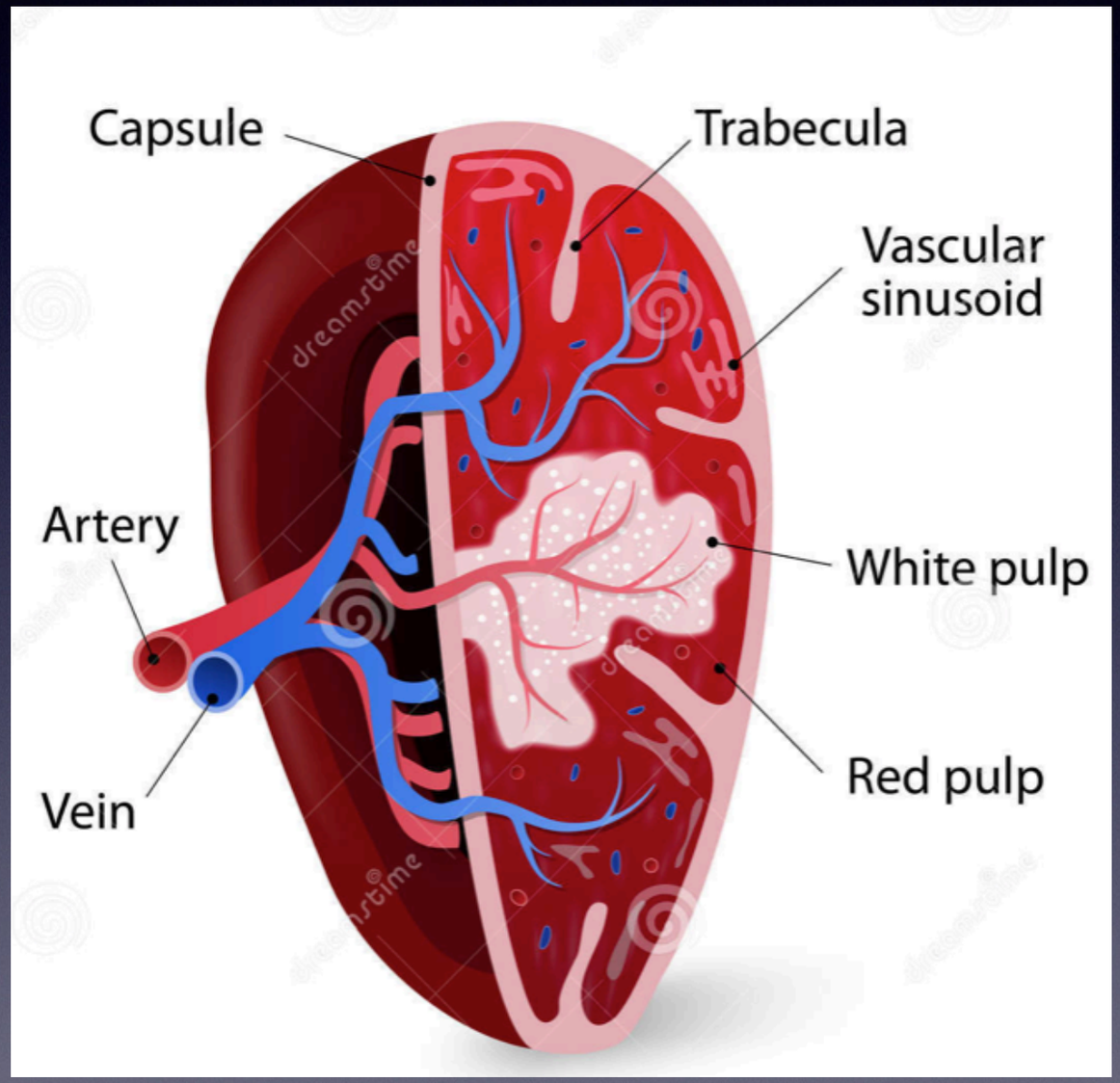
Milza: struttura

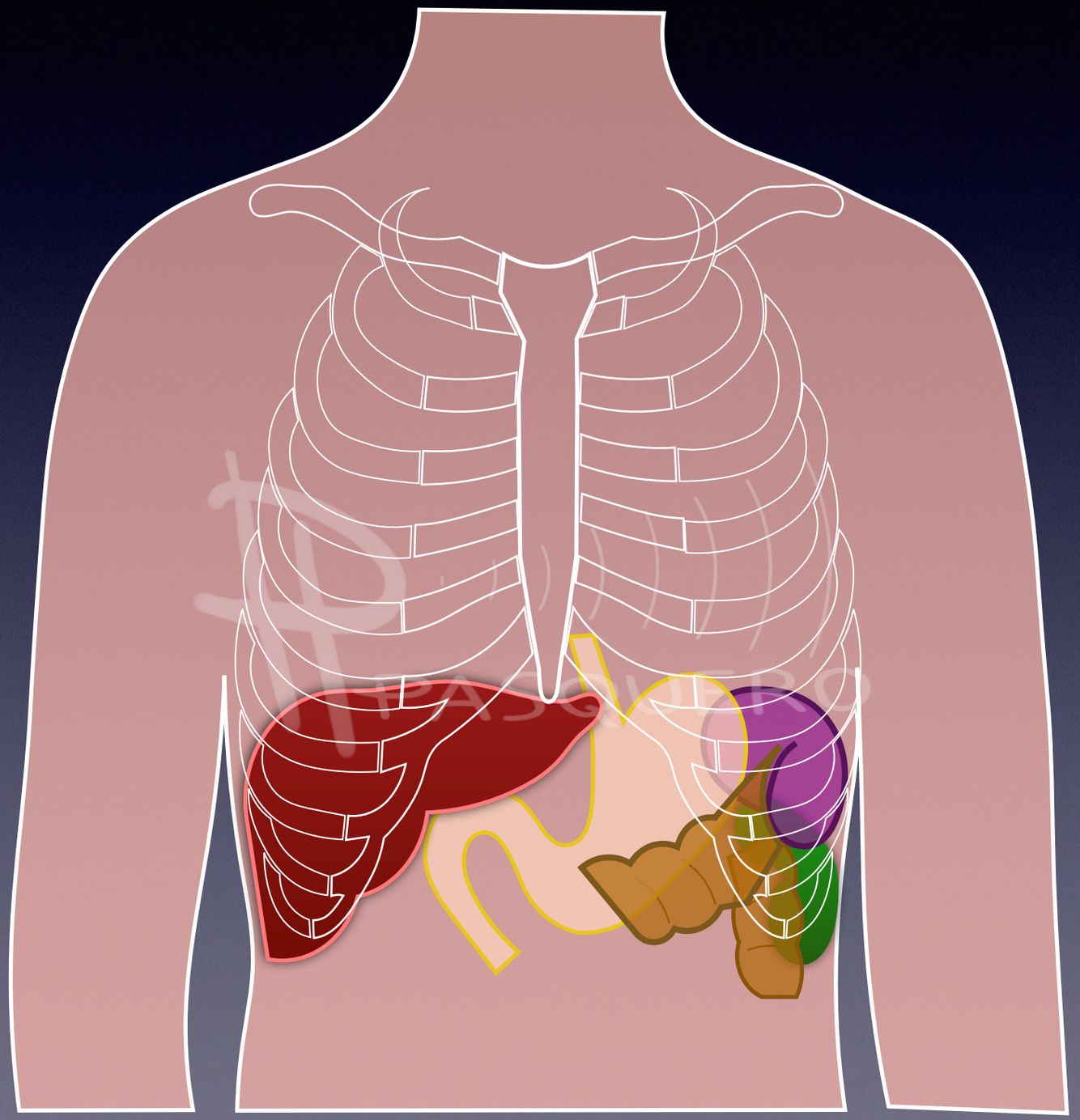
La **Polpa Bianca** appare di struttura circolare ed è costituita principalmente da linfociti T e B ed APC.
Funzione: immagazzinare linfociti e iniziare la risposta immunologica.

La **Polpa Rossa** circonda la Polpa Bianca e contiene principalmente RBC e macrofagi.
Funzione: fagocitare RBC senescenti.

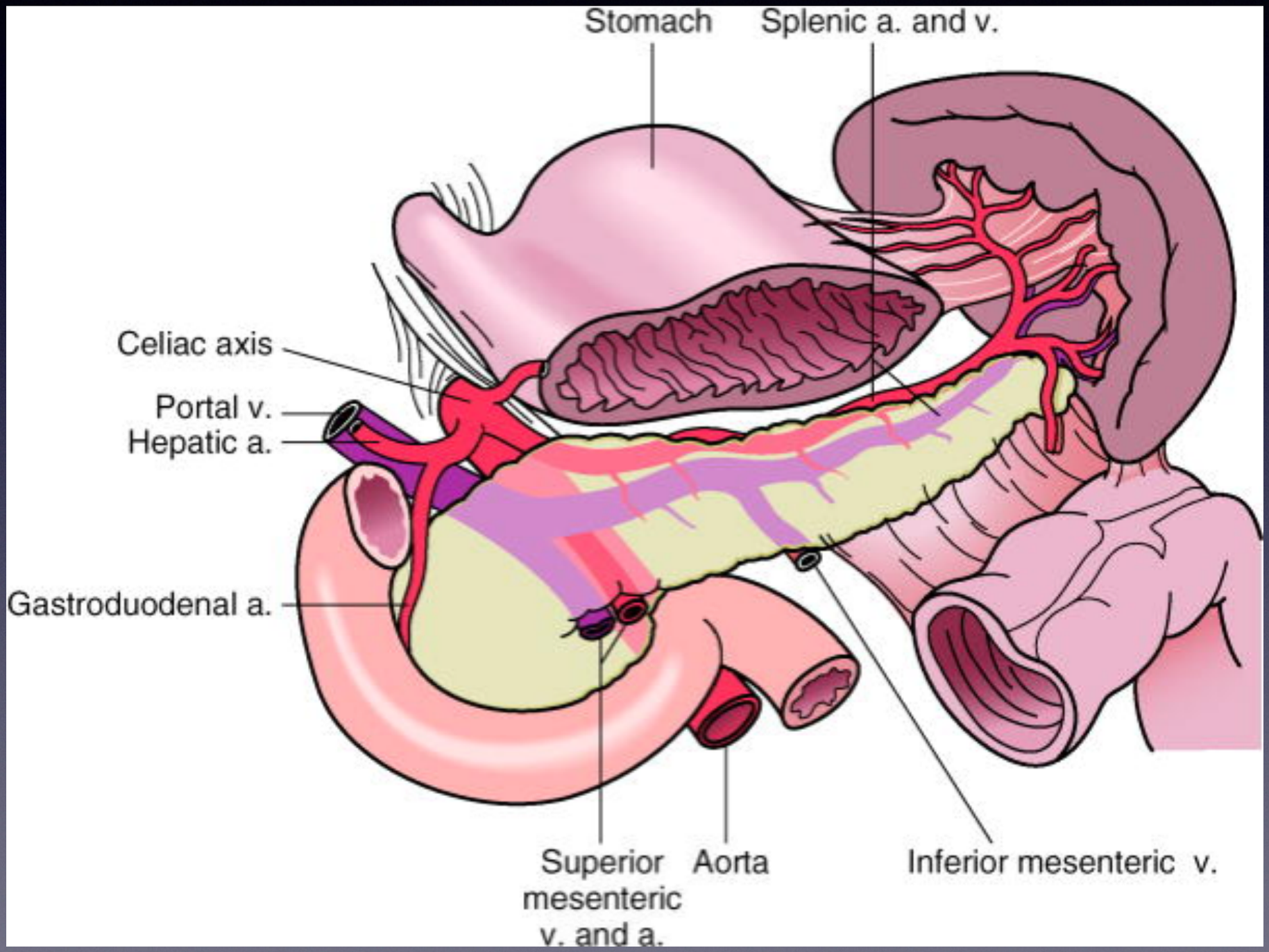


Milza: rapporti anatomici

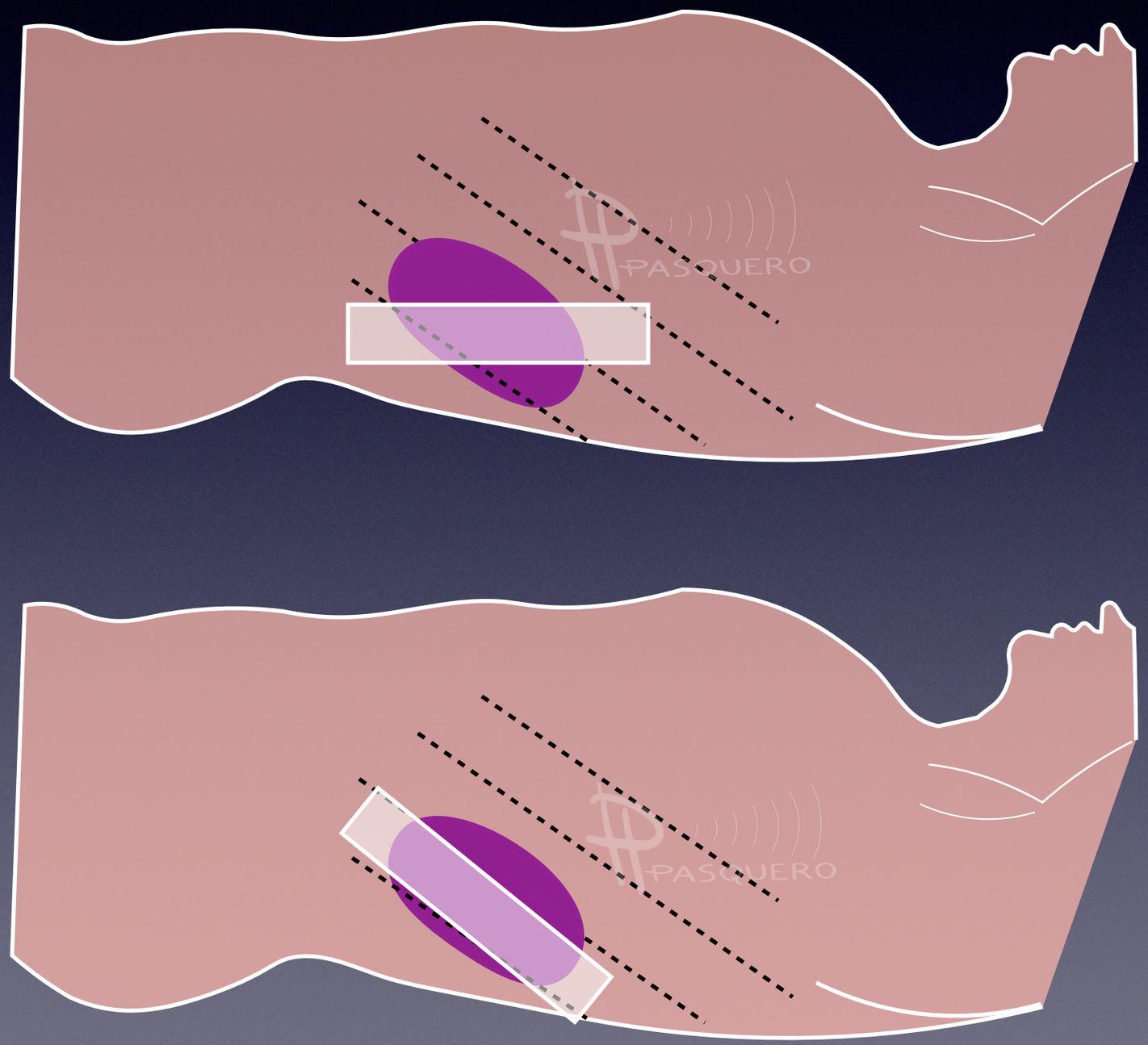
- emi-diaframma
- stomaco
- pancreas (coda)
- rene sx
- surrene sx
- flessura colica sx



Milza: rapporti anatomici



Milza: scansioni US



Coronali sx

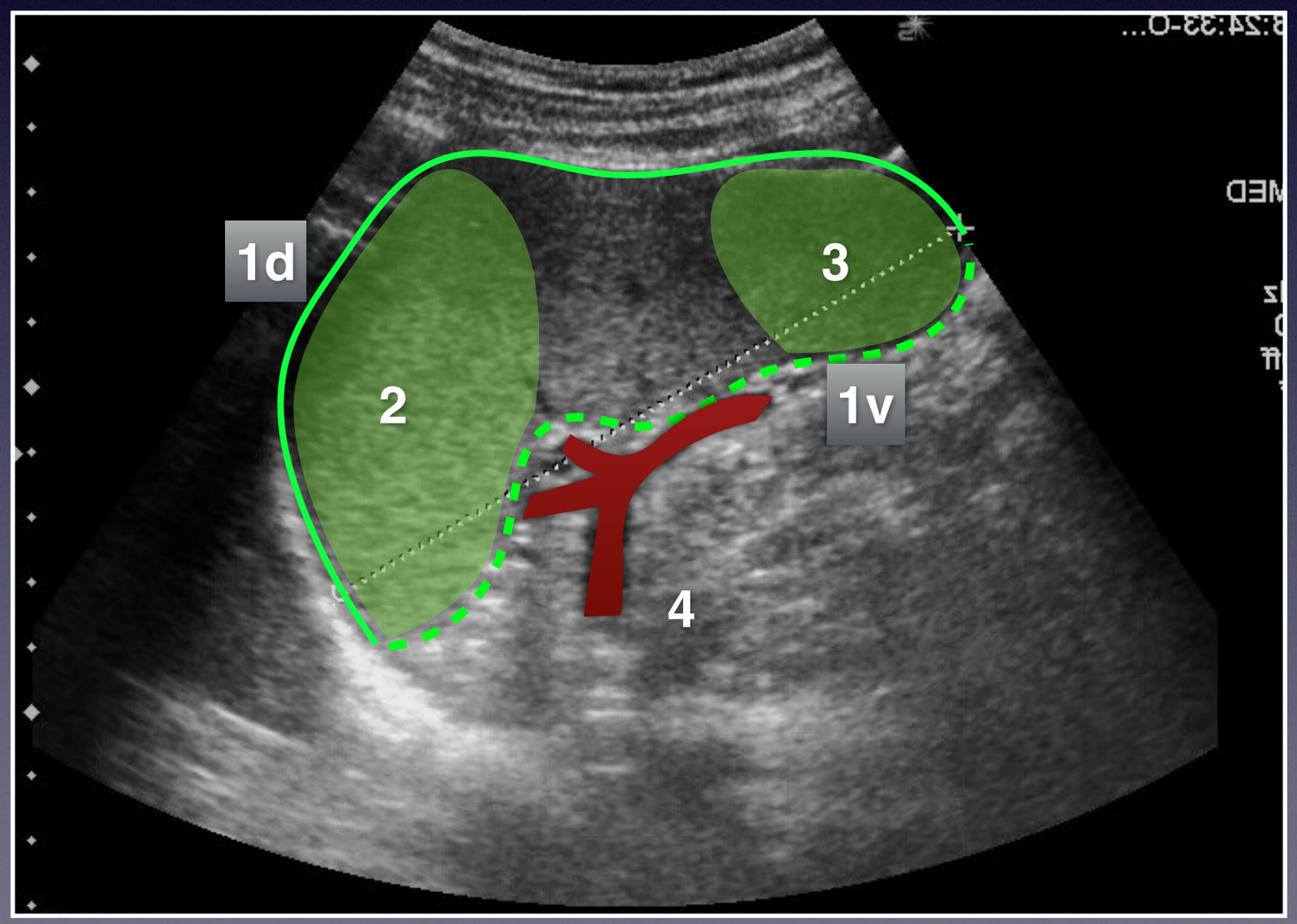
Oblique sx o
Intercostali sx

Milza: anatomia ecografica

- superficie viscerale e superficie diaframmatica
- polo superiore
- polo inferiore
- ilo vascolare

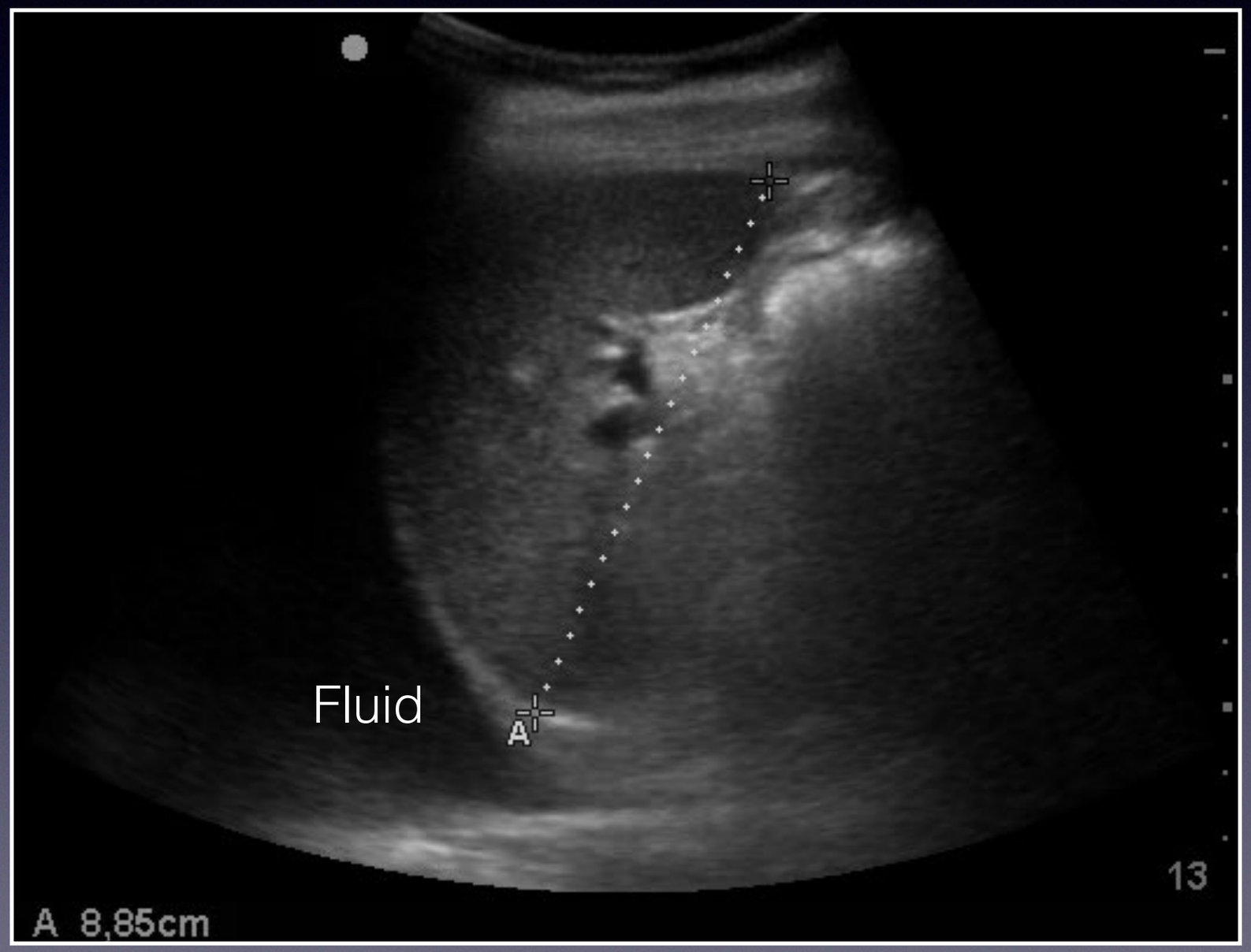
Milza: anatomia ecografica

1. superficie viscerale e superficie diaframmatica
2. polo superiore
3. polo inferiore
4. ilo vascolare



Milza & scavo pleurico

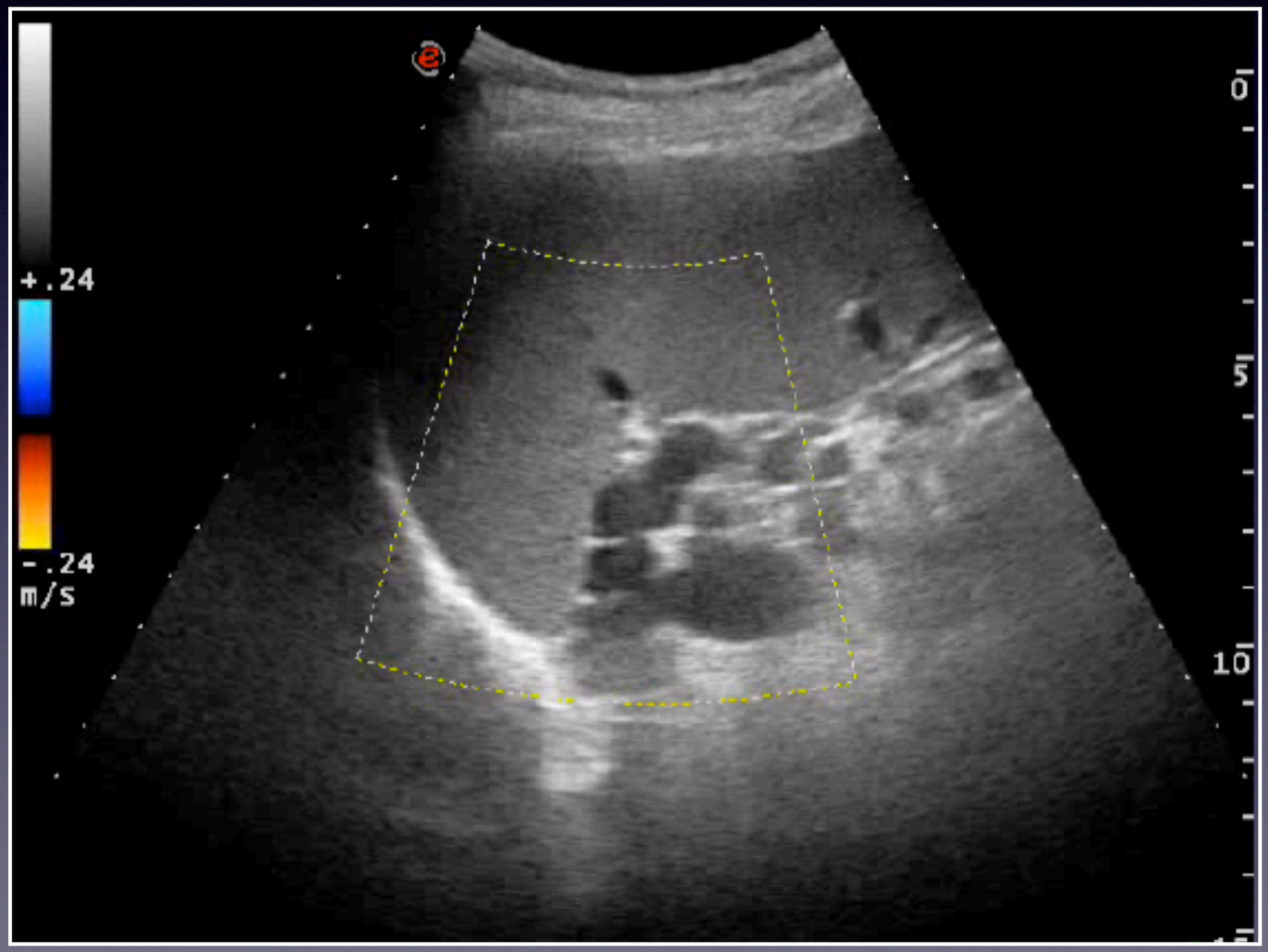
Milza & scavo pleurico



Milza & Rene

Milza: ilo e coda pancreatica

Milza: alterazioni ilo



Milza: obbiettivi esame US

- forma (a semiluna)
- dimensioni (diametro / volume)
- ecostruttura
- alterazioni / lesioni focali del parenchima
- masse e/o raccolte perispleniche

Milza: rapporti con le sierose

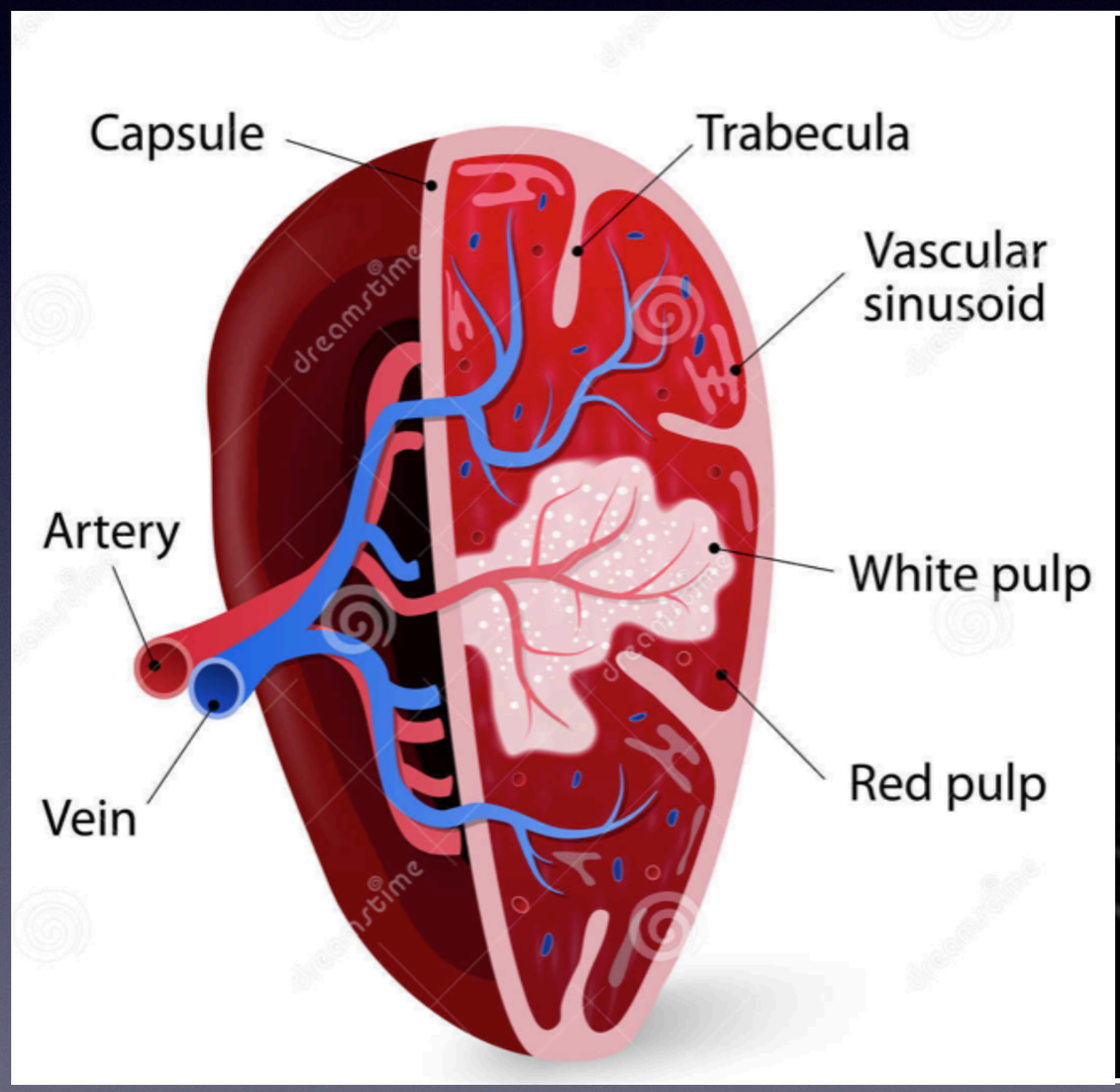
- sottodiaframmatico
- spazio spleno-renale
- scavo pleurico

Milza: alterazioni forma

- incisure
- bozze
- lobature

espressione di incomplete fusioni di noduli embrionali

Milza: struttura e US



Milza: struttura & CEUS

Pictorial essay

Med Ultrason 2014, Vol. 16, no. 1, 48-59
DOI: 10.11152/mu.2014.2066.161.lc1mz2

Ultrasonography of the spleen. Pictorial essay.

Liliana Chiorean[1], Mihnea Zdrenghea[2], Radu Badea[3]

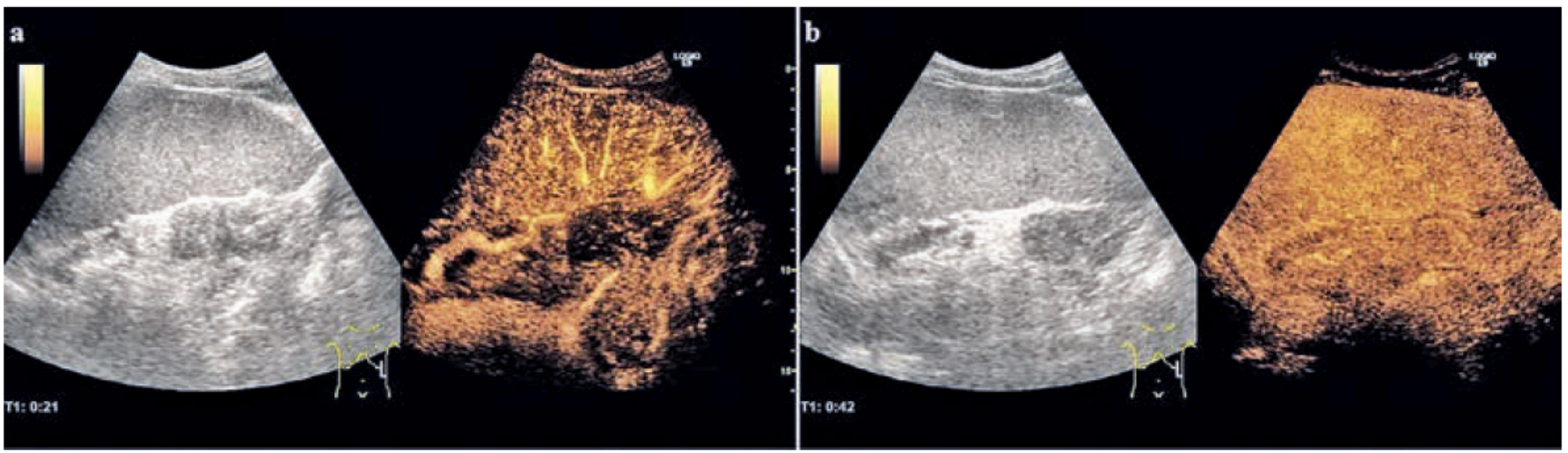


Fig 1. Gray-scale and CEUS of the spleen (dual examination): a) arterial time (at 21 seconds after contrast agent administration) – the arterial splenic vessels are seen; b) portal time (42 seconds), the splenic parenchyma becomes homogenously enhanced (also called the parenchymal time).

Milza: anomalie congenite

- agenesia
- milza accessoria (circa il 10-25%)
- milza ectopica e/o migrante
- polisplenia

Milza accessoria

- 10-25% della popolazione
- superficie ventrale
- diametro < 25 mm
- ecostruttura = milza
- DD: linfonodi, neoplasie, surreni, coda pancreas
- conferma alla CEUS

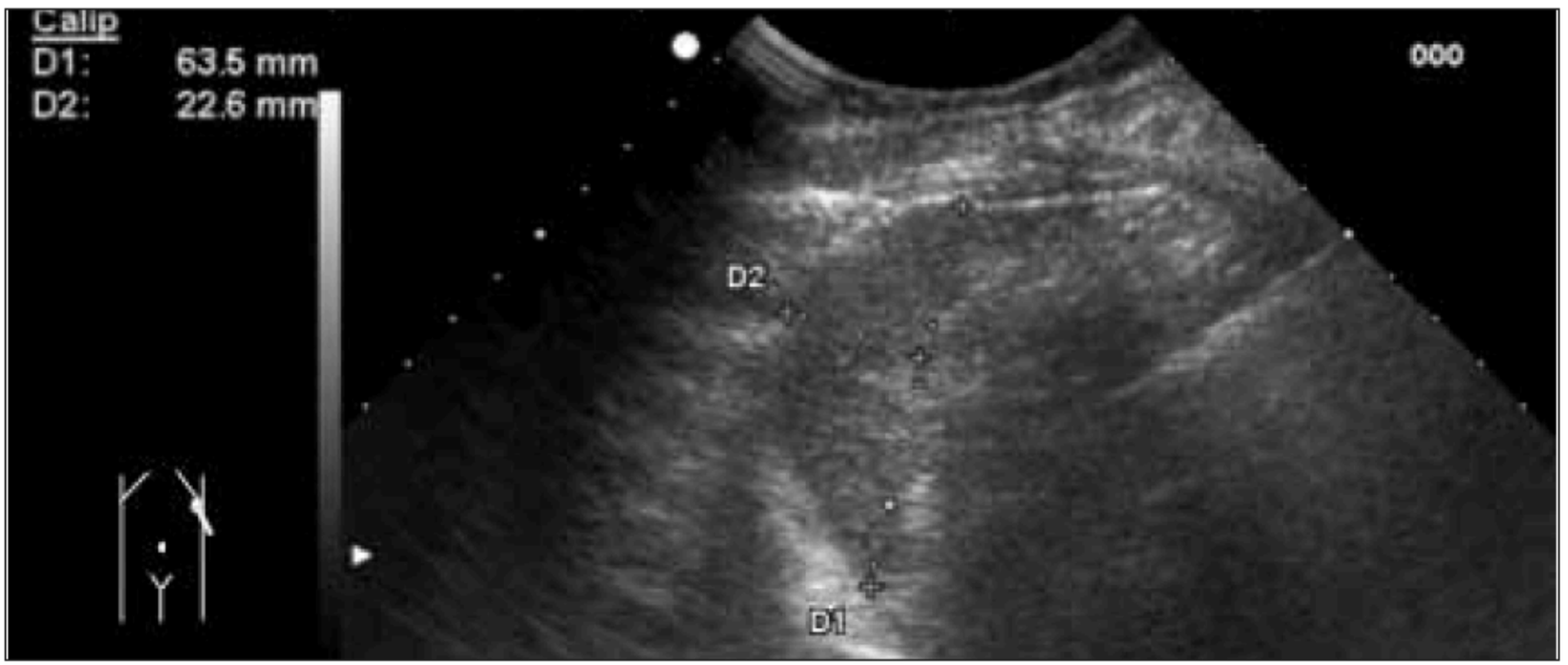
Milza ectopica e/o migrante

- lungo peduncolo vascolare ed insufficienza legamento gastro-splenico e lieno-renale

Milza: alterazioni volume

- splenomegalia
- iposplenia (bassa correlazione clinica / US)

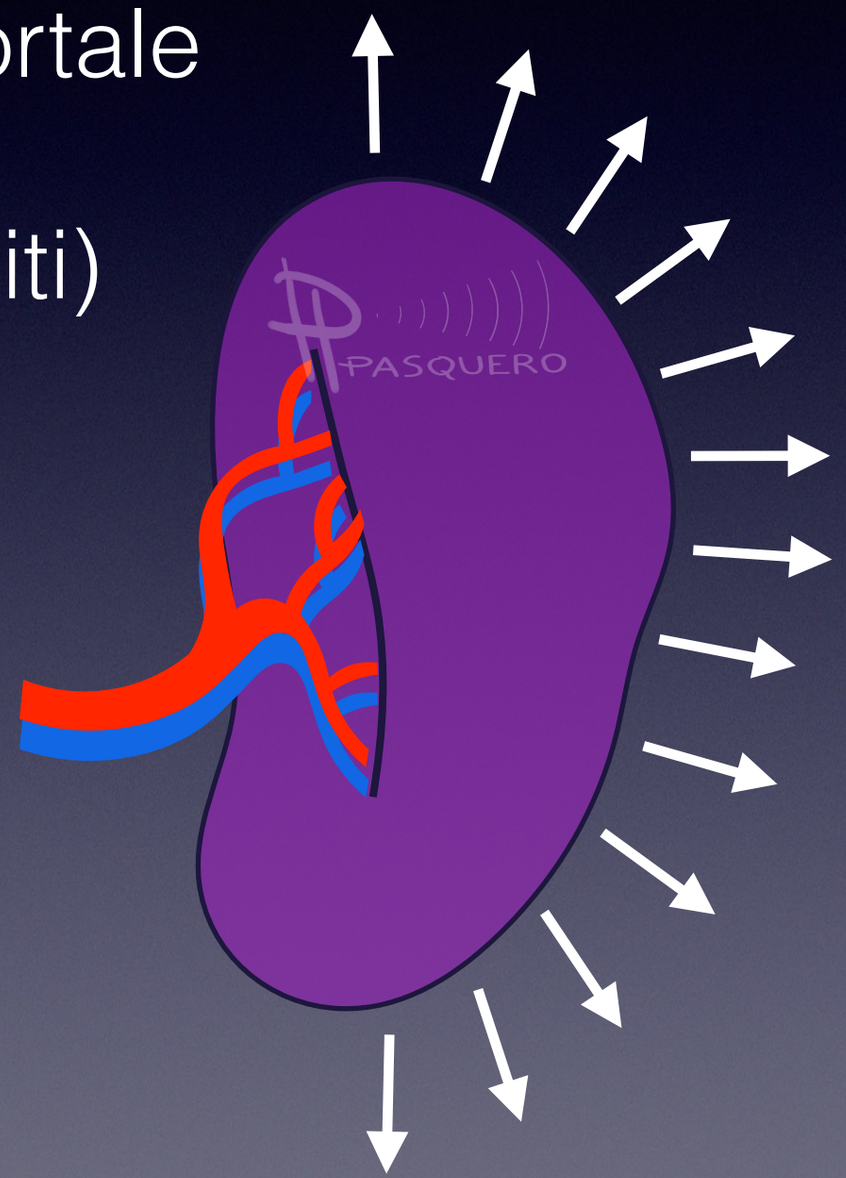
Figure 9. Hyposplenism in a patient after bone marrow transplantation (size, 6.3 × 2.2 cm). D1 indicates length; and D2, width.



J Ultrasound Med 2011; 30:1281–1293

Splenomegalia: cause

- Congestione / Ipertensione portale
- infezioni (virus, batteri, parassiti)
- dismetaboliche
- ematologiche
- neoplastiche
- collagenopatie



Splenomegalia: US

- Diametro bipolare > 12-13 cm (diametro trasverso >5 cm)
- Area > 45 cm^2
- arrotondamento polare

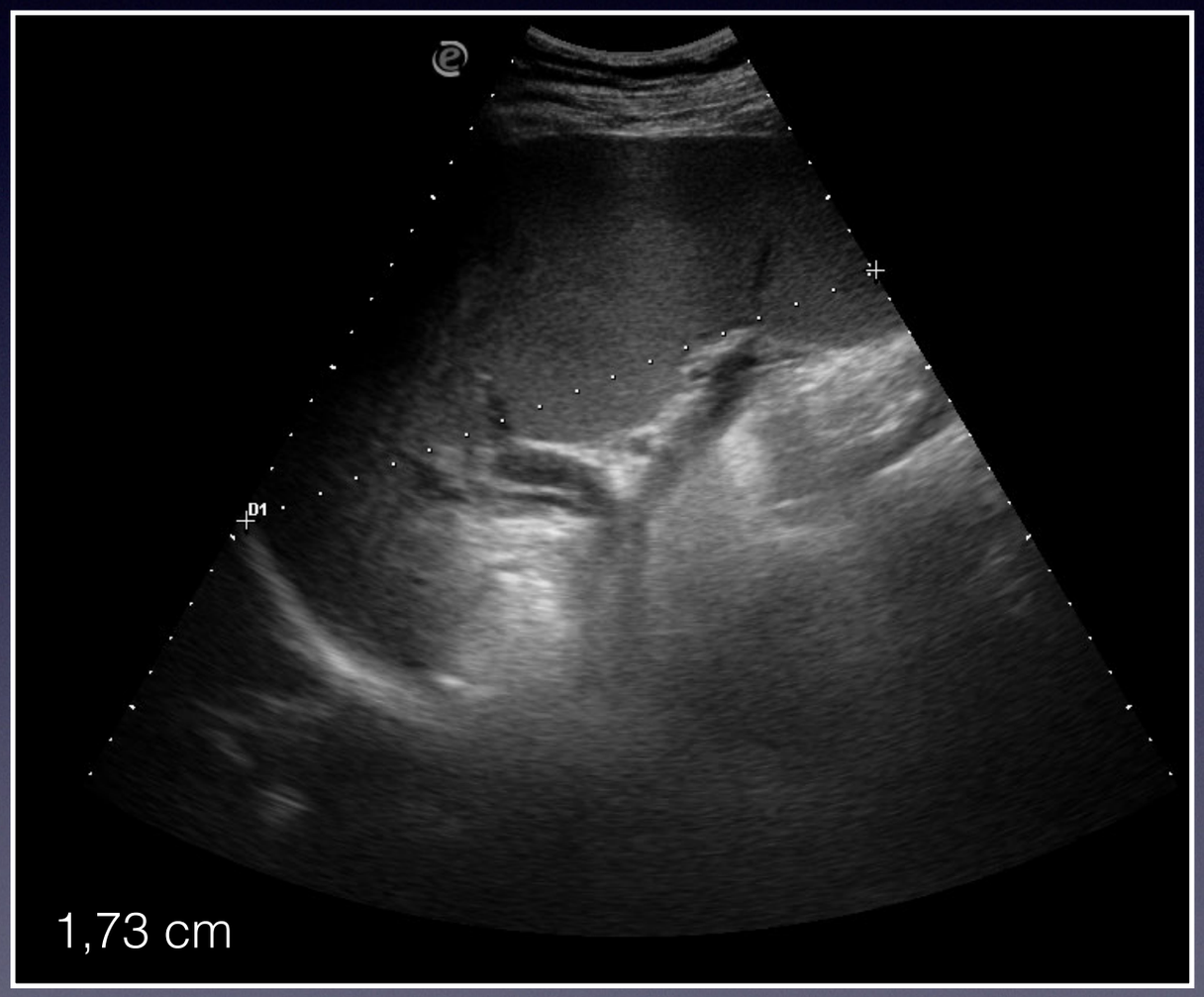
Splenomegalia: grado

- LIEVE: infezioni acute e croniche, cirrosi, leucemia acuta, anemia emolitica, insufficienza cardiaca.

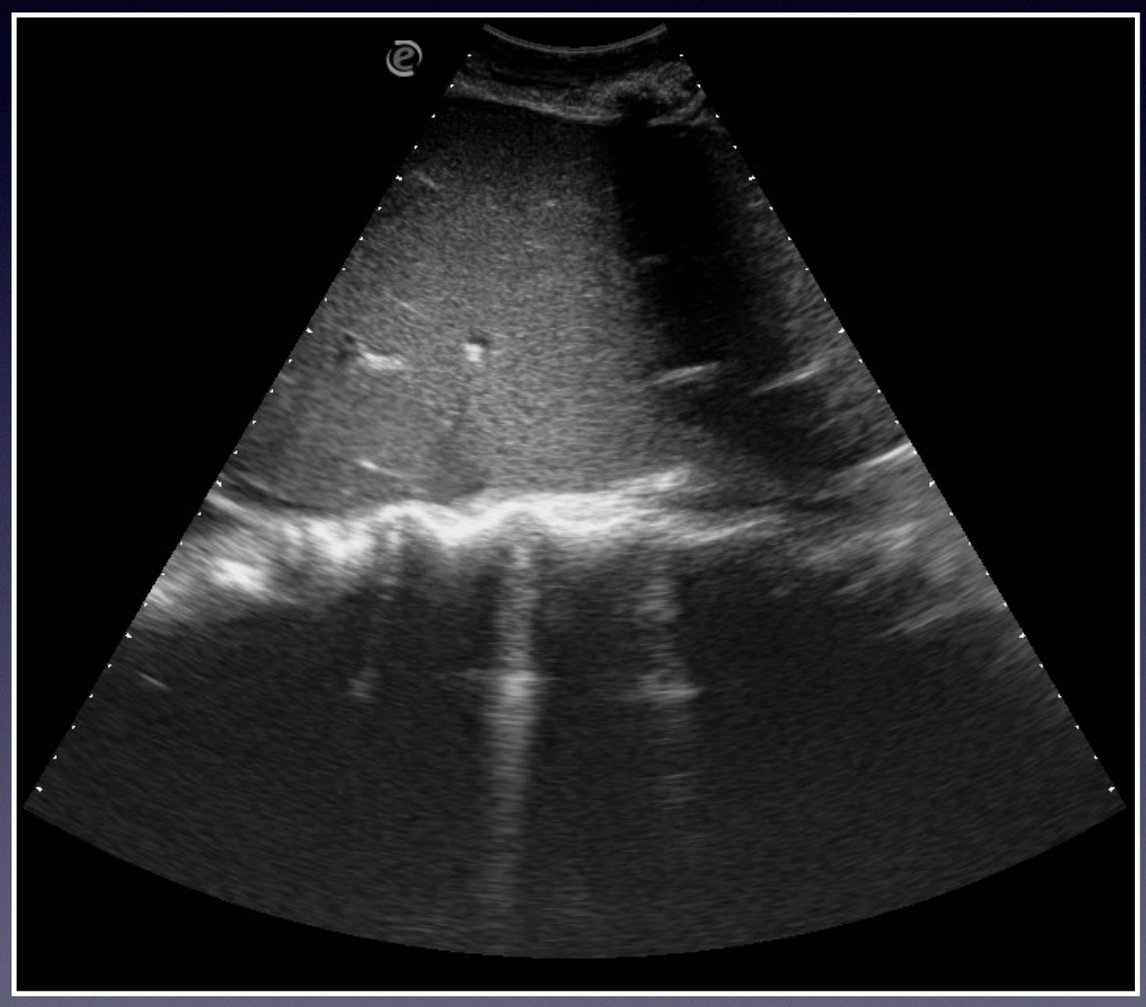
- MODERATO (fino a 90 cm^2): infezioni acute e croniche, cirrosi, congestione (IP), LLC, linfogranuloma.

- MARCATO (oltre 90 cm^2): LMC, policitemia, anemia emolitica, sarcoma, leishmaniosi, cisti spleniche, malaria, tesaurismosi.

Splenomegalia

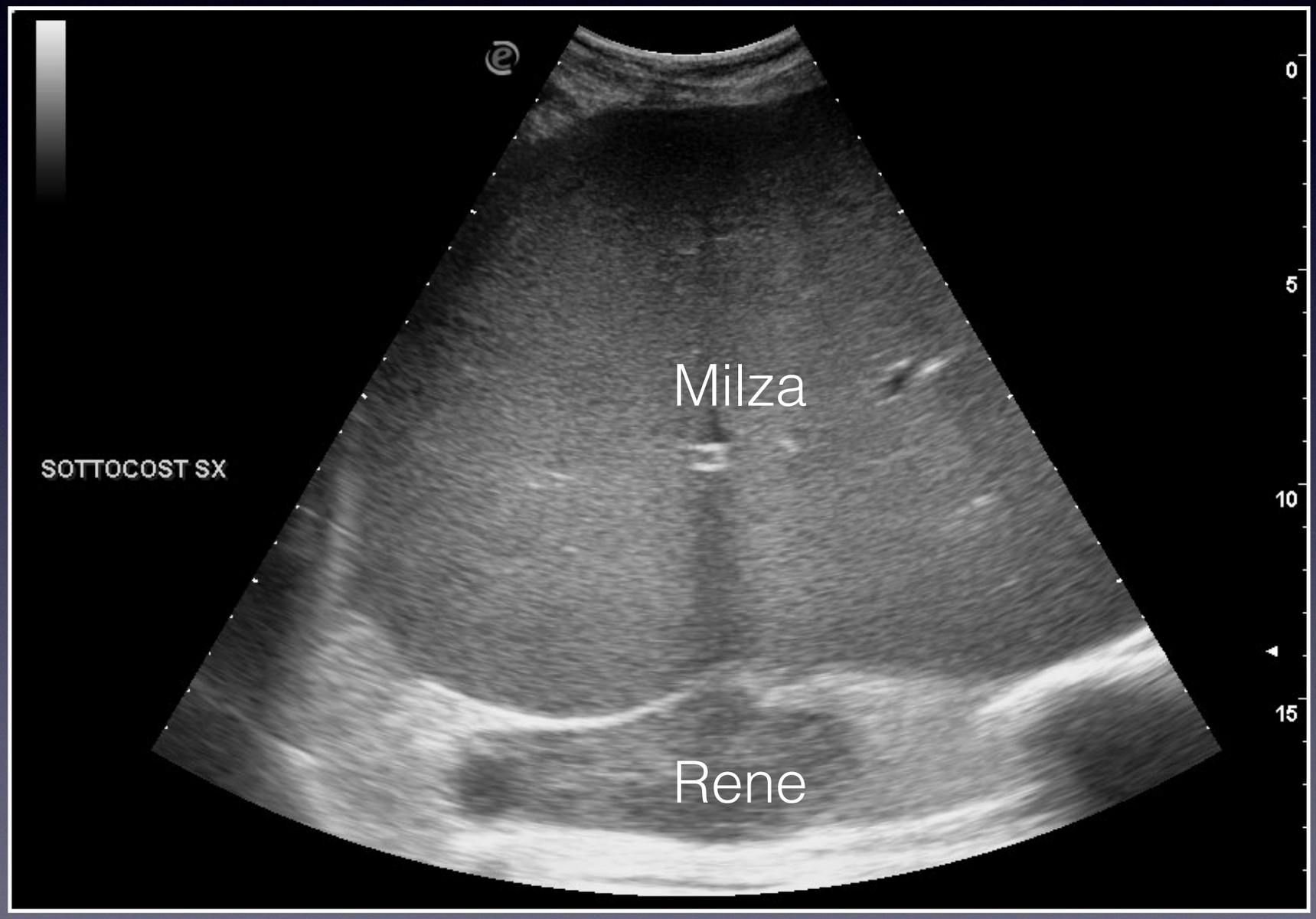


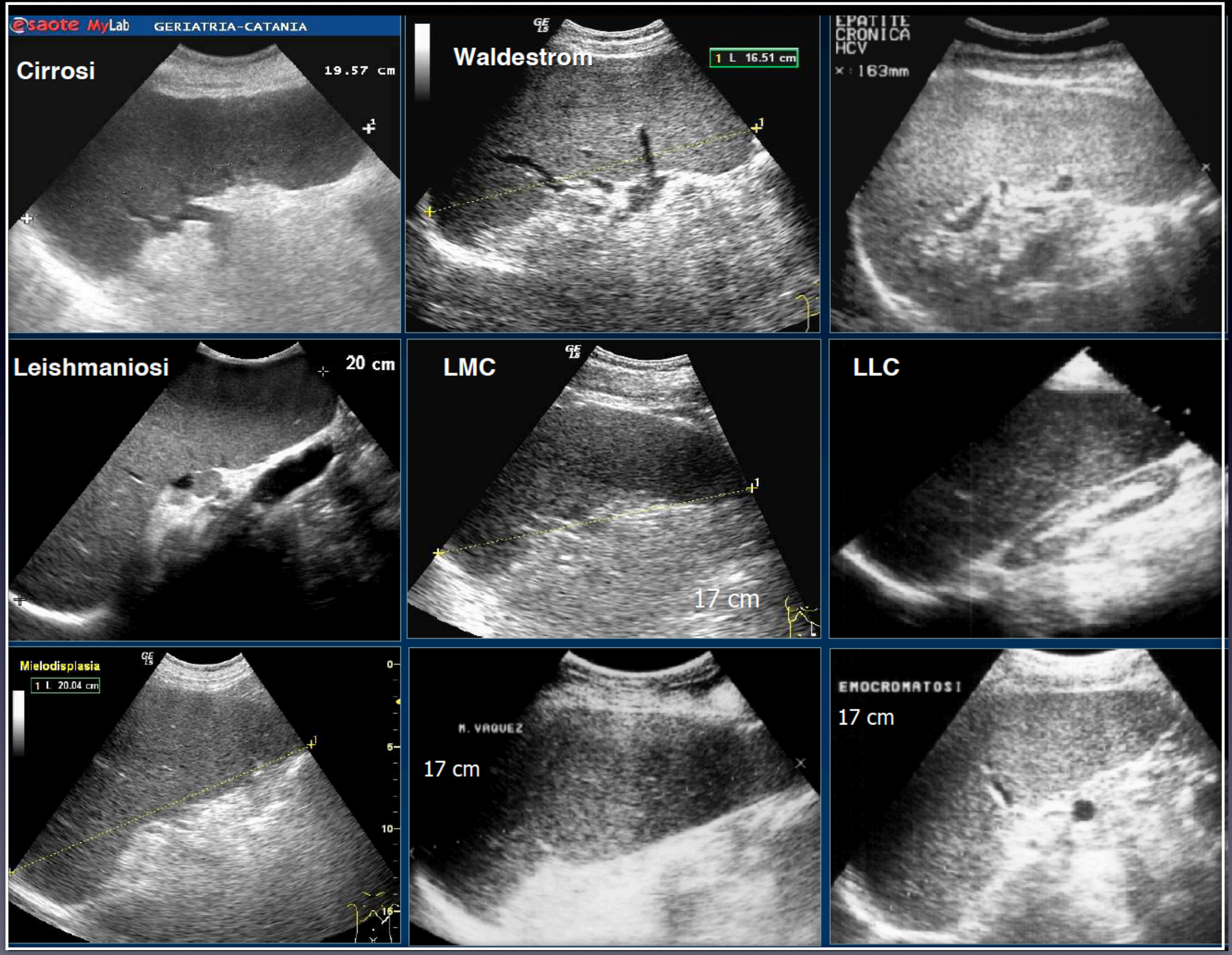
Scansione intercostale



Scansione coronale

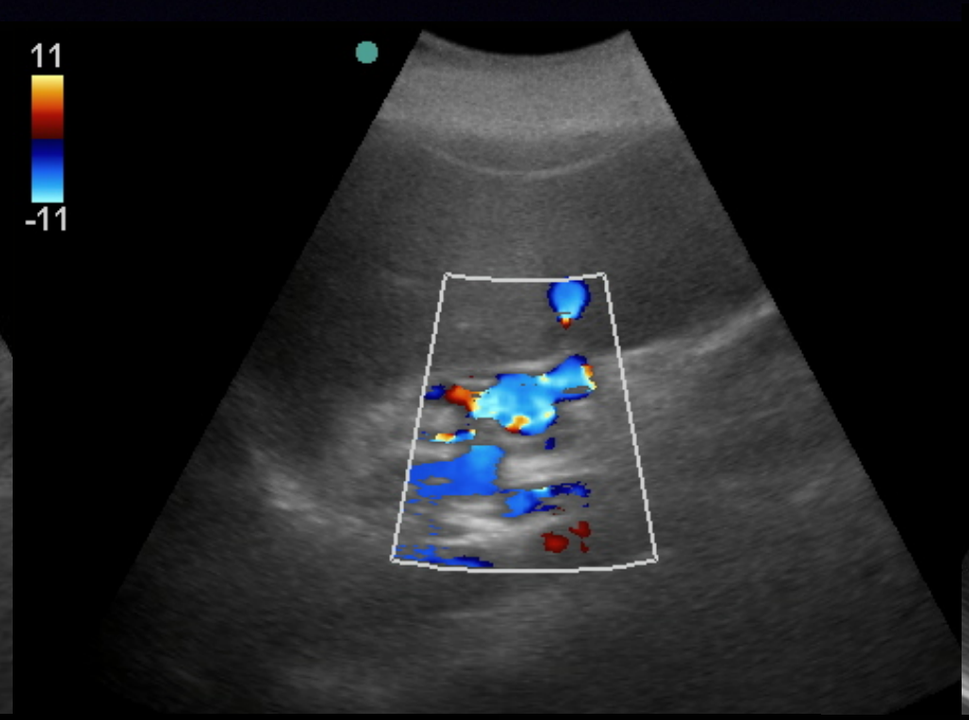
Splenomegalia & Rene

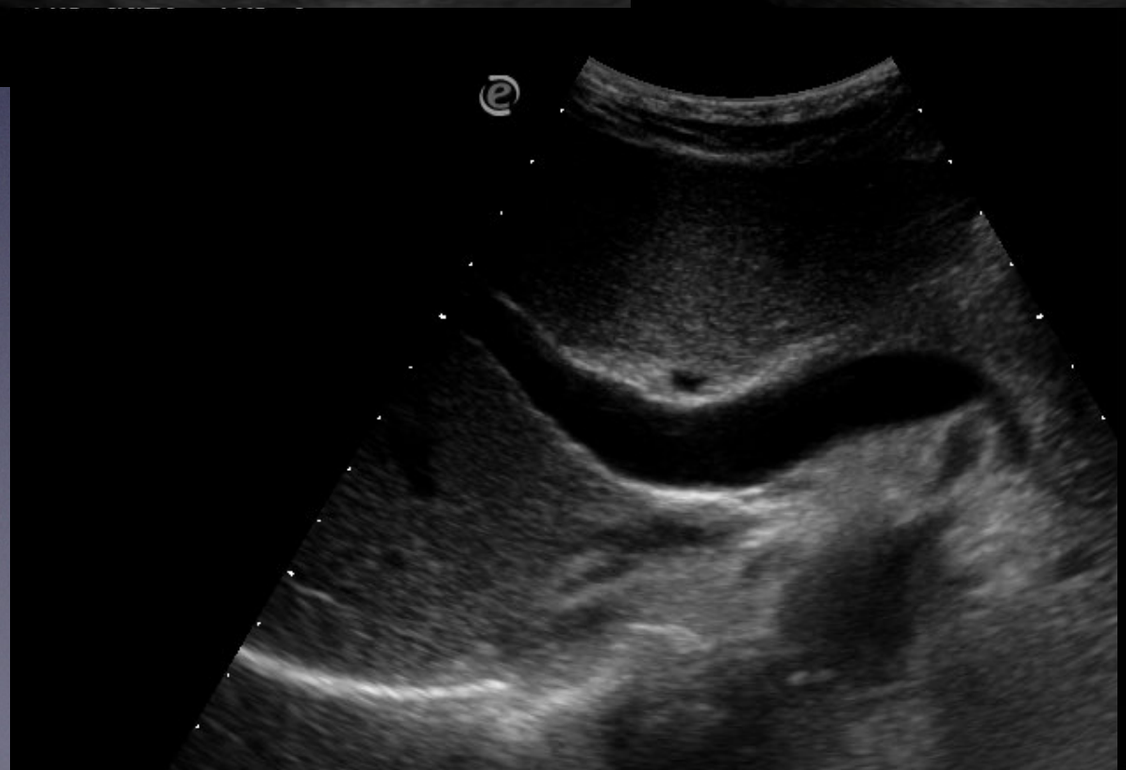




Courtesy from M. Romano

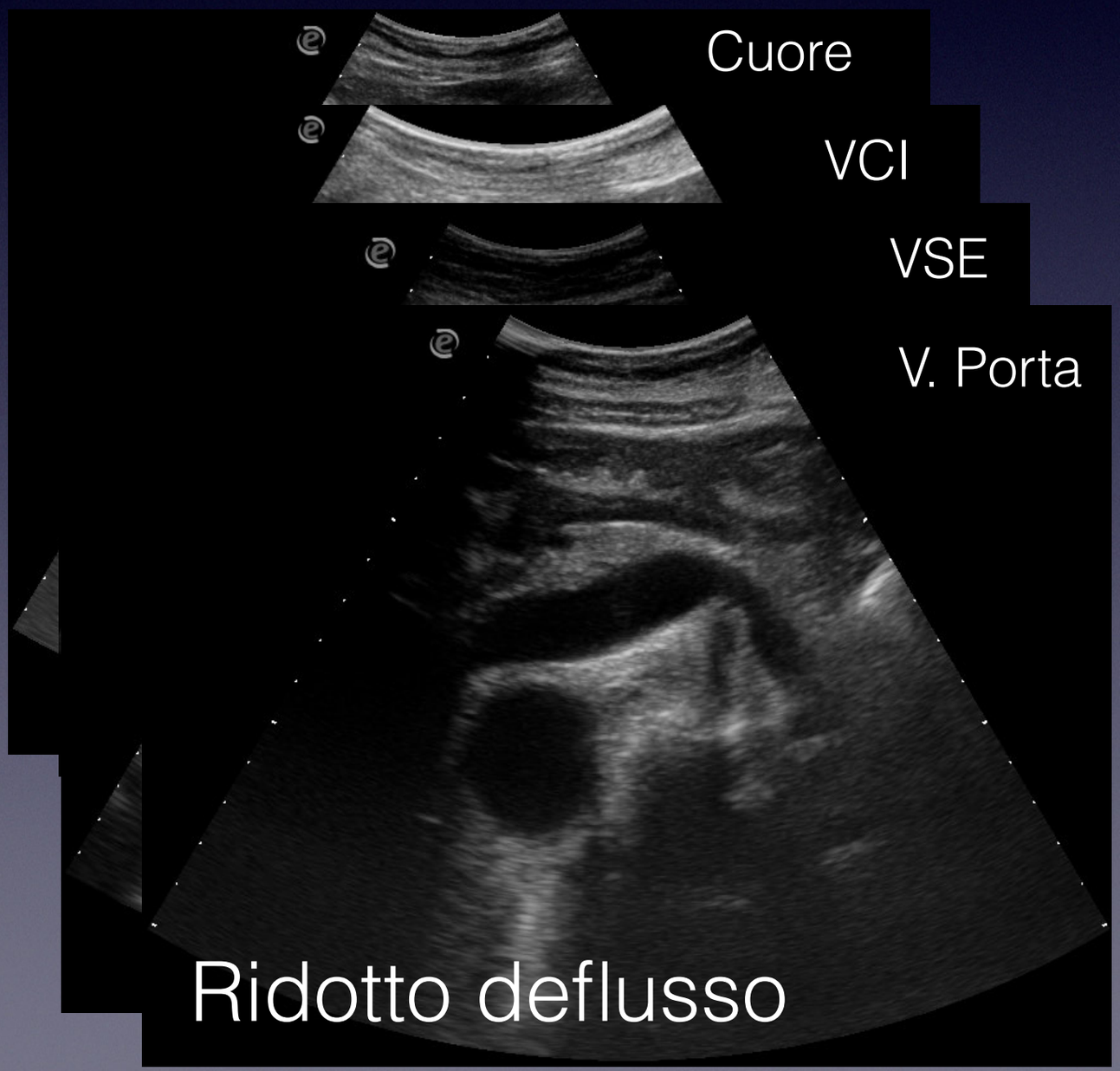
Splenomegalia: correlazione clinica & elementi US extra-splenici





Splenomegalia: correlazione Clinica & Ecocolordoppler

Congestione



vs

Patologia Ematologica

iperafflusso

Milza: alterazioni focali

- cisti primitive e secondarie (parassiti)
- calcificazioni
- angiomi
- ascessi
- neoplasia e metastasi

Milza: lesioni cistiche

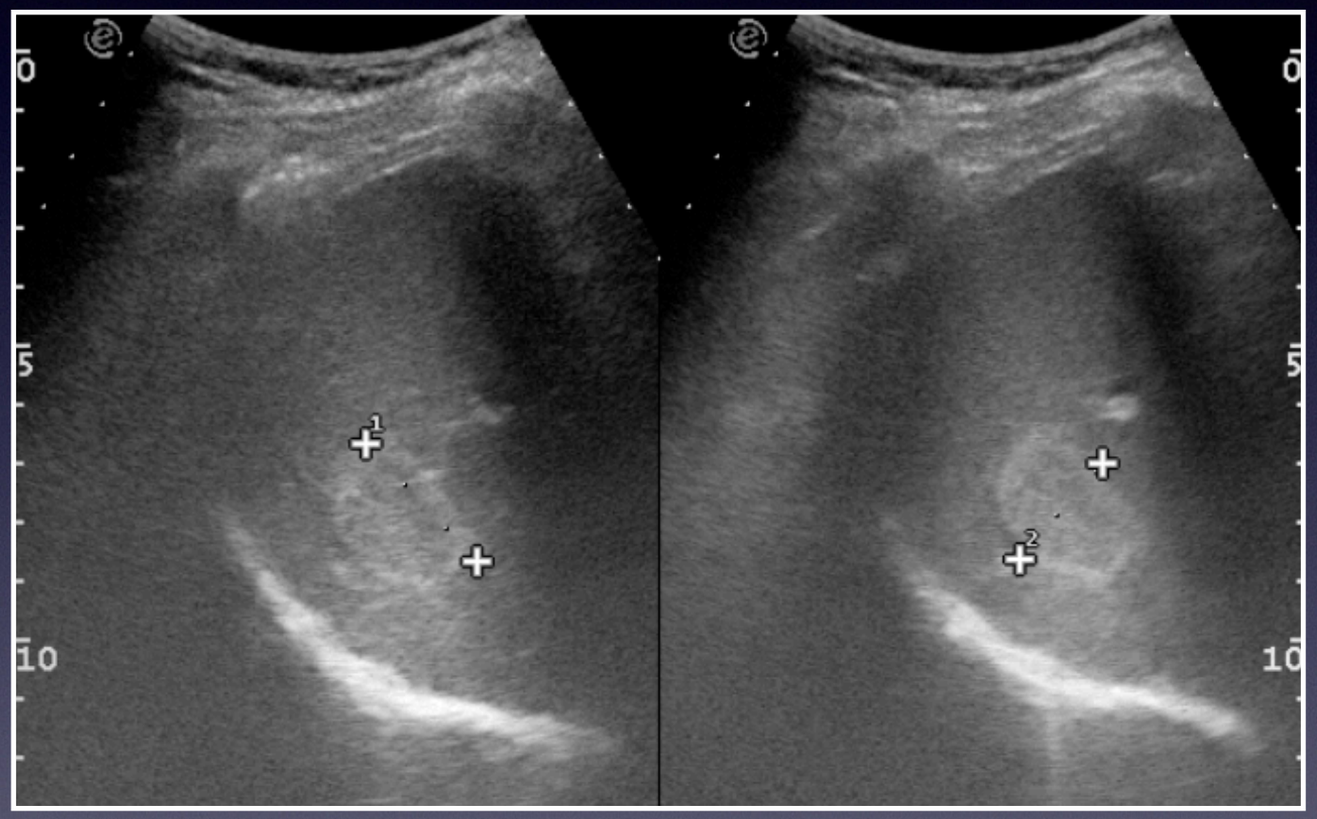
- semplici
- complesse
- epidermoide

Milza: cisti

Milza: calcificazioni

- esiti di malattie infettive (TBC, Brucella, Malaria)

Milza: angioma



- solo l’angioma cavernoso è spesso vascolarizzato al Color Doppler.

Milza: angioma e CEUS

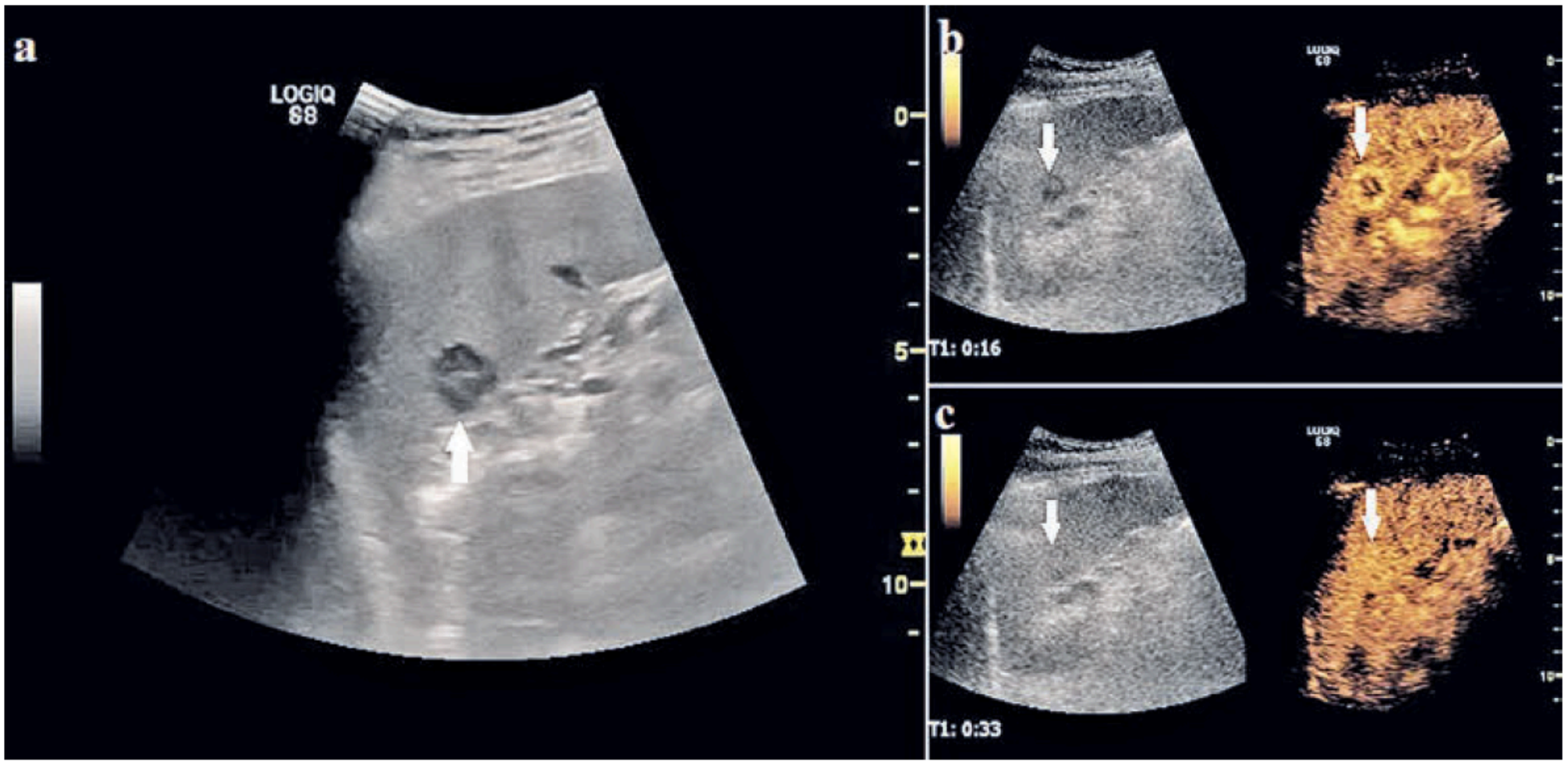
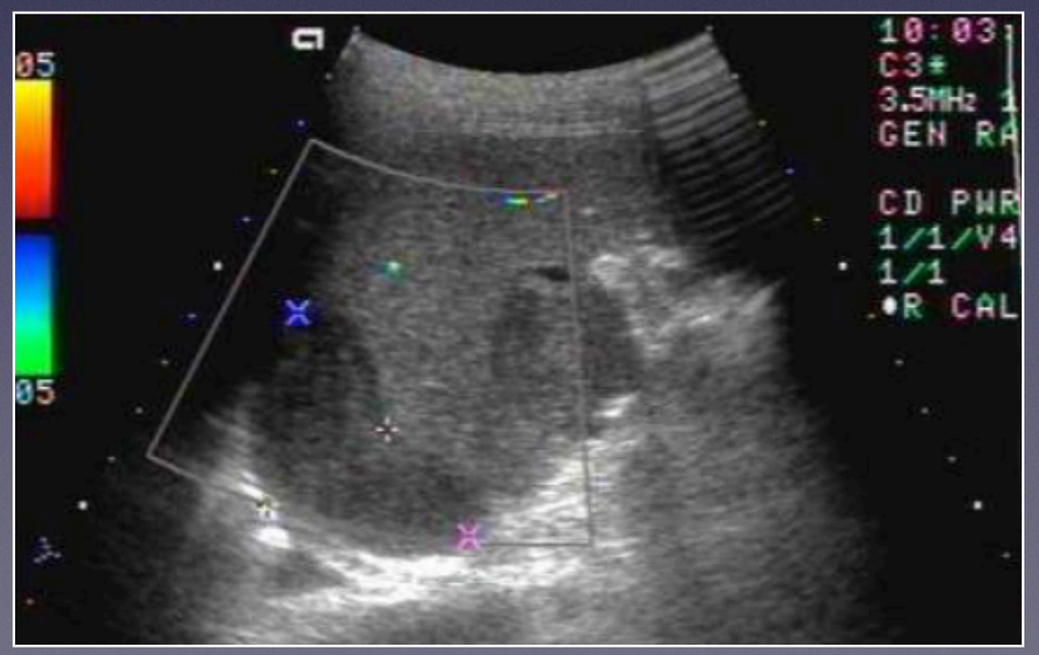


Fig 9. Splenic hemangioma (asterisk). a) Splenic sonography shows a hypoechoic splenic lesion in an asymptomatic patient; b,c) the splenic lesion is isoenhancing comparing to the adjacent splenic parenchyma.

Milza: ascessi

- primari
  (complicazioni di infarto o ematoma)

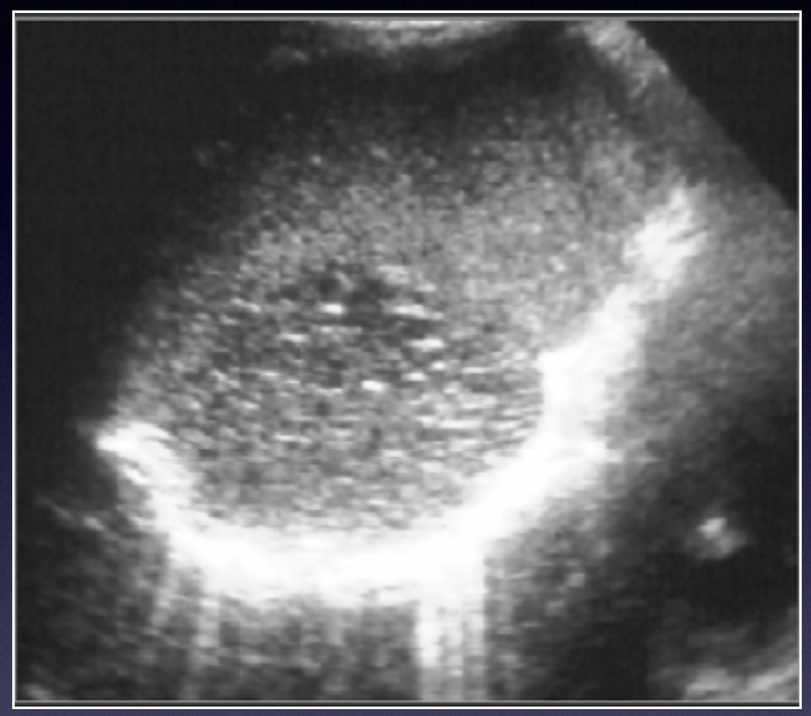
- secondari
  (batterici, micotici)



Ascesso splenico

da piogeni

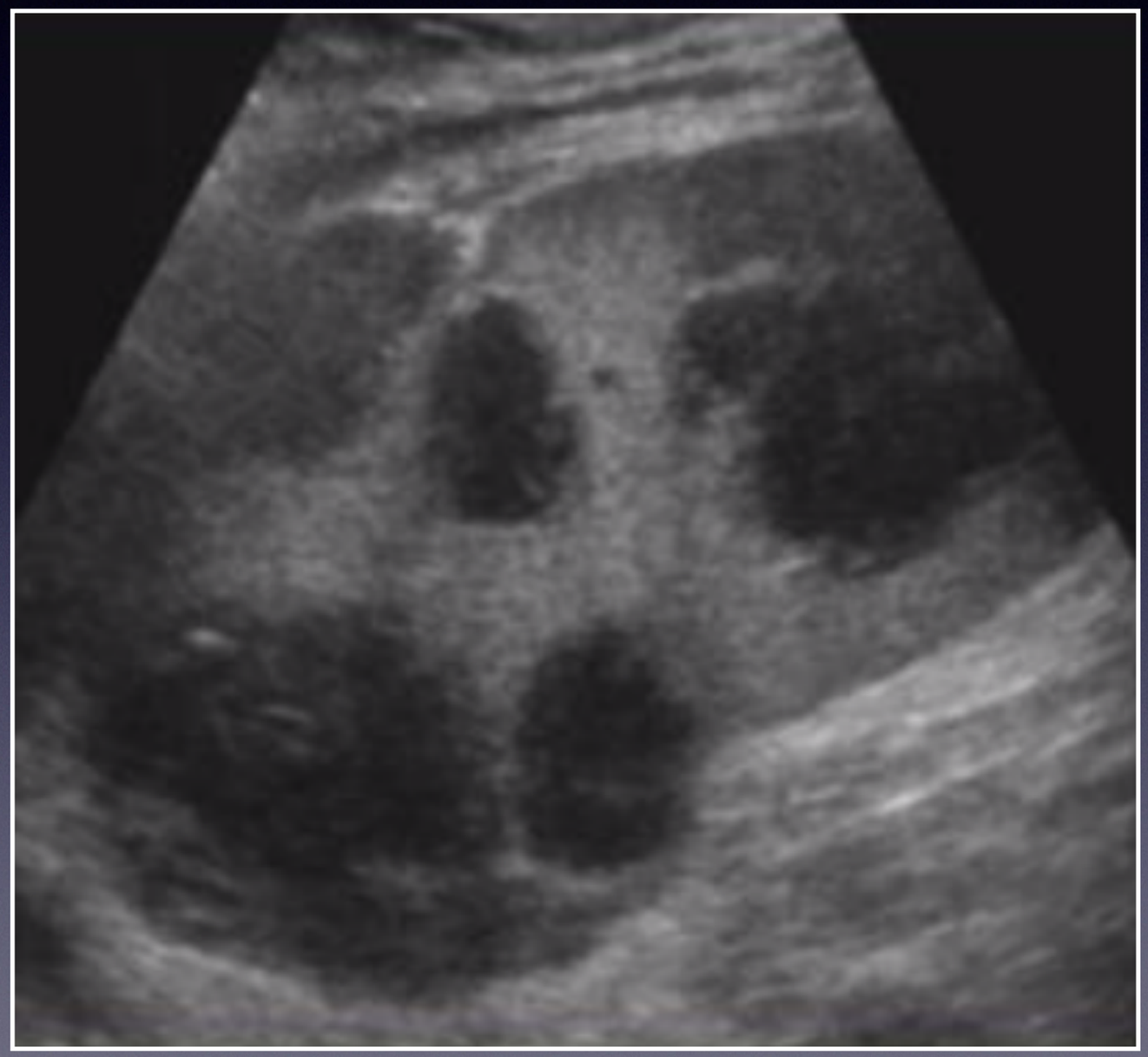
ipoecogeno
pareti regolari
ecostruttura disomogenea
incostante:
- rinforzo distale
- echi mobili
- livelli



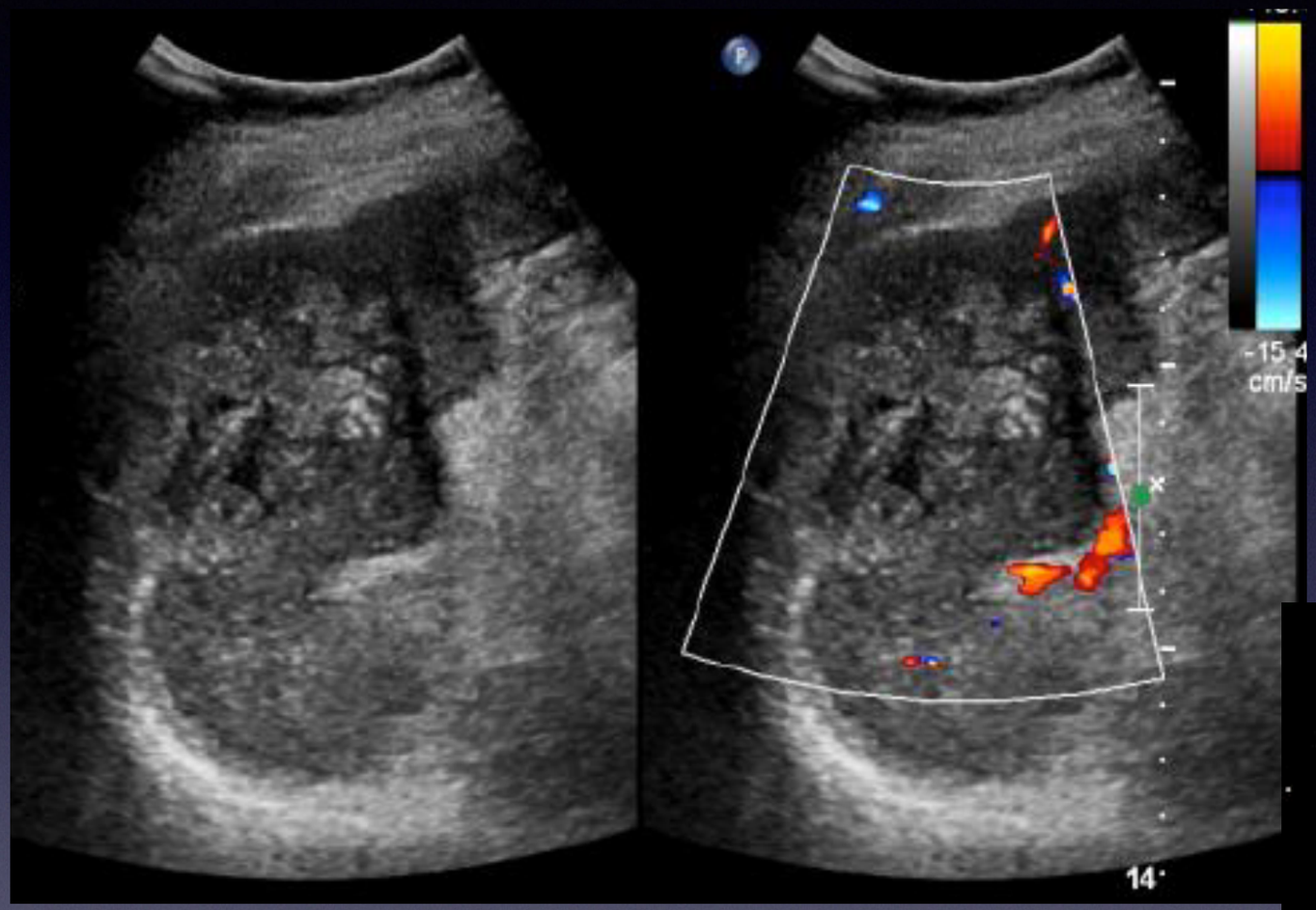
da anaerobi

riverbero interno
DD: fistola

Ascesso splenico

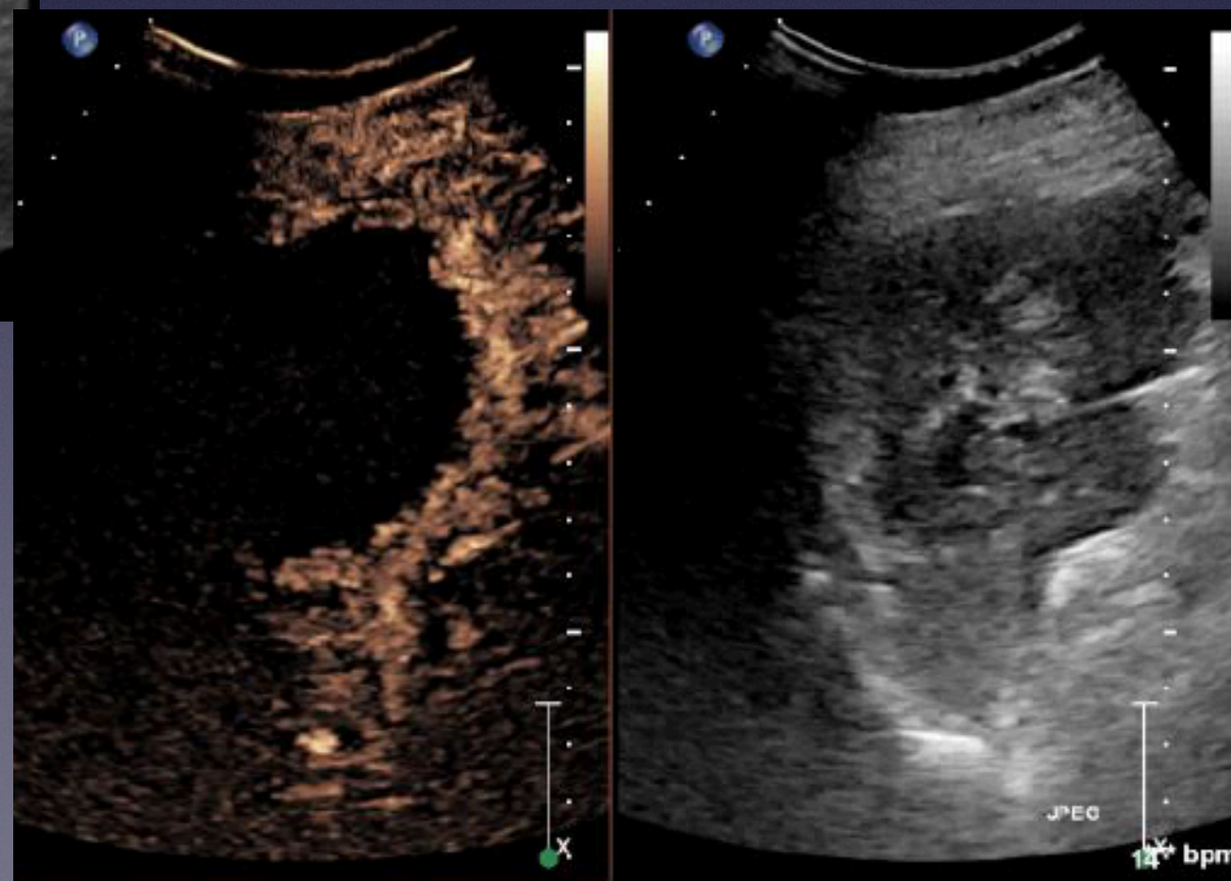


Milza: ascesso?



Ecocolordoppler

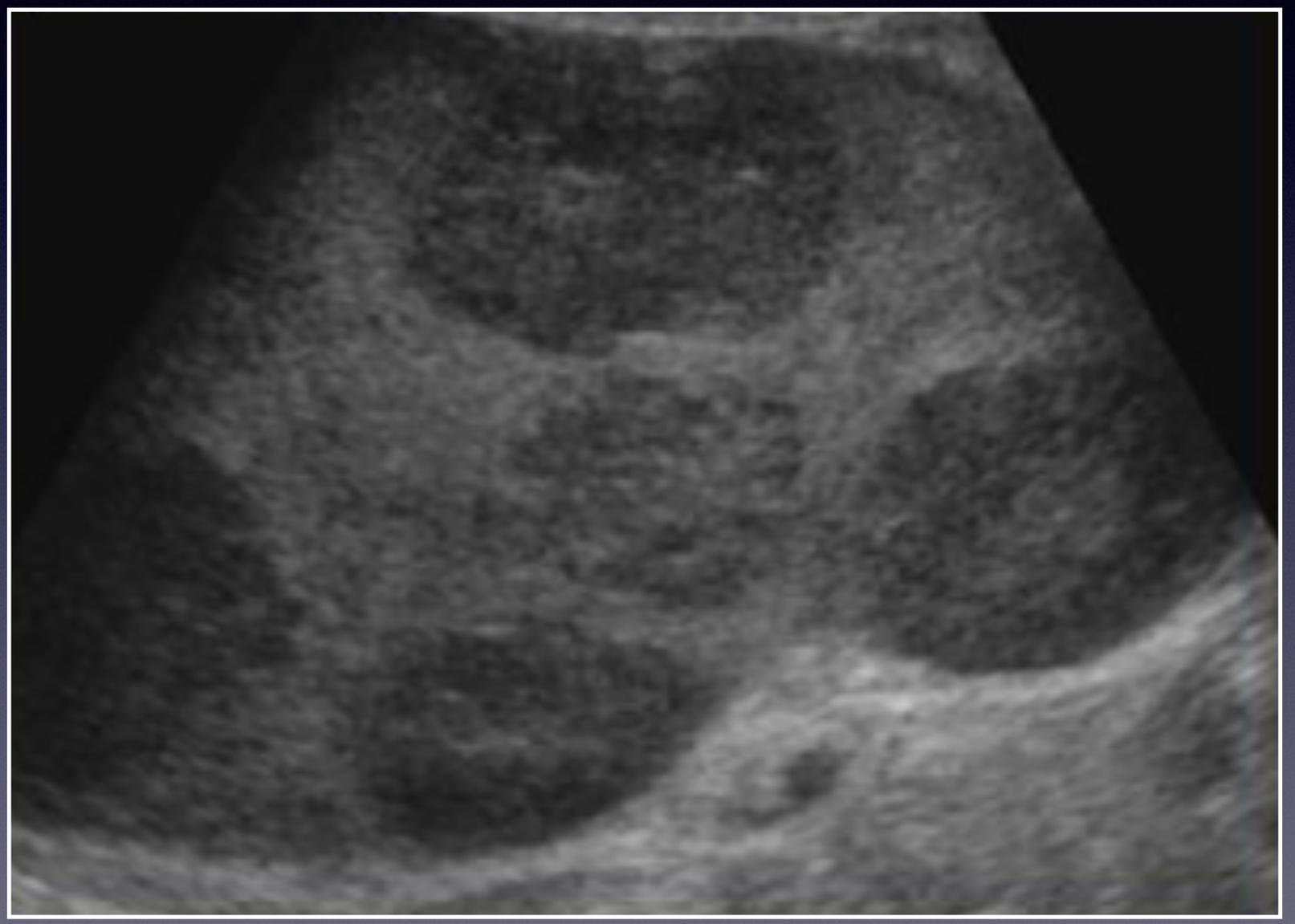
CEUS



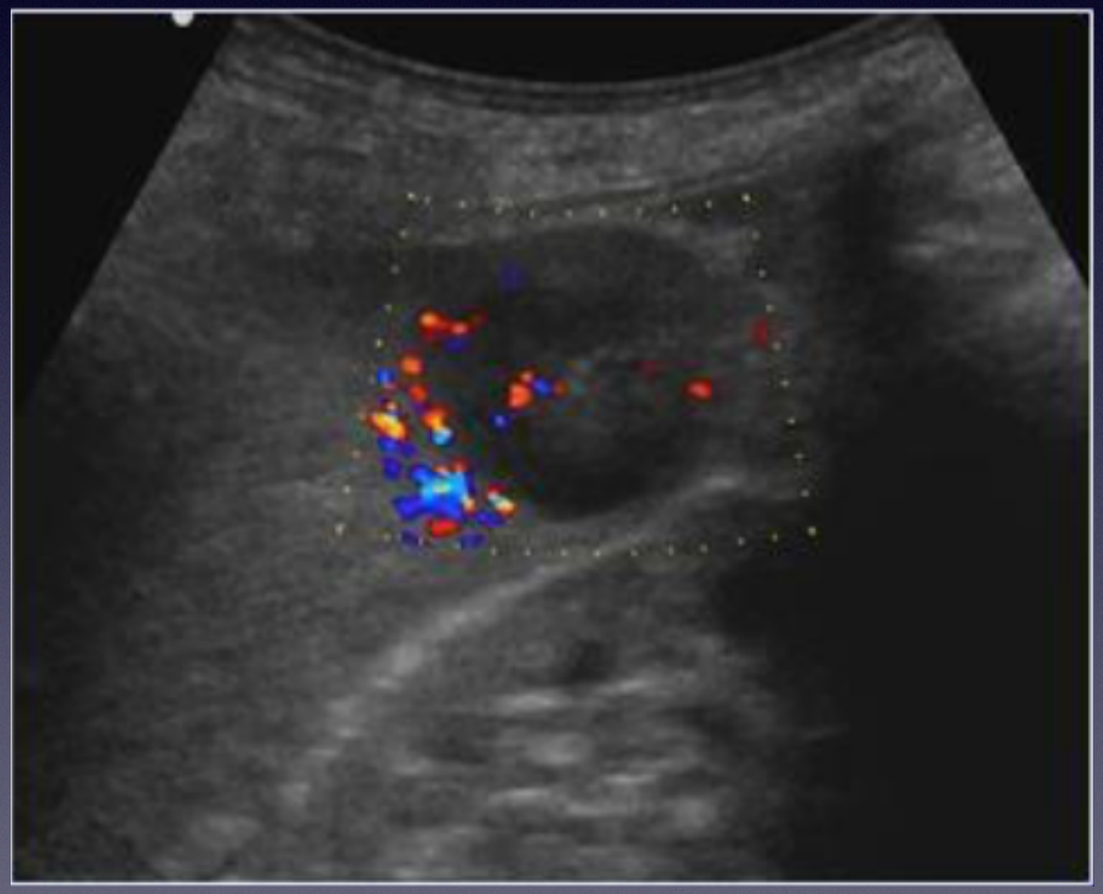
Milza: neoplasia e MTS

- Neoplasia primitiva: Linfomi (LH, LNH).
- MTS: ipo-ecogene: polmone, prostata, melanoma.
- MTS: iper-ecogene: colon, ovaio, pancreas.

Milza: linfoma



Milza: MTS ipoecogene



Milza: MTS iperecogene

Milza: cause di infarto

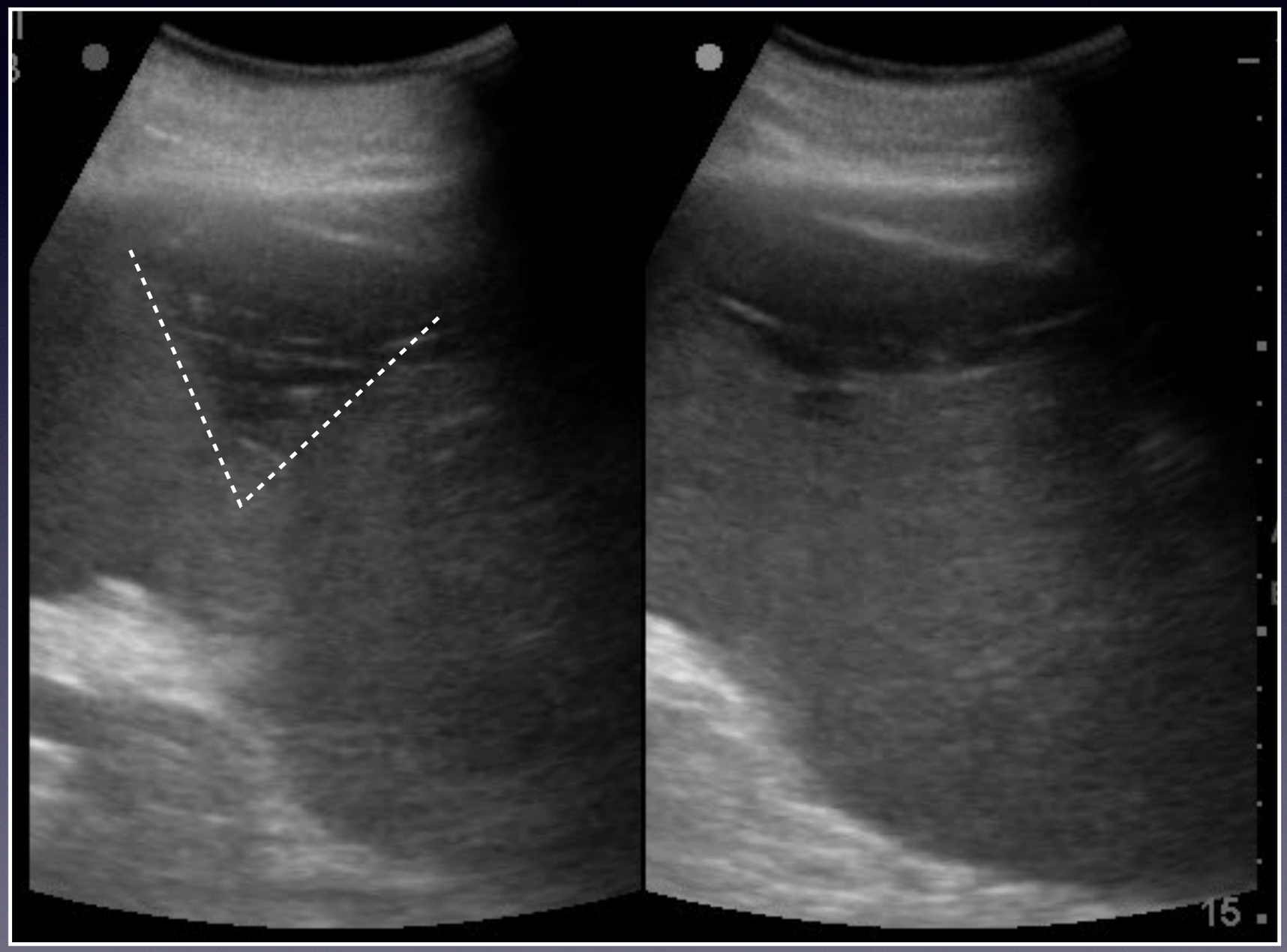
- Malattia Linfoproliferativa
- Malattie Cardio-Emboliche
- Sepsi
- Pancreatiti
- Vasculiti

Milza: infarto splenico

- Iniziale: iper
- Successivo iso/ipo

Milza: infarto

Ecopattern:
triangolare
ipoecogena
subcapsulare



Milza: infarto

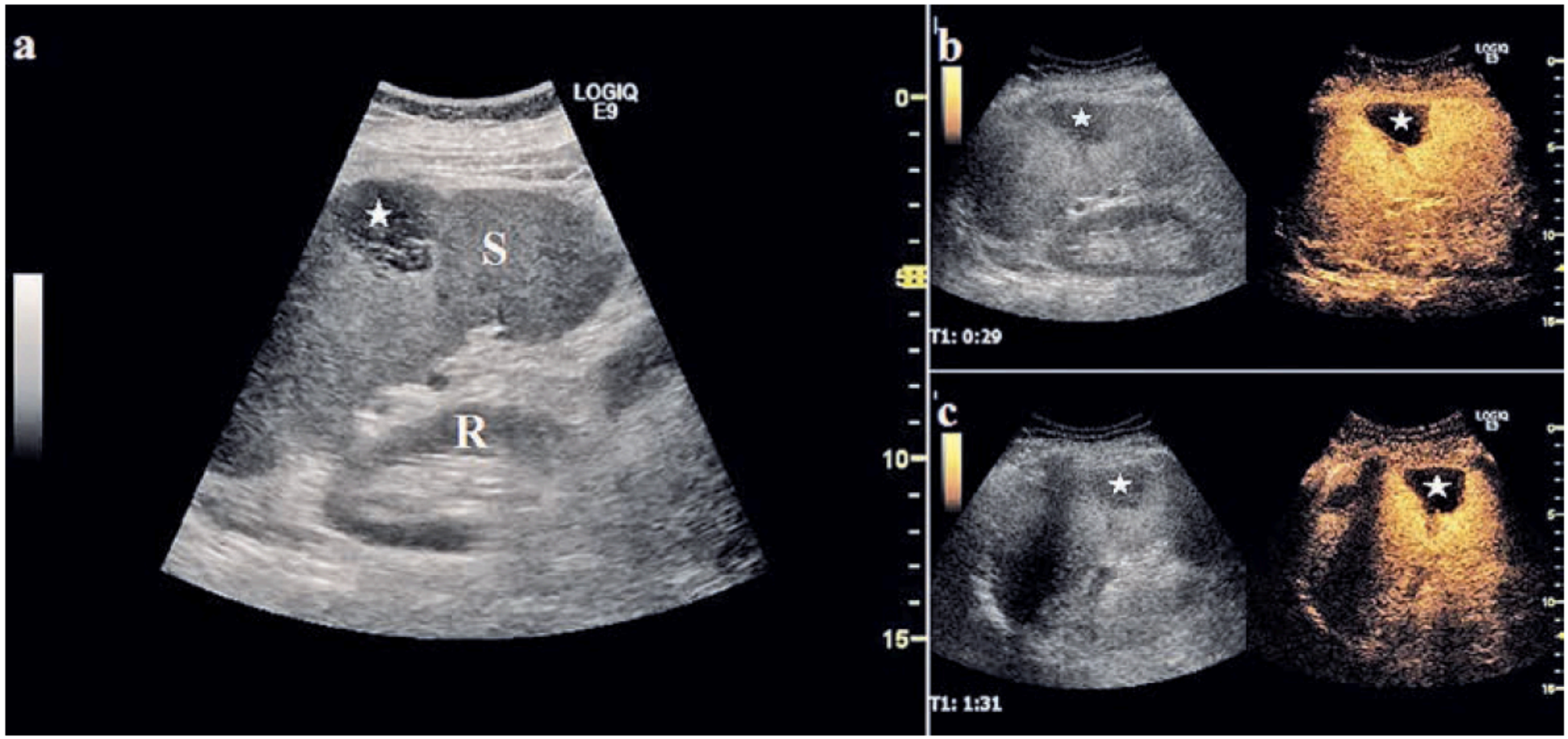
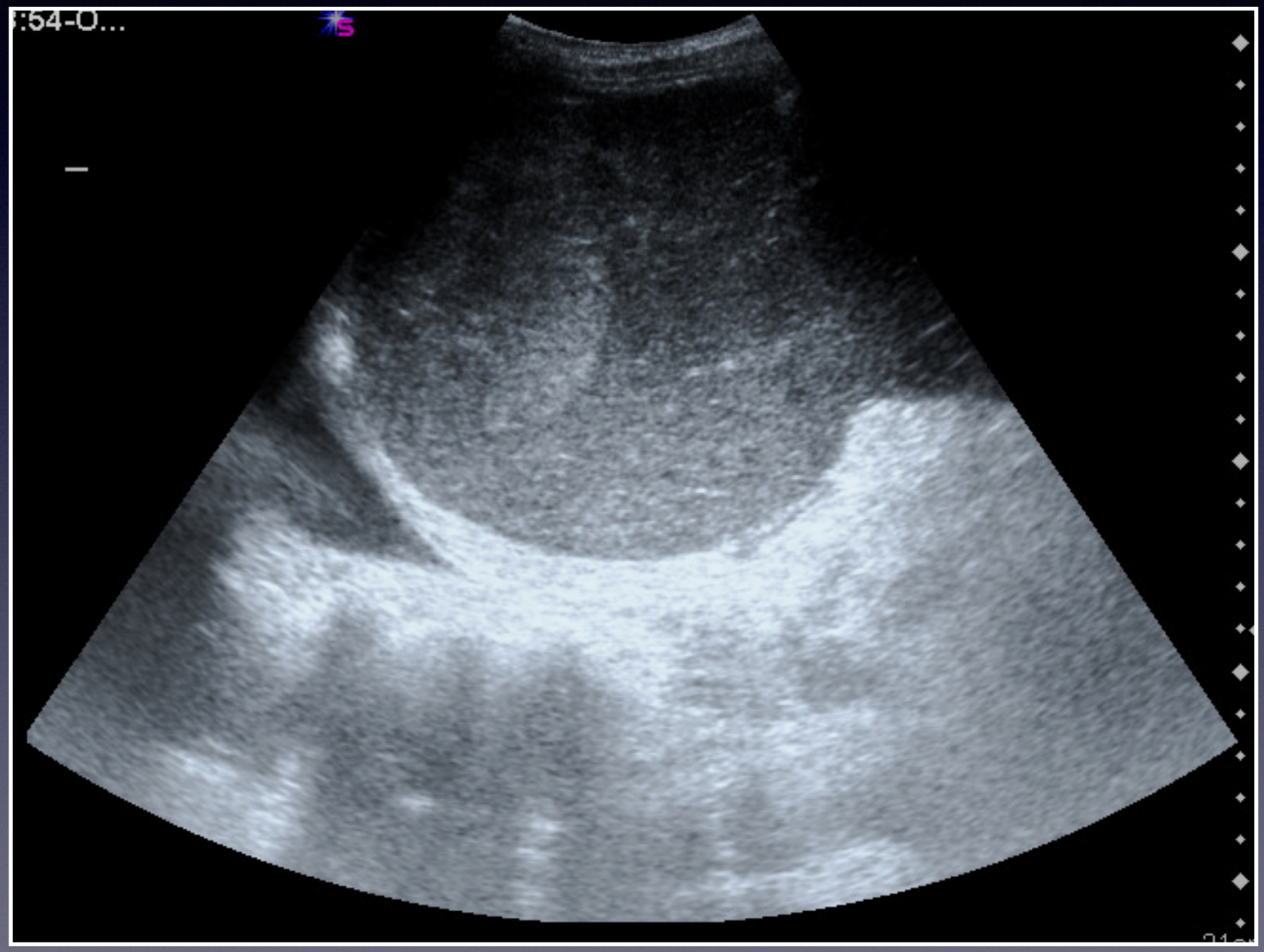


Fig 5. Splenic infarct. a) sonogram shows a triangular hypoechoic lesion (asterisk); b) CEUS, arterial time – the splenic lesion is unenhanced; c) CEUS, prenchymal phase – the lesion presents no enhancement (S = spleen; R = left kidney).

Milza: traumi-ematoma

- Ematoma sub-capsulare
- Ematoma intrasplenico
- Lacerazione / rottura
- Versamento perisplenico

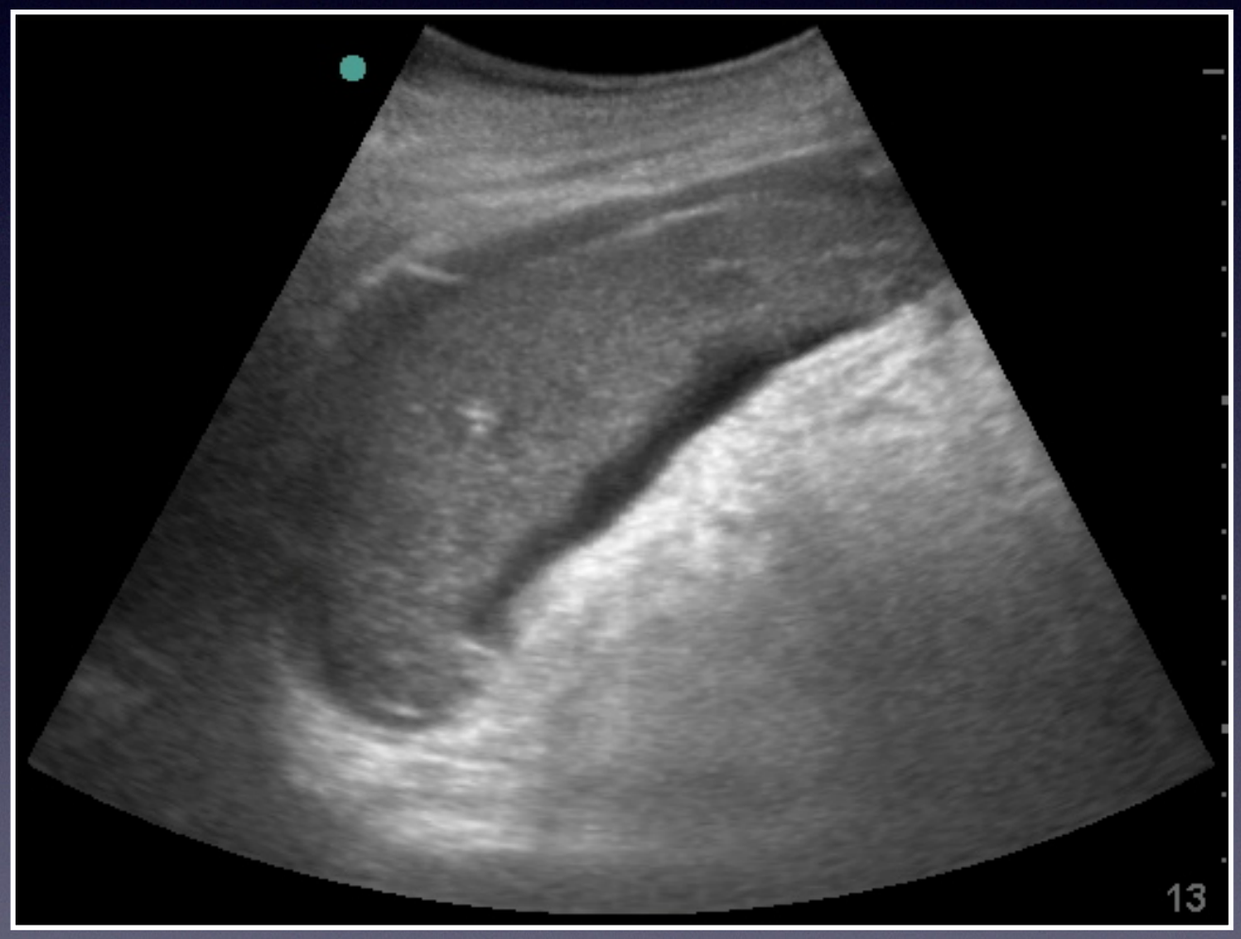
Milza: ematoma



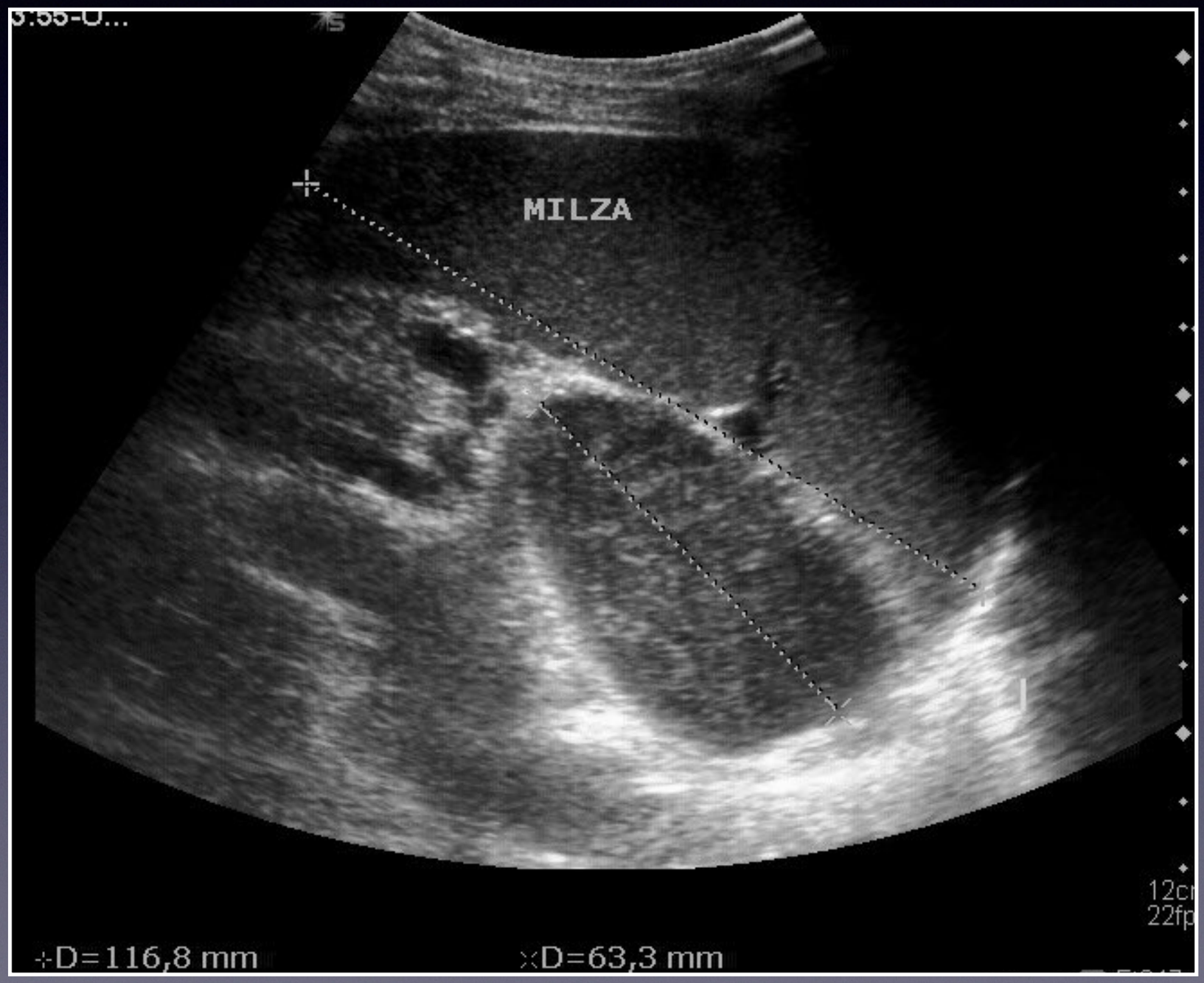
Ematoma subcapsulare

Milza: ematoma

Versamento perisplenico



Milza: incidentaloma

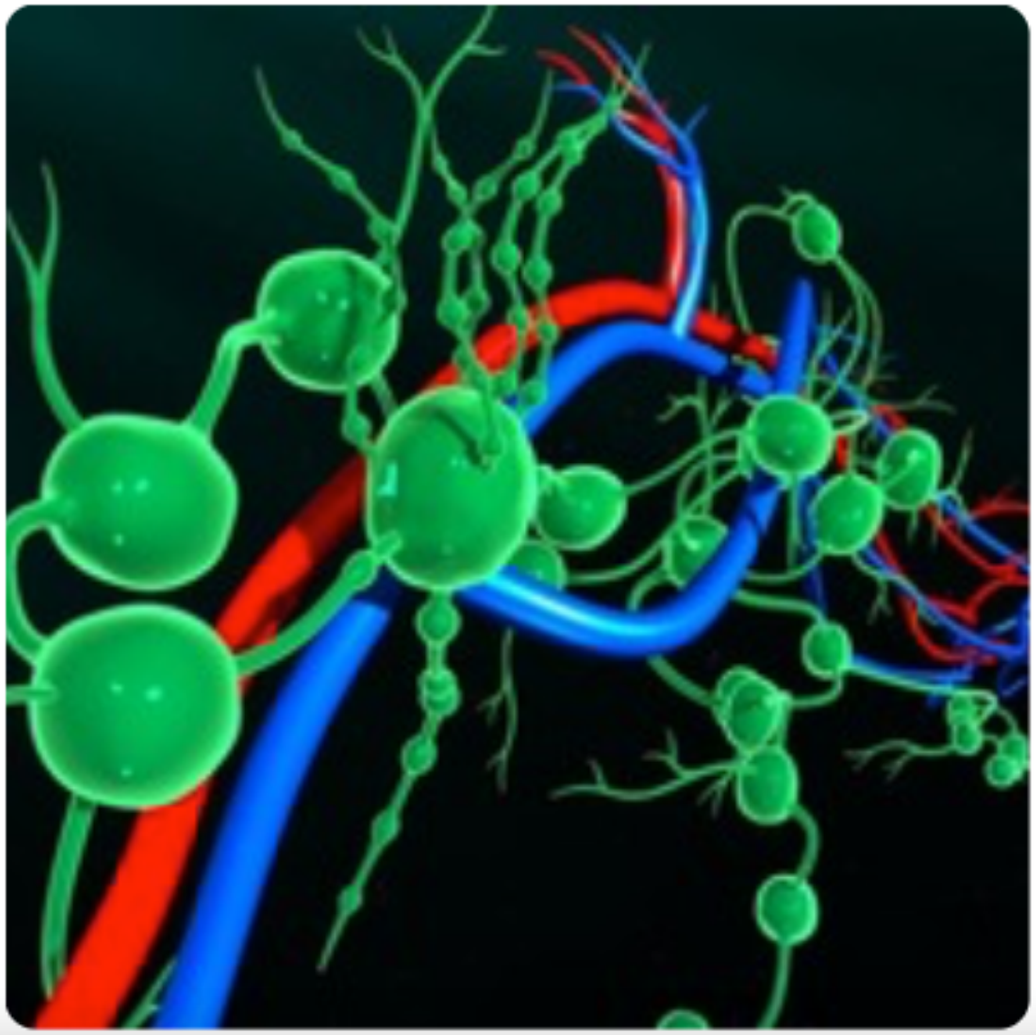


Milza: conclusioni

- ✓ forma
- ✓ dimensioni
- ✓ ecostruttura
- ✓ alterazioni / lesioni focali del parenchima
- ✓ masse e/o raccolte perispleniche
- ✓ ruolo di ECD e CEUS

Elastografia?

Linfonodi addominali



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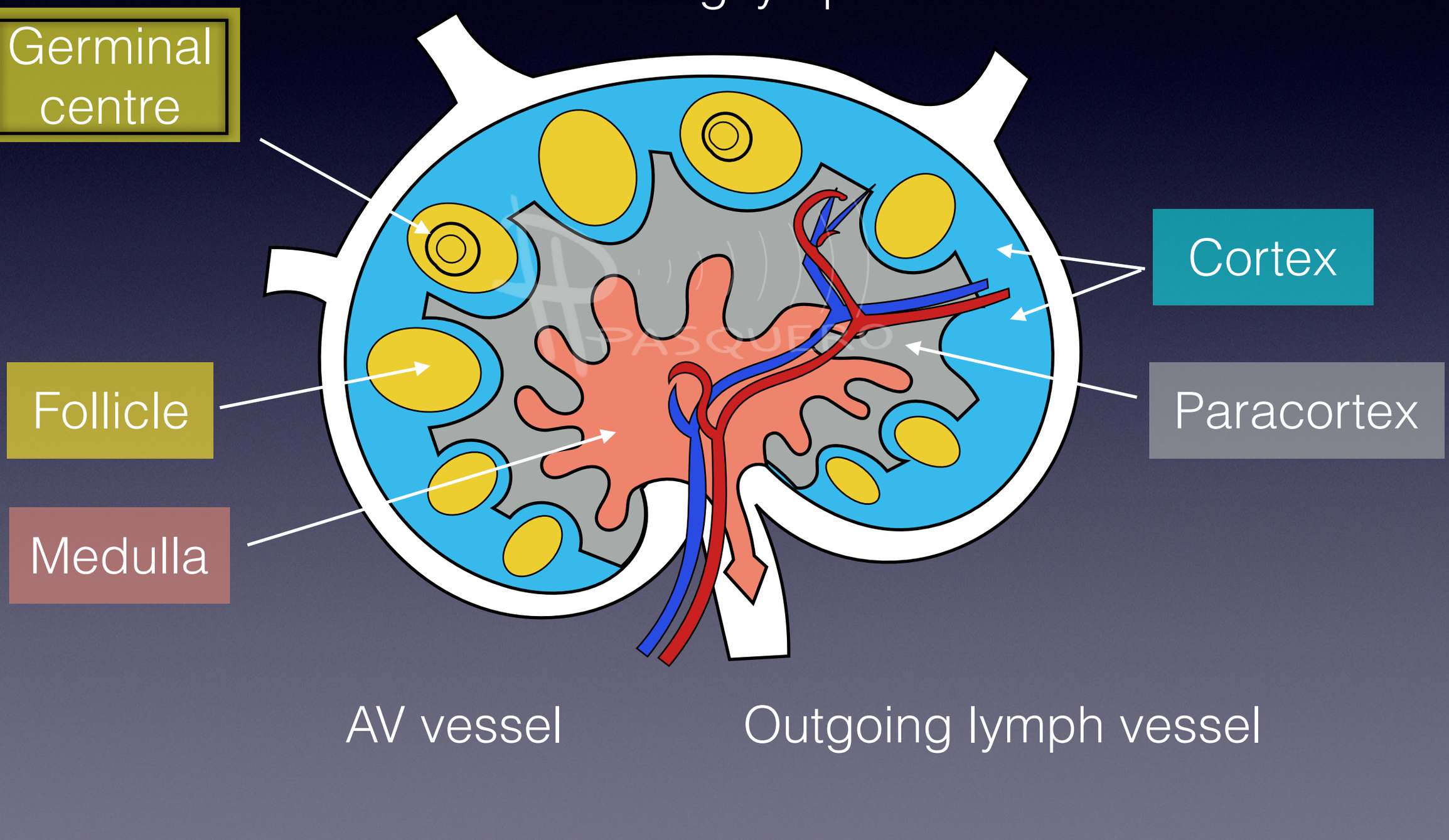
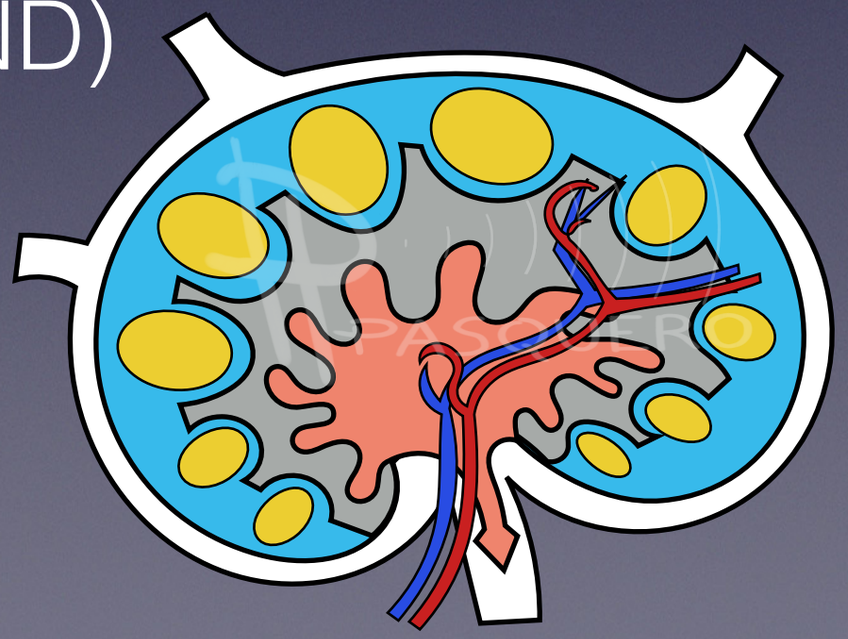
Lymph node


Incoming lymph vessel
Germinal centre
Cortex
Follicle
Paracortex
Medulla
AV vessel
Outgoing lymph vessel

Linfonodi: anatomia

- ilo vascolare LND (asse arterioso e venoso)
- capsula
- architettura cortico-midollare
- vasi linfatici afferenti (superficie LND) ed efferenti (ilo LND)



Linfoadenopatie addominali

CAUSE PRINCIPALI

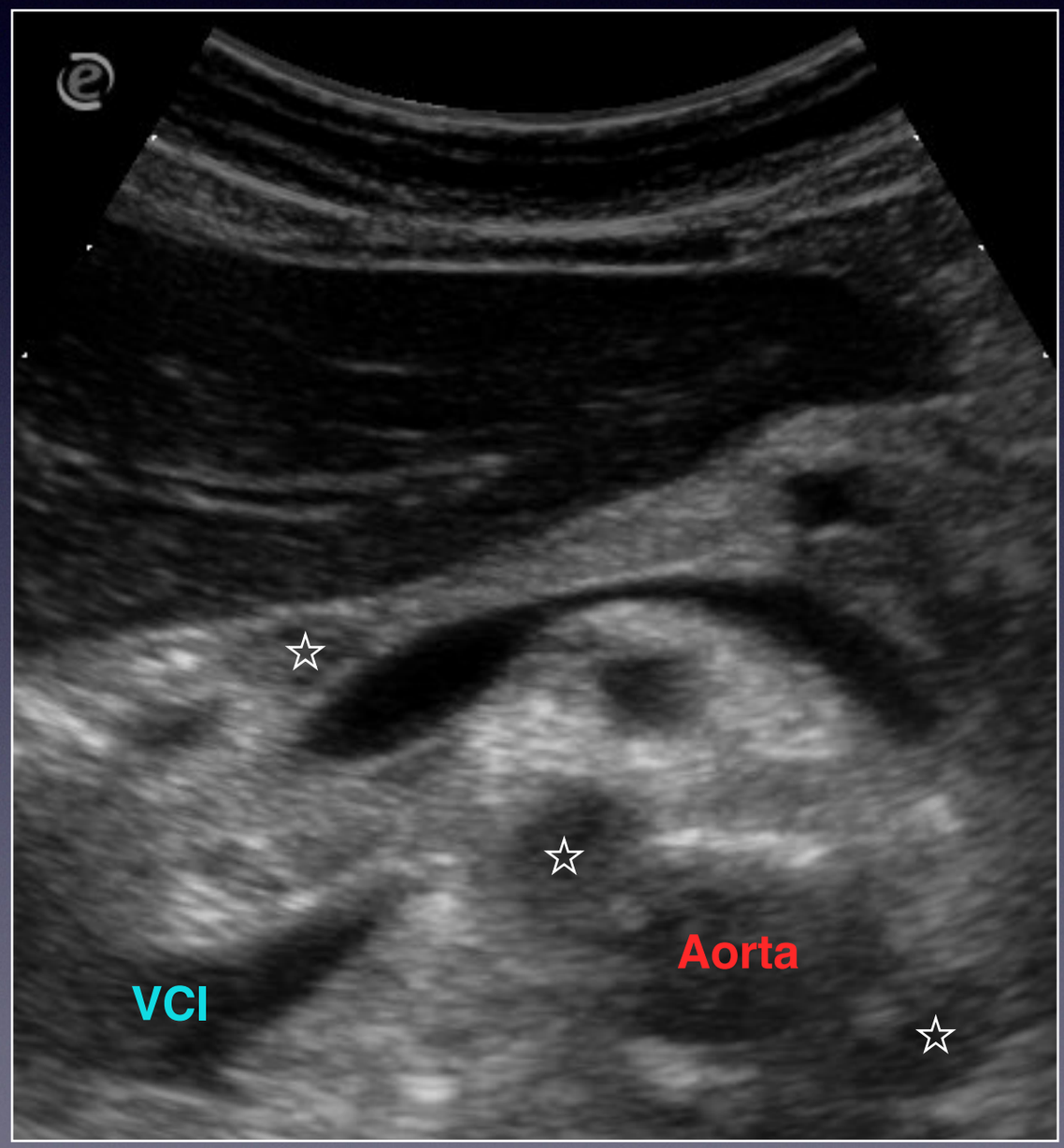
- infezioni (virali, batteriche, fungine, parassitarie)
- malattie immunologiche (AR, LES, S. Sjogren, M. Crohn)
- malattie neoplastiche (metastatiche, ematologiche)
- malattie da accumulo
- sarcoidosi, istiocitosi

Linfonodi:
tecnica d'esame US

- sonde (lineare / convex)
- approccio alle stazioni LND superficiali / profonde
- rapporto con vasi, organi, strutture anatomiche

Linfonodi addominali: anatomia ecografica

- morfologia
- ecostruttura
- dimensioni
- numero
- confluenza



LND: valutazione US

LND SUPERFICIALI

- numero e dimensioni
- superficie / capsula
- morfologia (indice di rotondità)
- ilo & ecostruttura
- vascolarizzazione
- calcificazioni

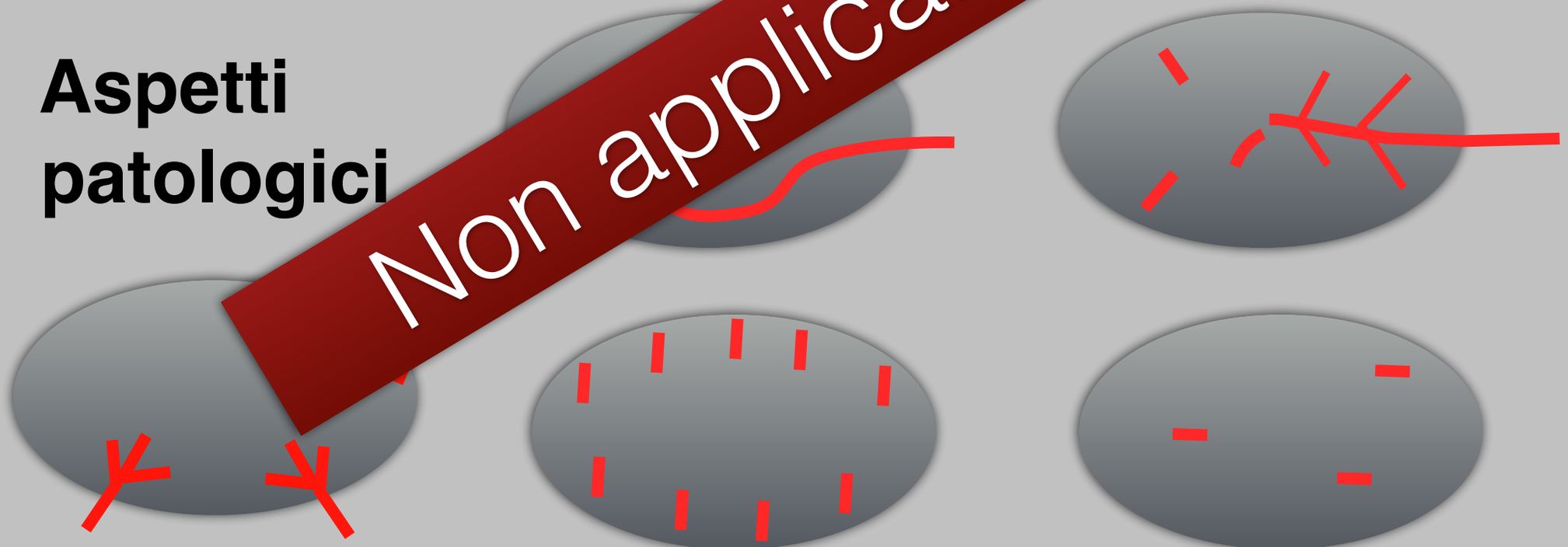
LND PROFONDI

- numero e dimensioni
- morfologia (indice di rotondità)
- ecostruttura

LND: criteri EcoColorDoppler

Aspetti normali

Aspetti patologici



Non applicabili!

LND addominali: caratteristiche principali

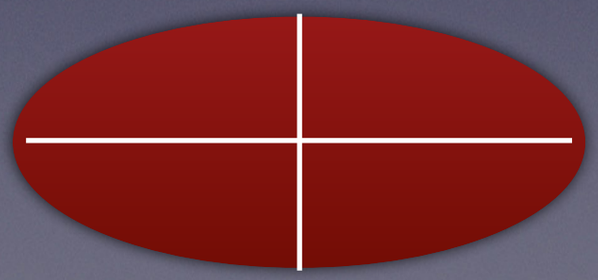
- forma, grandezza, ecogenicità
- singolo o multipli, confluenti
- Ecocolordoppler non soddisfacente

LND: parametri morfologici

- Indice di Rotondità: rapporto fra diametro Longitudinale ed Antero-Posteriore del LND.

- Se >1 morfologia allungata del LND: normale o possibile forma iperplastico-reattiva.

- Se =1 morfologia sferica del LND: possibile natura neoplastica.



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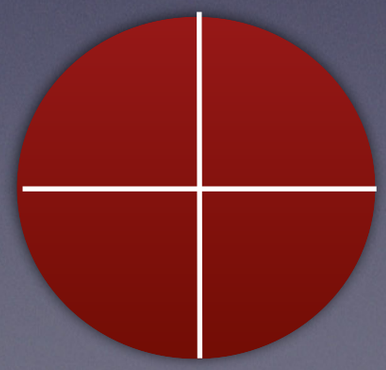

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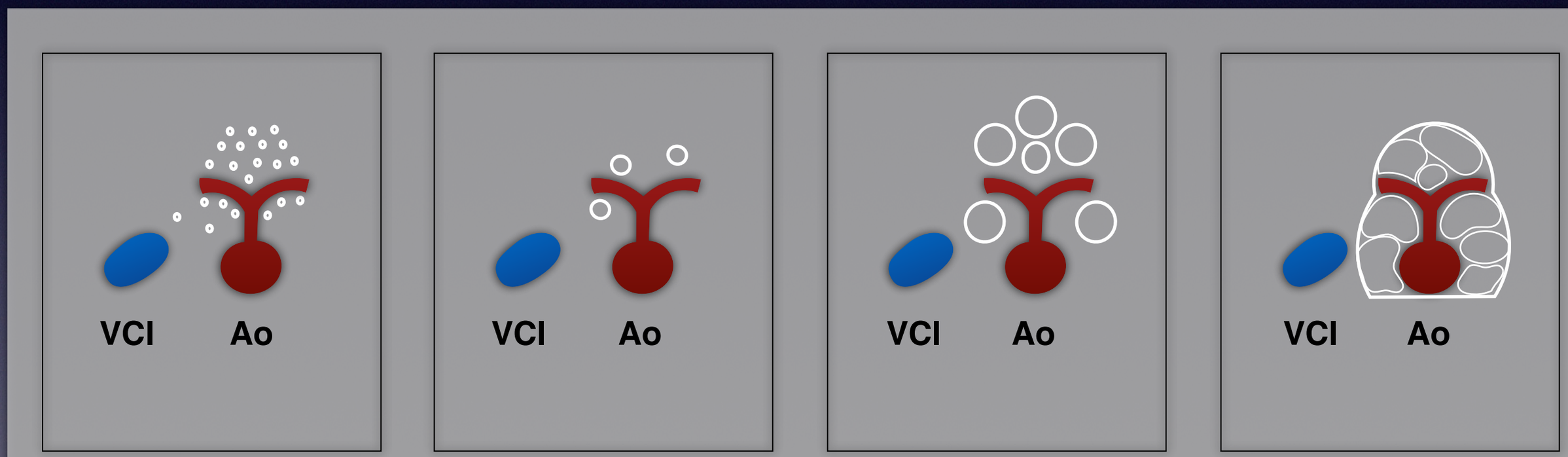
LND: parametri morfologici

⟵ utilità degli US ⟶



Aspetto micronodulare diffusa

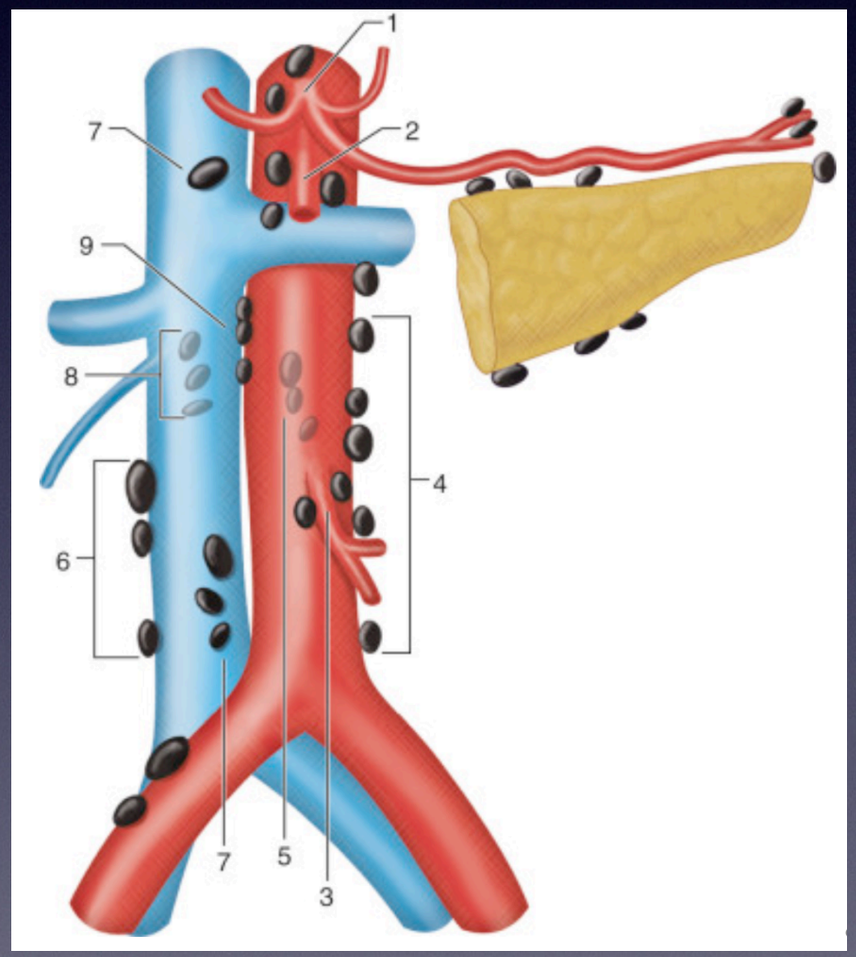
Aspetto micronodulare focale

Aspetto macronodulare focale

Bulky

LND: stazioni addominali principali

- tronco celiaco
- para-aortici ed inter aorto-cavali
- ilo epatico
- ilo splenico
- mesenterici

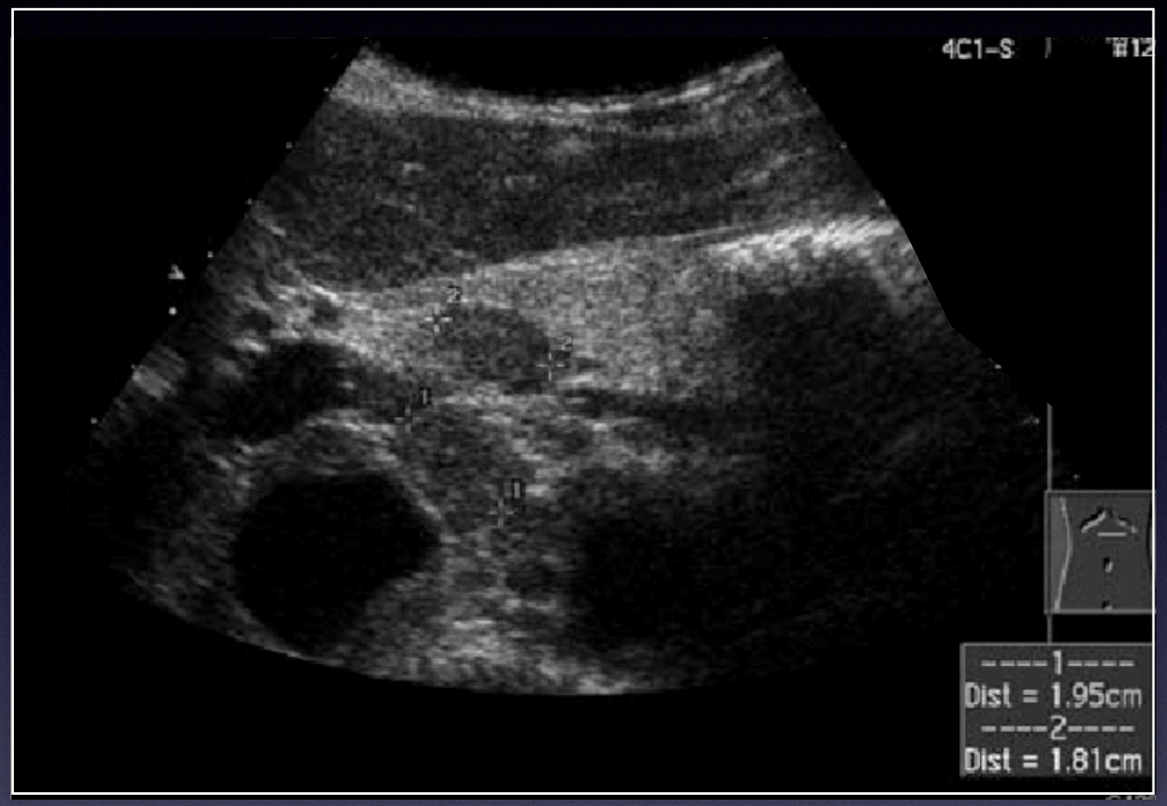


Linfoadenopatia: ilo epatico

LND INFIAMMATORI

- < 2 cm
- ovalari (IR >1)
- isoecogeni rispetto al fegato
- correlati ad HCV (77% pz con HCV), EBV, HIV, Cirrosi Biliare Primitiva, Colangite Sclerosante…

Linfoadenopatia & HCV



Pre-terapia

Post-terapia

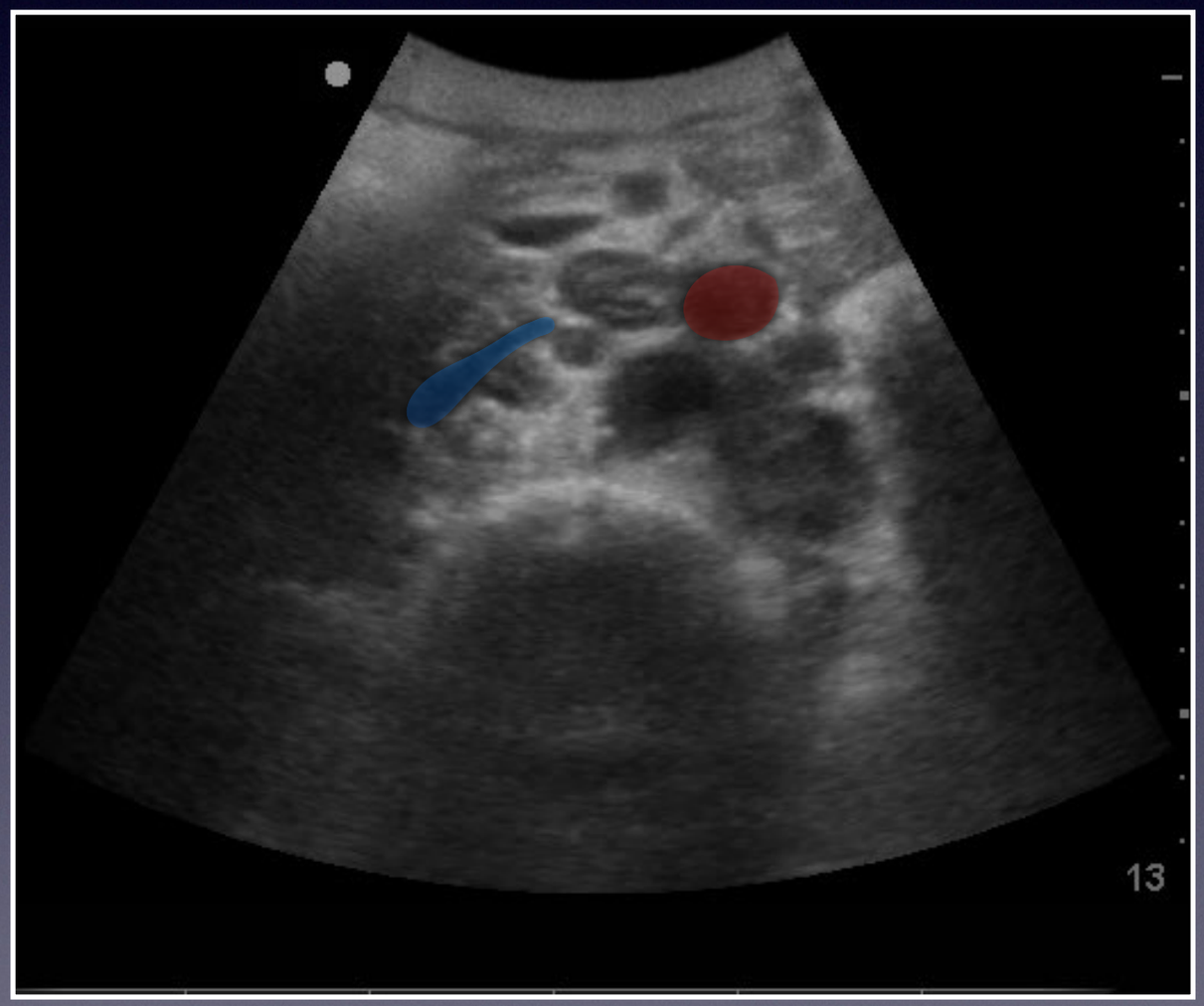
Linfoadenopatia: ilo epatico

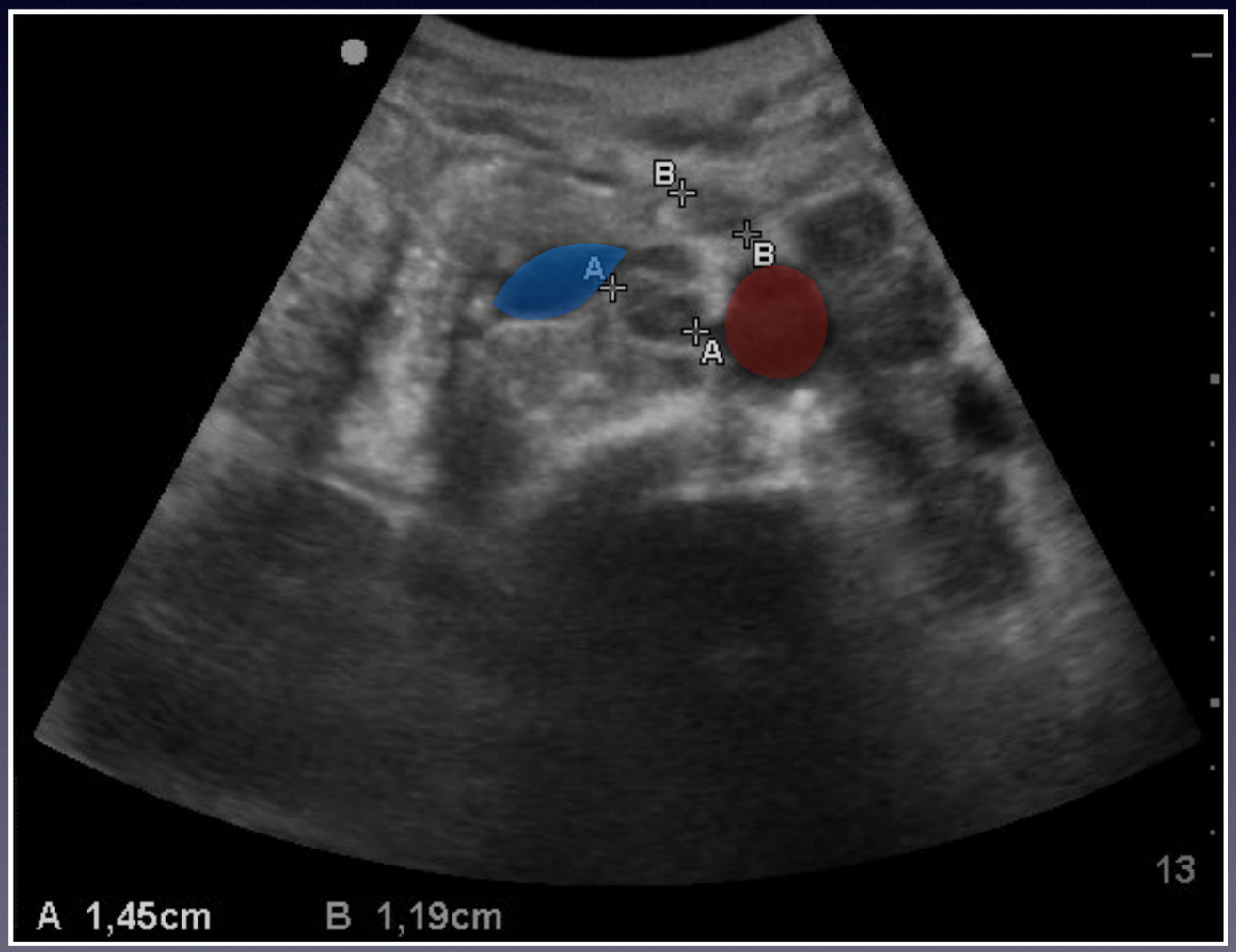
LND NEOPLASTICI

- non sicuri criteri US di malignità
- la probabilità di invasione LND neoplastica incrementa con l'aumentare delle dimensioni, l'ipoecogenicità e con Indice di rotondità che tende ad 1.

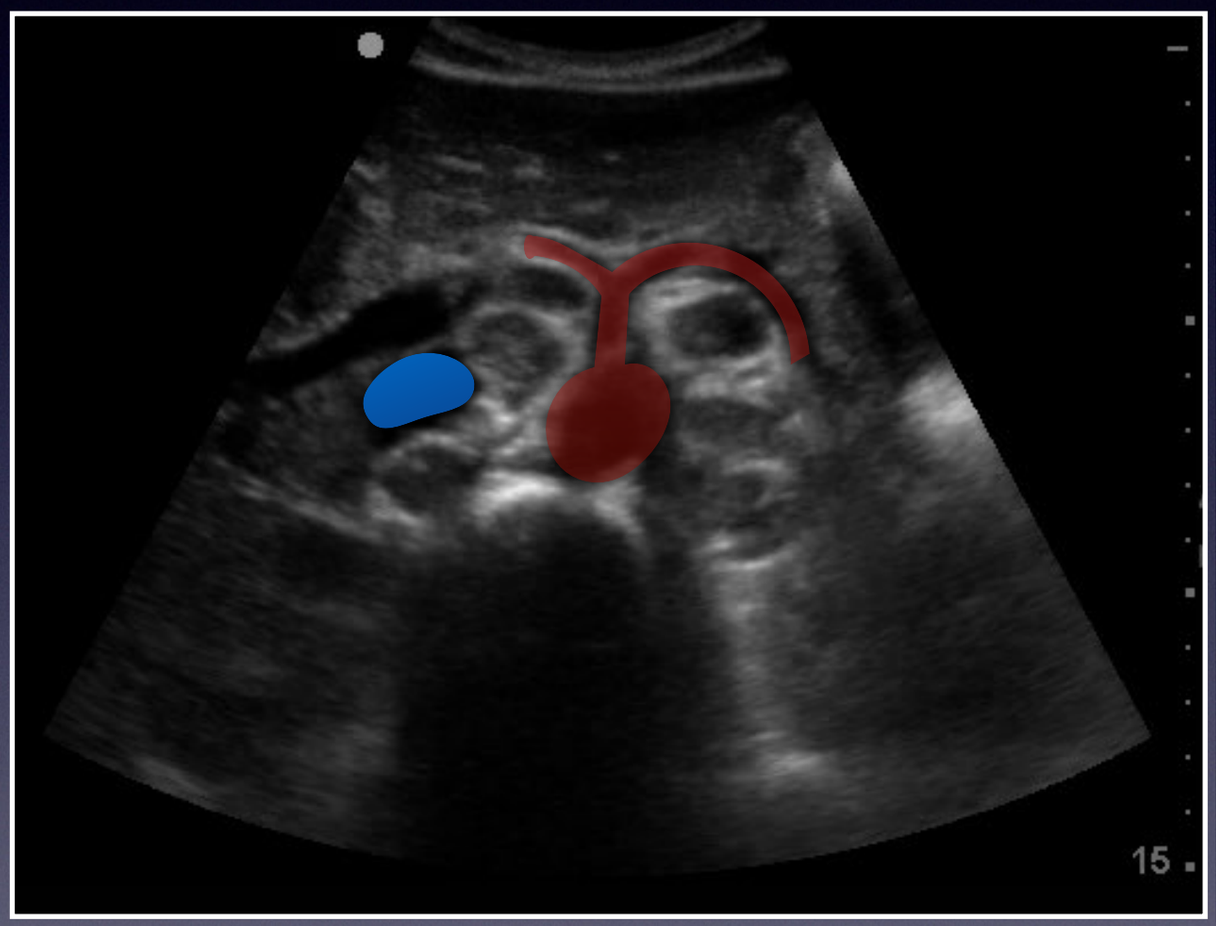
LND ilo epatico

LND inter aorto-cavali e para aortici

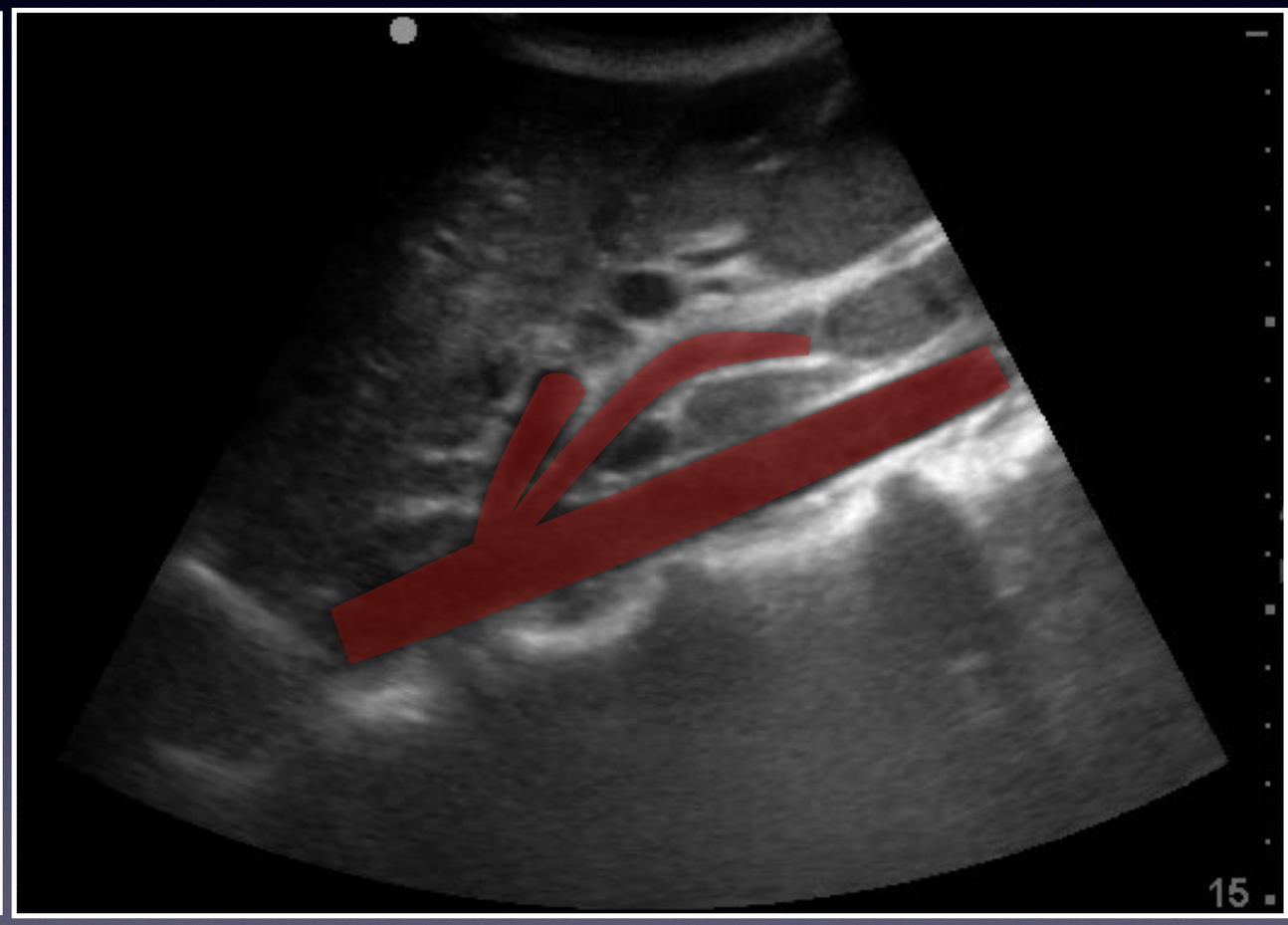




LND

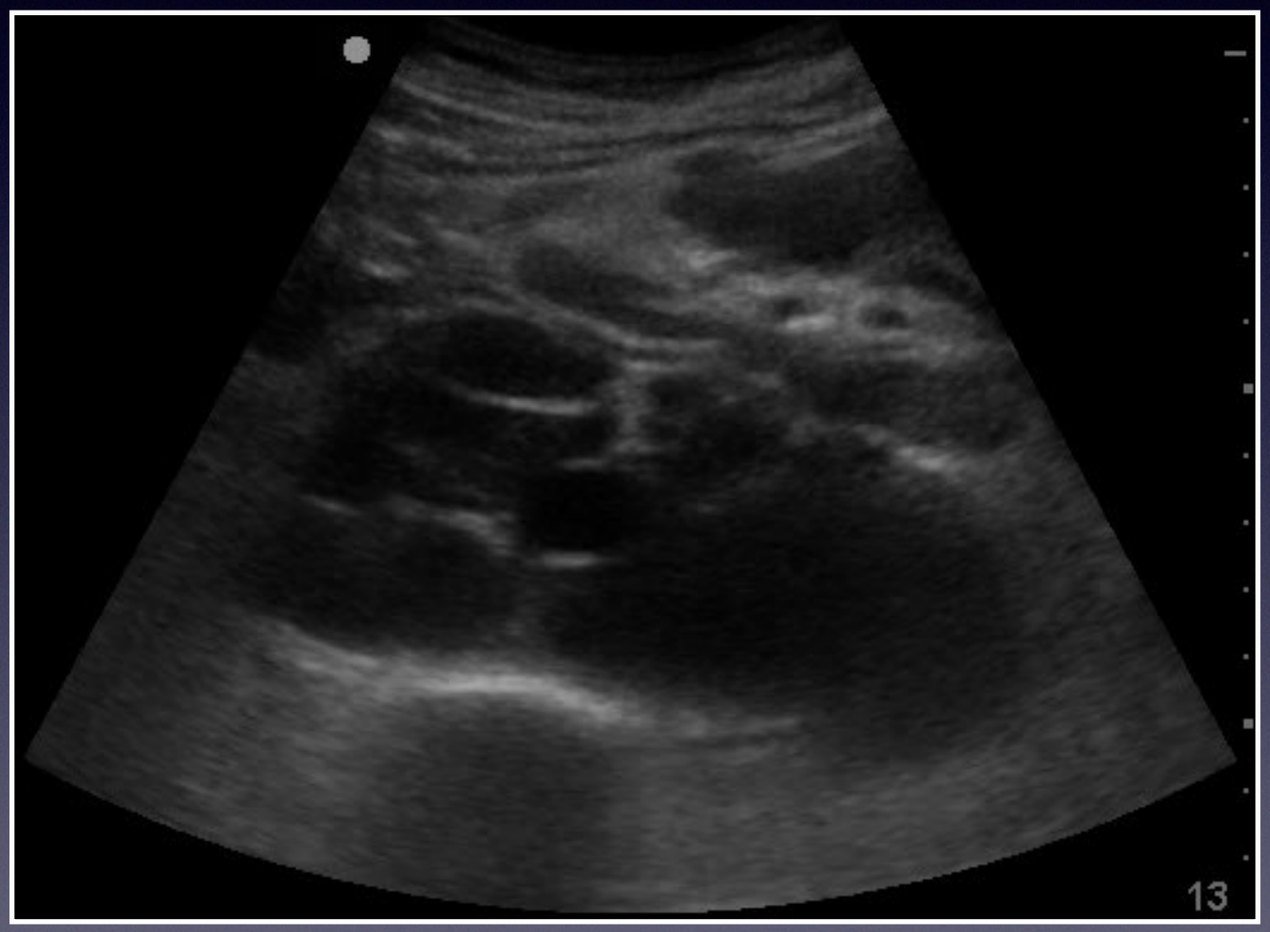


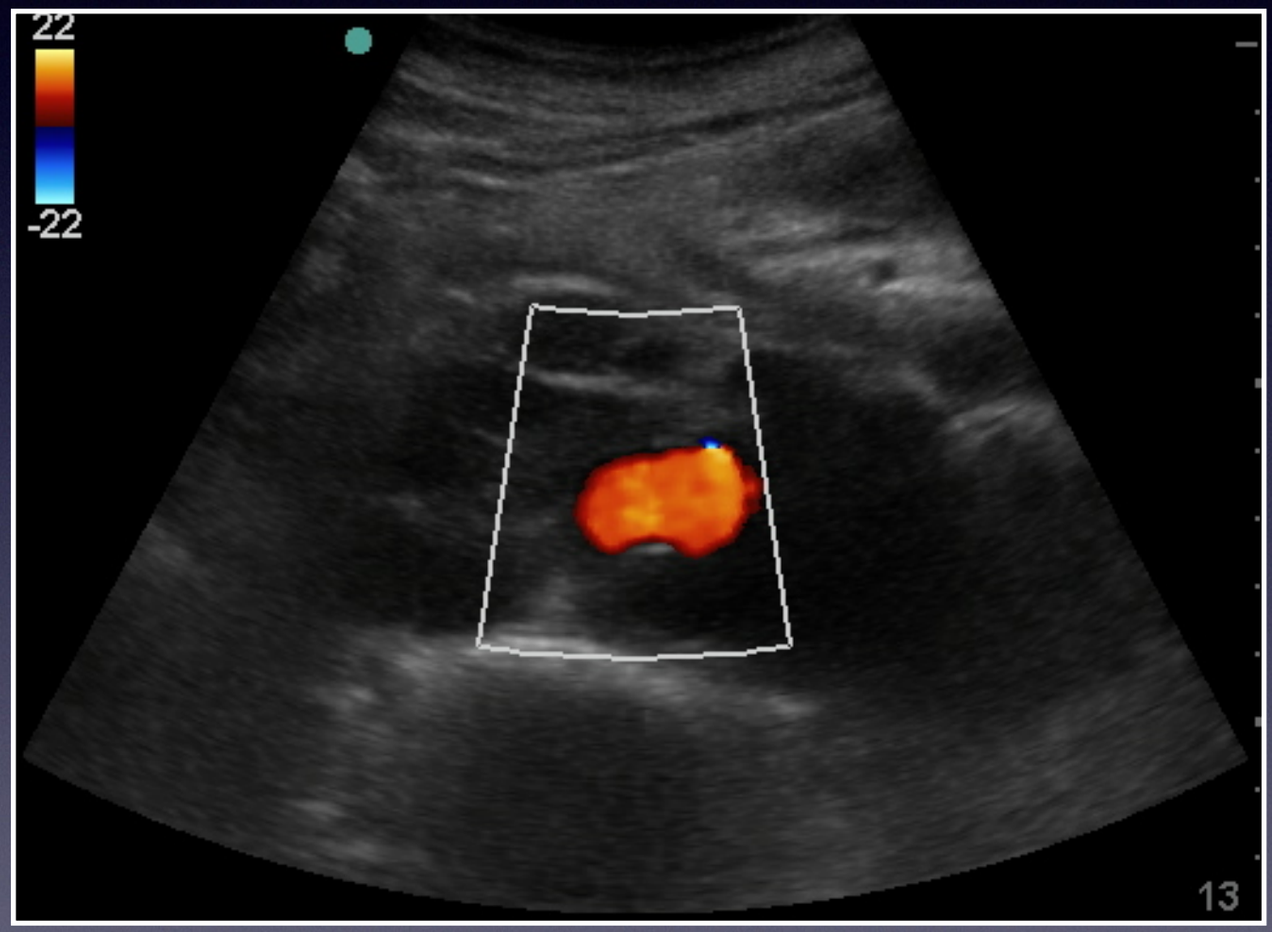
celiaci



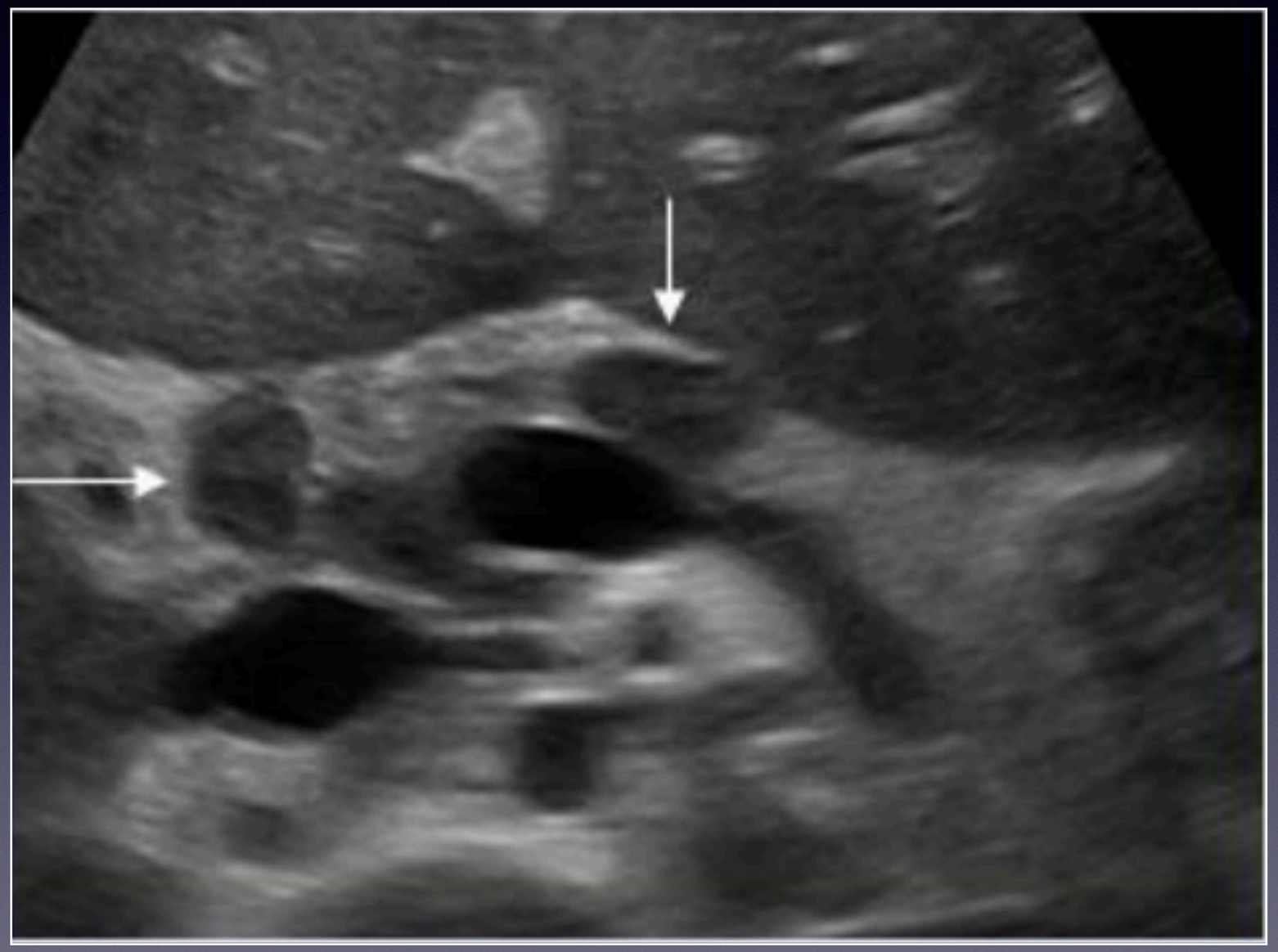
mesenterici

Bulky



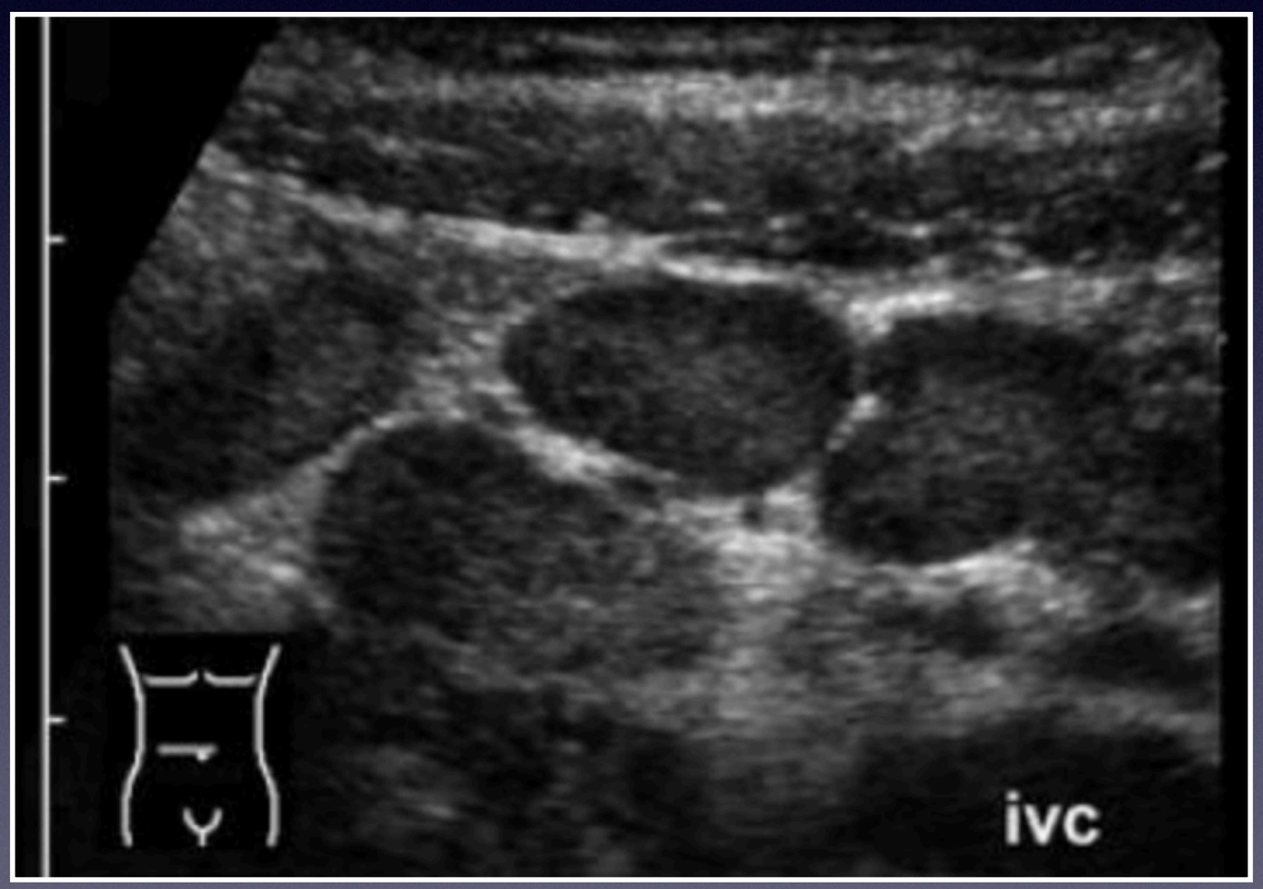


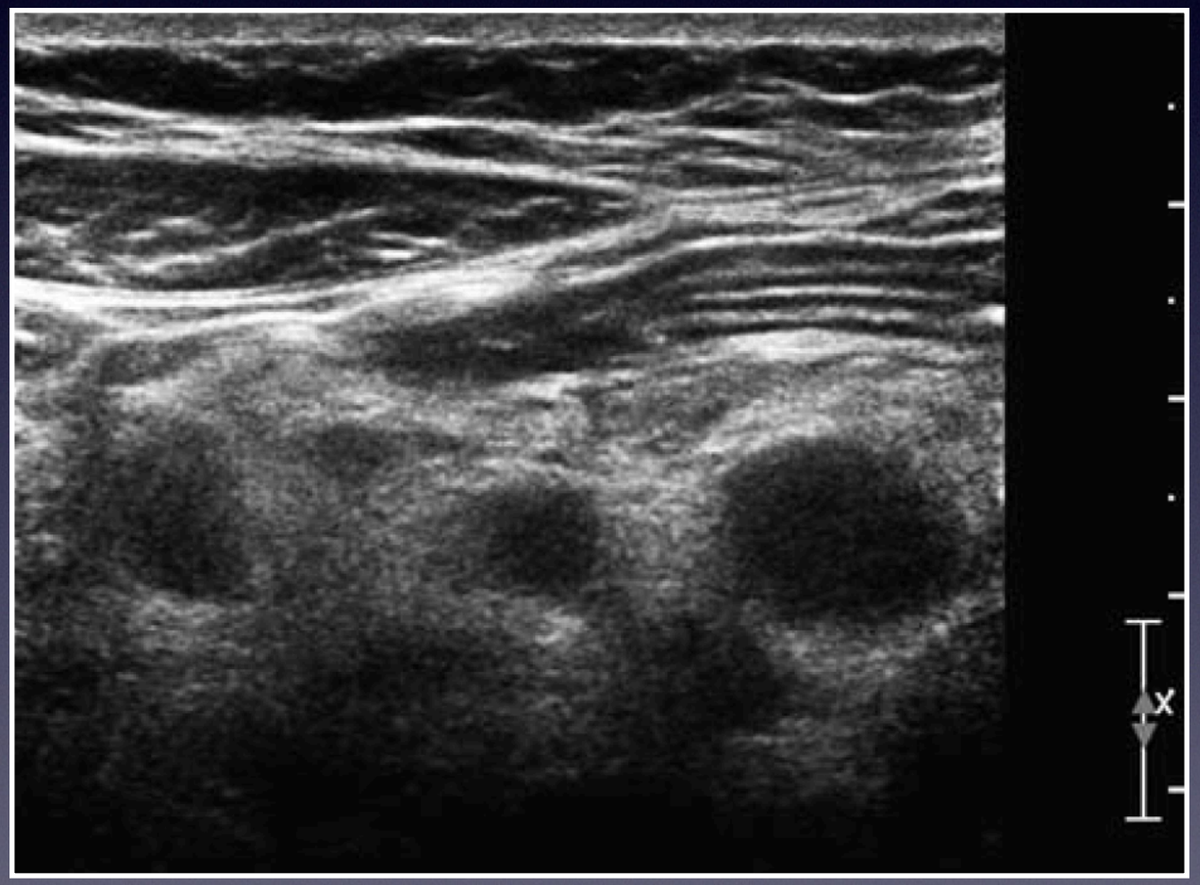
LND peripancreatici



LNH

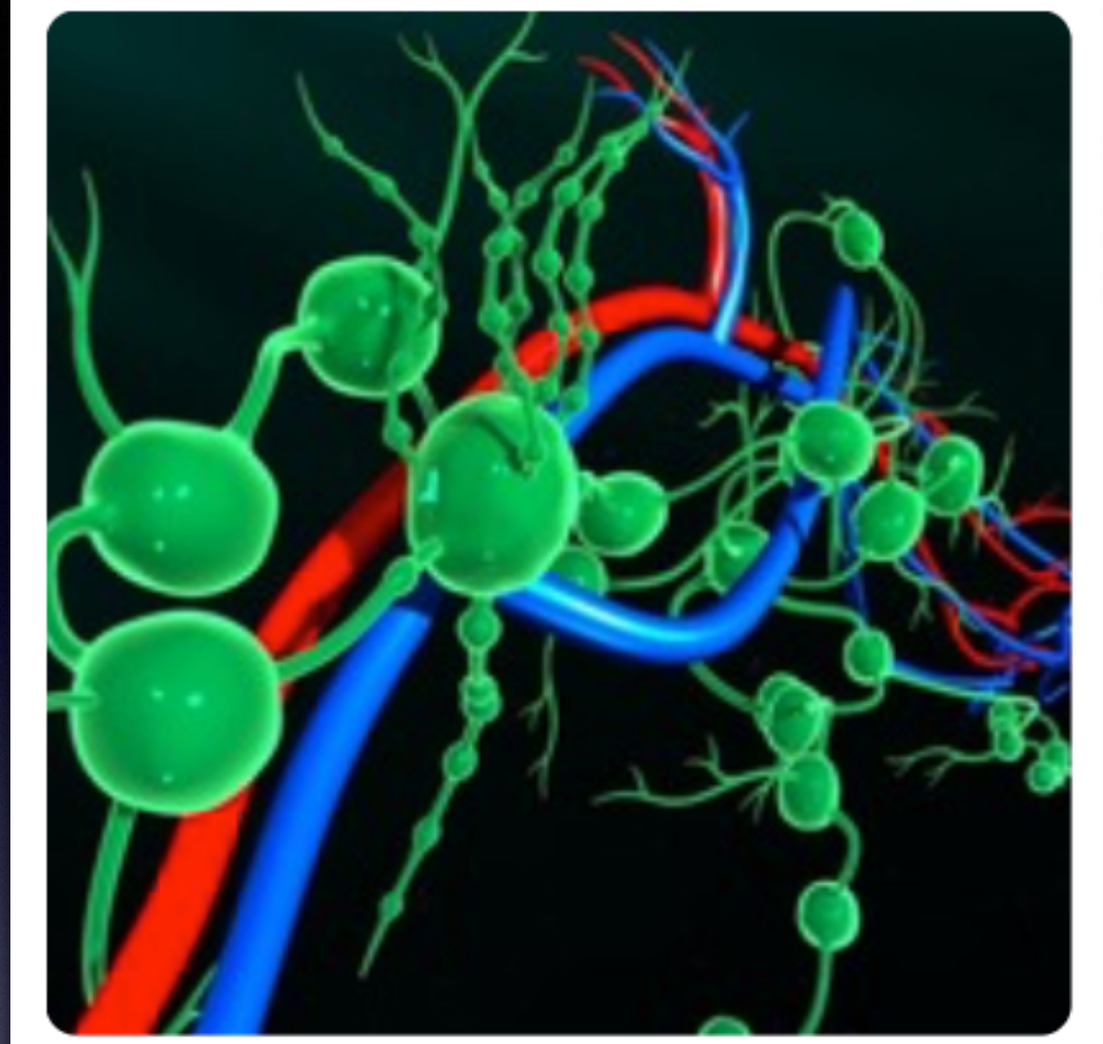
LND mesenterici





LND addominali: ruolo degli US

- sospetto diagnostico di LND patologici
- monitoraggio dei LND patologici o reattivi
- ottimizzazione del timing per TAC/PET



Grazie!