

XXI CORSO NAZIONALE DI
**ULTRASONOLOGIA
VASCOLARE
DIAGNOSI E TERAPIA**

20-22 APRILE 2023

BERTINORO

**Arteriopatie
infiammatorie: la
visione Reumatologica**

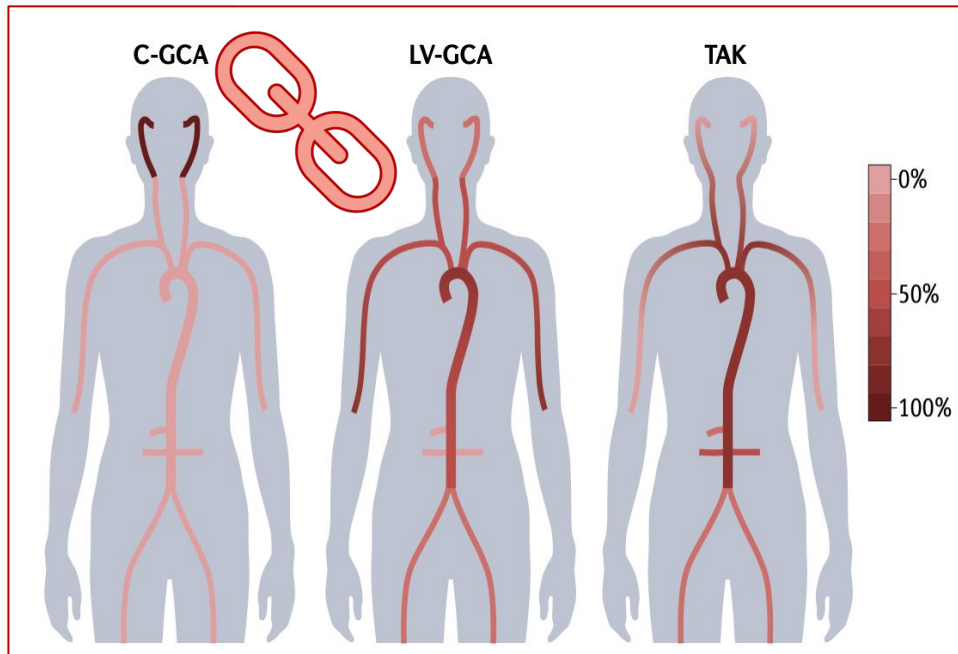
Dott.ssa Beatrice Maranini

UOC Reumatologia

Azienda Ospedaliero-Universitaria S. Anna,
Ferrara

Direttore: Prof. Marcello Govoni

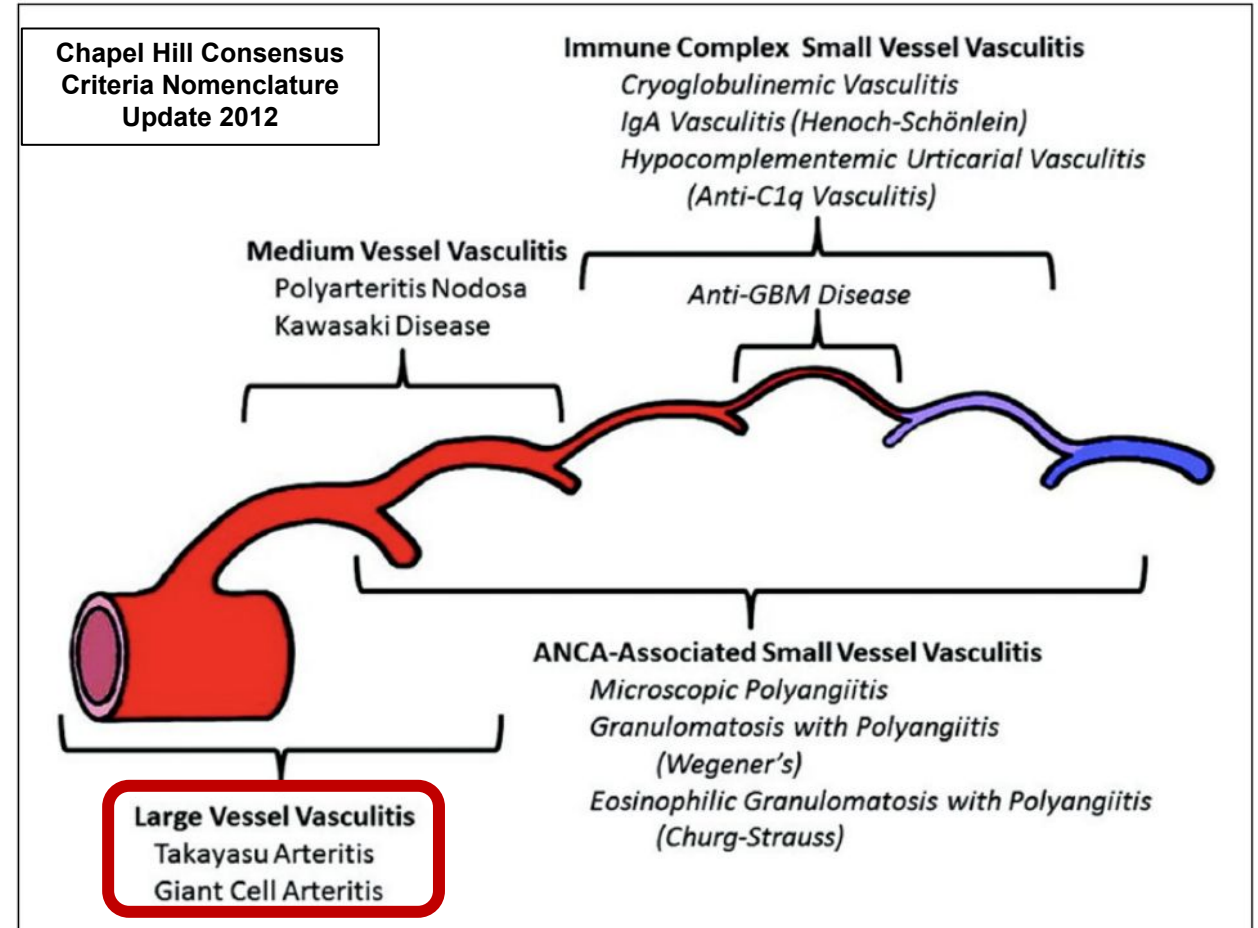
Classificazione delle vasculiti



Arterie
temporali

Arterie
ascellari

Arterie renali
e
mesenteriche

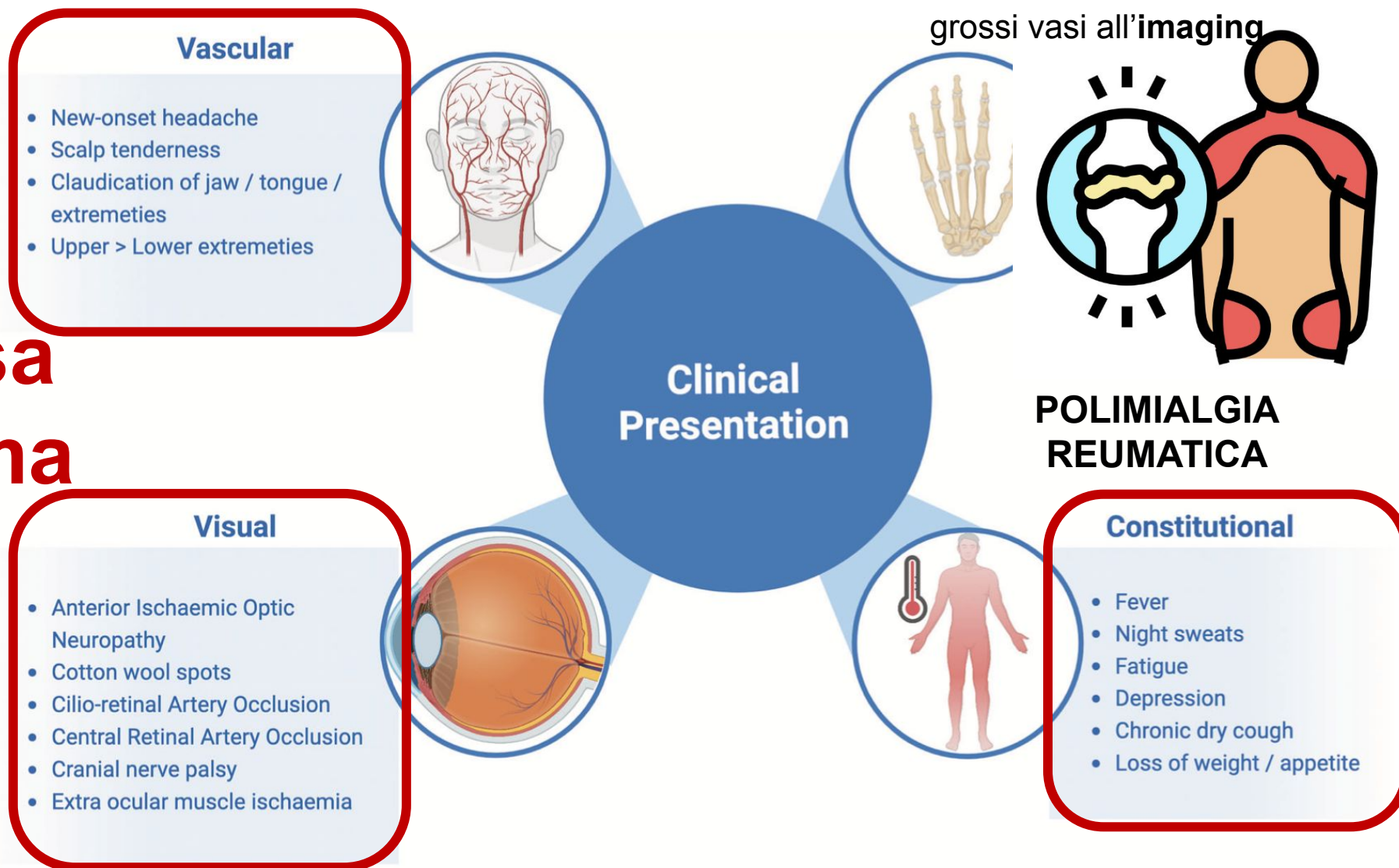


Jennette JC *et al.* Arthritis Rheum. 1994; Pugh D *et al.* Nat Rev Dis Primers. 2022.

GCA = Giant Cell Arteritis; TAK = Takayasu

Clinica

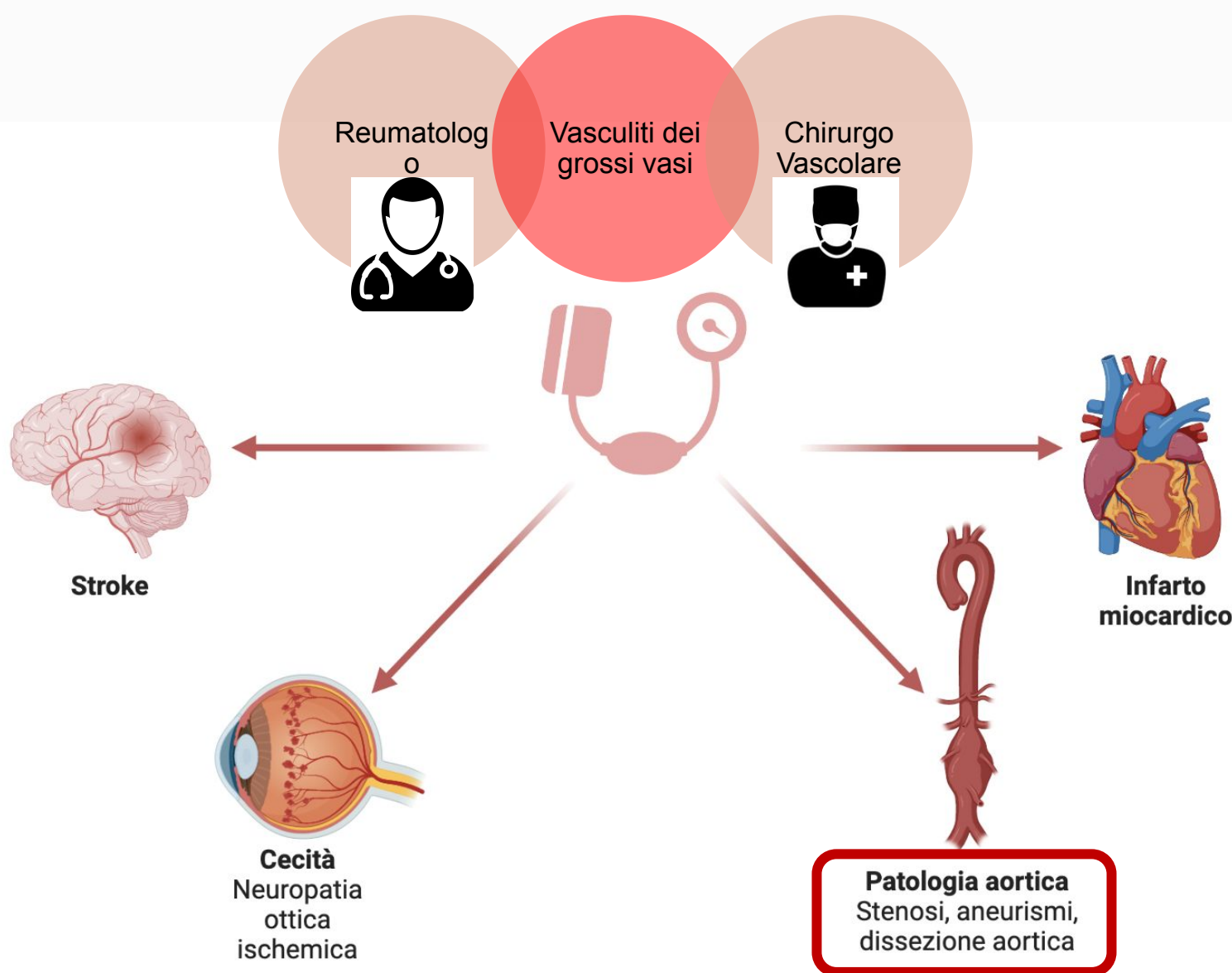
- **Insidiosa**
- **Conclamata**




Complicanze

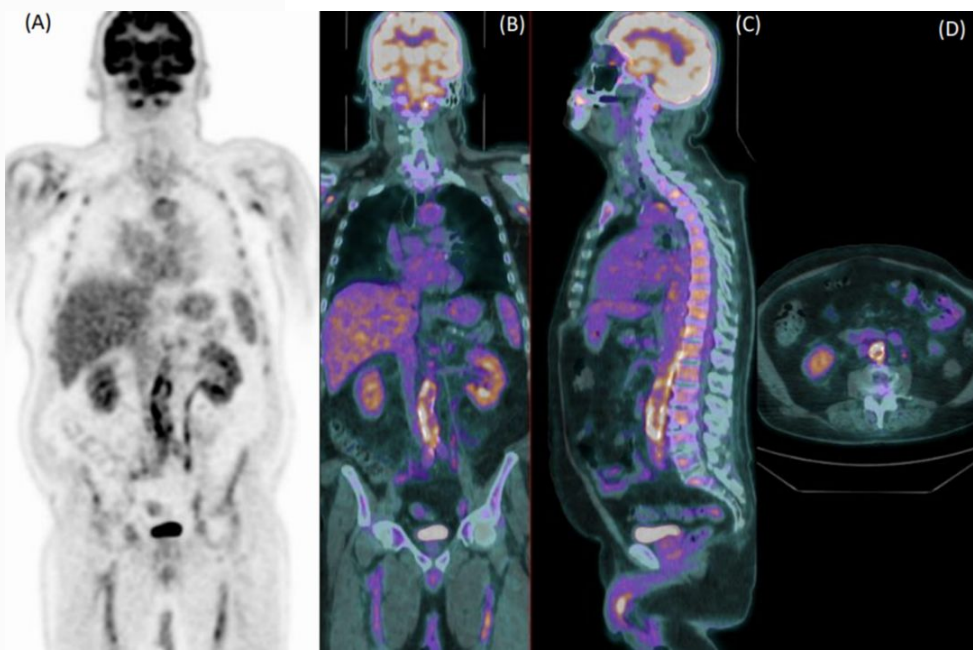


Diagnosi si precoc





Diagnosi




Chirurgia  Terapia immunosoppressiva

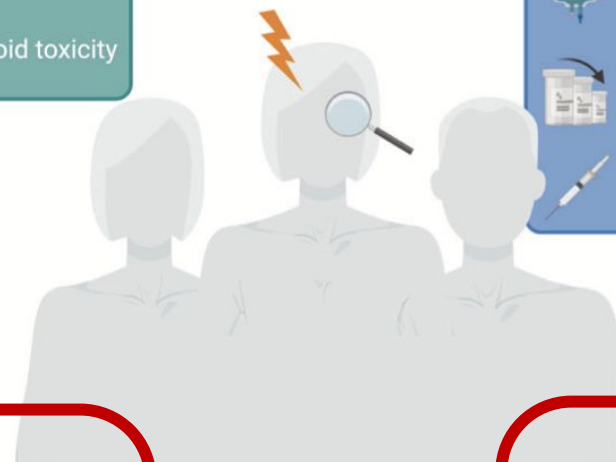


Aims:





-  Rapid, accurate diagnosis
-  Prevent glucocorticoid toxicity

Treatments:




-  Immediate high dose glucocorticoids when sight threatened
-  Taper over 12-18 months unless relapse occurs
-  Add tocilizumab, IL-6 inhibitor, if required



Tests:

- Where possible use rapid access clinics
-  Before steroids: ESR, CRP, platelets
 -  Temporal artery ultrasound
 -  Temporal artery biopsy
 -  PET/CT, CTA or MRA

Long-term monitoring:

-  Disease activity: symptoms, signs and laboratory markers
-  Glucocorticoid side effects: diabetes, hypertension
-  Protect bones

DIAGNOSI

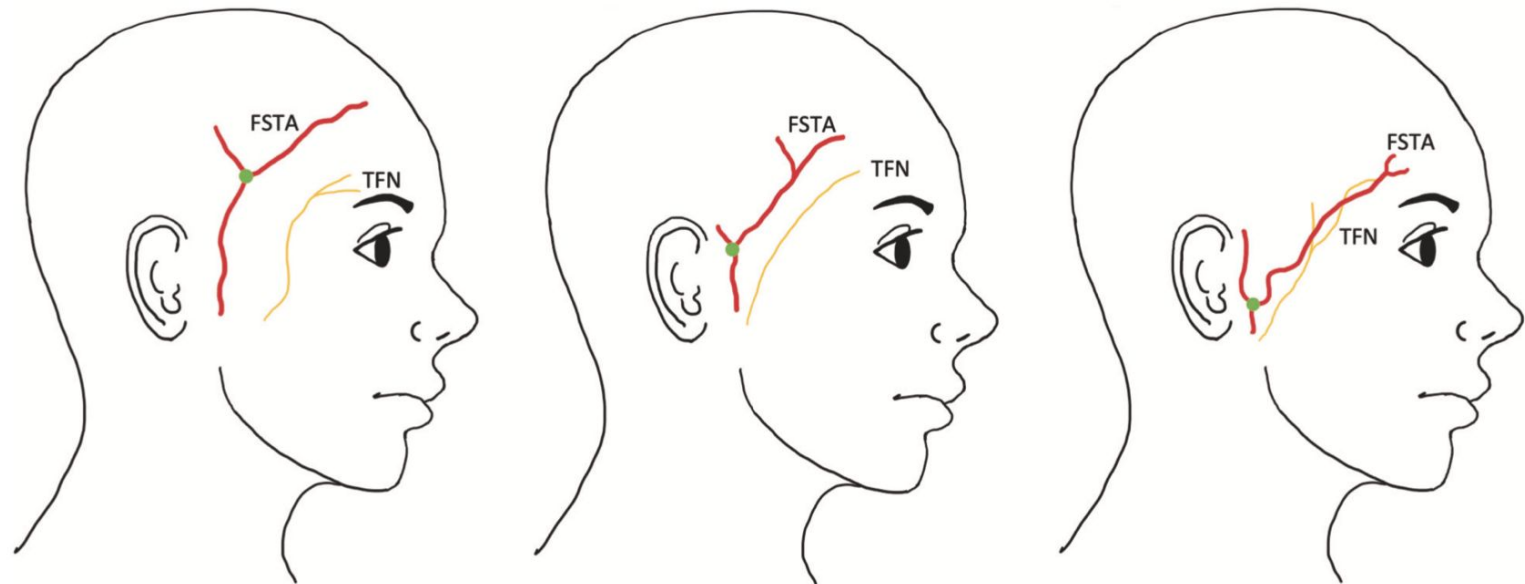
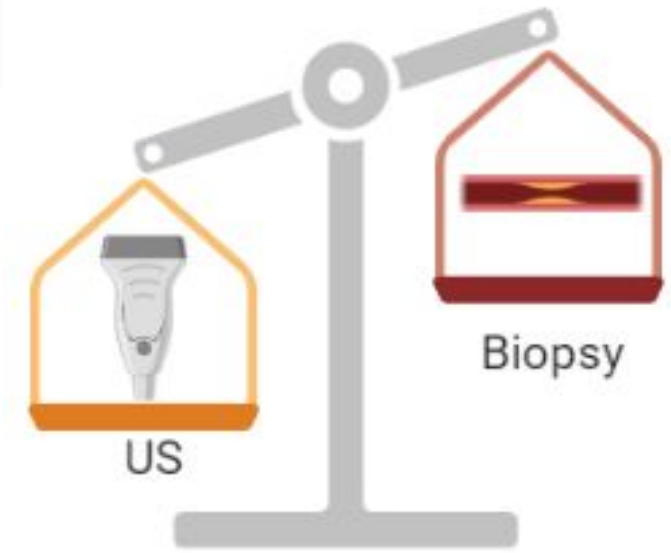
FOLLOW UP

Diagnosi: limiti della biopsia

□ **Distribuzione «a salto» delle lesioni**

□ **Possibili complicanze:**

- danni al nervo faciale
- necrosi cutanea
- stroke (interruzione di un circolo collaterale)



US: diagnostica differenziale e pitfalls

Overview

Diagnosis of large vessel vasculitis (LVV)

Vasculitis mimics

Atherosclerosis (may cause vascular inflammation)

IgG4-related disease (may cause true aortitis)

Hereditary disorders:

- Marfan syndrome
- Ehlers-Danlos syndrome Type IV
- Loeys-Dietz syndrome
- Neurofibromatosis type 1
- Fibromuscular dysplasia

Primary amyloidosis

Erdheim-Chester disease

Segmental arterial mediolysis

Congenital aortic coarctation

Post-radiation vascular lesions

Thoracic outlet syndrome

Secondary vasculitis

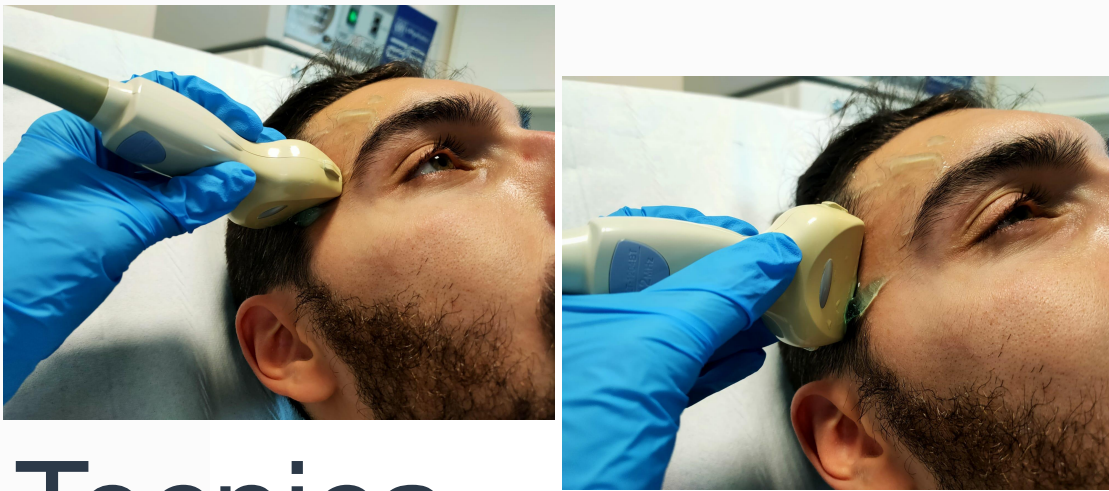
Infection:

- Tuberculosis
- Mycotic aneurysm
- Syphilis
- HIV (human immunodeficiency virus)
- Bacterial aortitis
(e.g. Staphylococcus, Streptococcus and Salmonella)

Neoplasia / Treatment with G-CSF

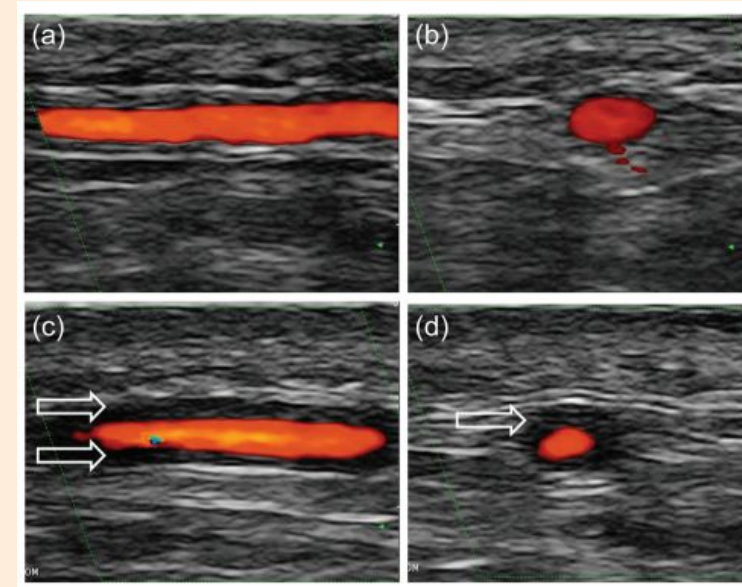
Systemic immune-mediated diseases:

- Rheumatoid arthritis
- Systemic lupus erythematosus
- Sjögren's syndrome
- Idiopathic inflammatory myopathies
- Spondyloarthropathies
- Sarcoidosis
- Inflammatory bowel diseases



Tecnica

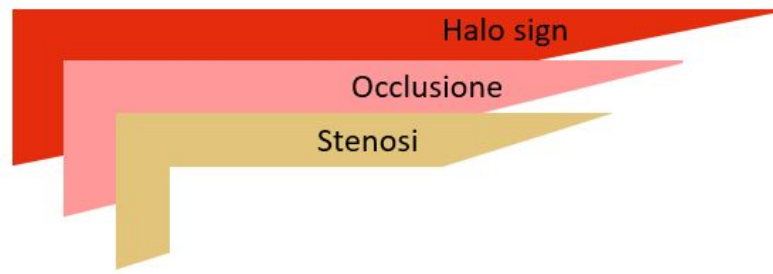
- ◆ Sonda **lineare** ad alta frequenza (10 MHz)
- ◆ Combinazione **ultrasonografia B-mode/Doppler**
- ◆ Esame completo delle arterie temporali di entrambi i lati (ramo frontale e parietale):
 - ◆ **parete arteriosa** (diametro del lume arterioso, spessore della parete arteriosa)
 - ◆ **velocità flusso sistolico** (peak systolic blood-flow velocity)



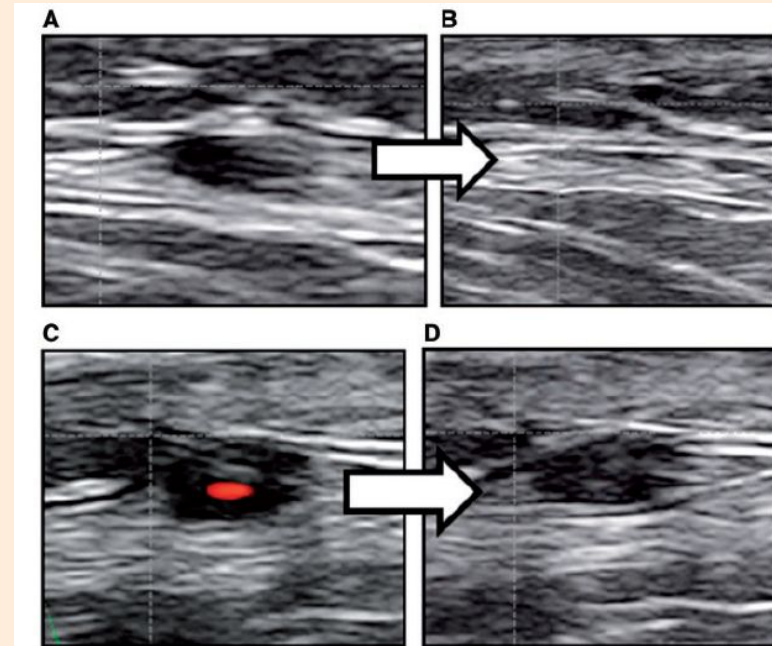
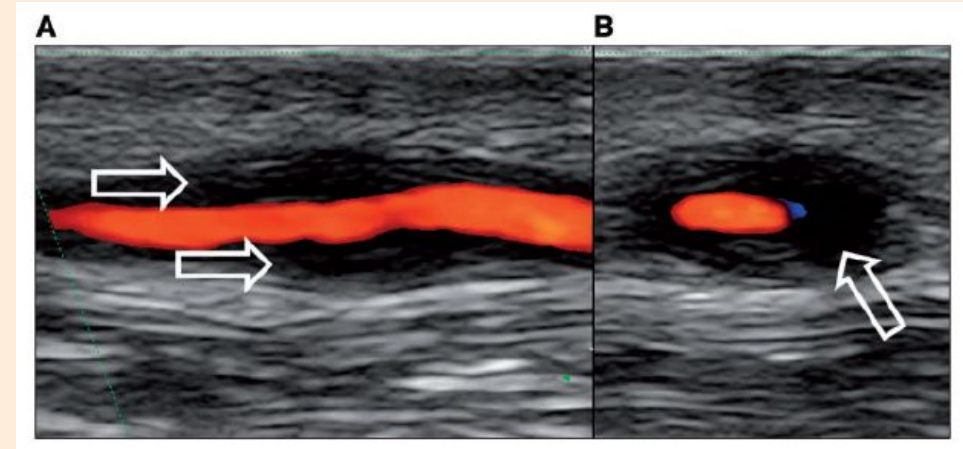
Site	Patients with Temporal Arteritis (N=30)	Patients with Polymyalgia Rheumatica (N=37)	Control Subjects (N=30)	Patients with Negative Histologic Findings and Other Diagnoses (N=15)
Parietal ramus (15 mm distal to bifurcation)				
Systolic lumen (mm)	0.79±0.29	0.76±0.20	0.89±0.24	0.81±0.30
Wall (mm)	0.94±0.28*	0.70±0.08	0.72±0.13	0.79±0.11
Maximal velocity (cm/sec)	52±18	59±14	54±14	57±18
Frontal ramus (25 mm distal to bifurcation)				
Systolic lumen (mm)	0.67±0.20	0.66±0.22	0.74±0.24	0.68±0.23
Wall (mm)	0.95±0.20*	0.66±0.07	0.66±0.13	0.72±0.09
Maximal velocity (cm/sec)	48±13	53±16	47±15	55±19
Frontal ramus (10 mm distal to bifurcation)				
Systolic lumen (mm)	0.74±0.24	0.71±0.17	0.86±0.26	0.79±0.30
Wall (mm)	0.95±0.22*	0.69±0.09	0.71±0.13	0.76±0.10
Maximal velocity (cm/sec)	50±14	56±15	48±13	59±20
Common superficial temporal artery (8 mm below skin surface)				
Systolic lumen (mm)	1.51±0.44	1.54±0.41	1.70±0.35	1.85±0.54
Maximal velocity (cm/sec)	62±22	61±16	55±13	64±16

Specificità dell'alone

Specificità



- ♦ Area **ipo-anecogena circonferenziale** intorno al lume vasale
- ♦ Deve essere dimostrato in **due scansioni (longitudinale e trasversale)**
- ♦ Conseguenza dell'edema della parete arteriosa (**NON COMPRIMIBILE**)

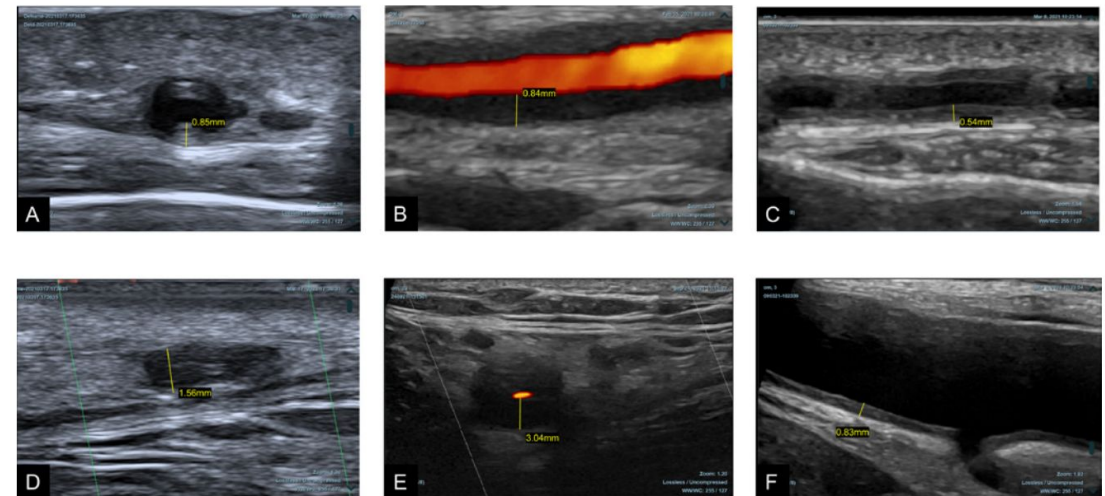


Segno dell'alone

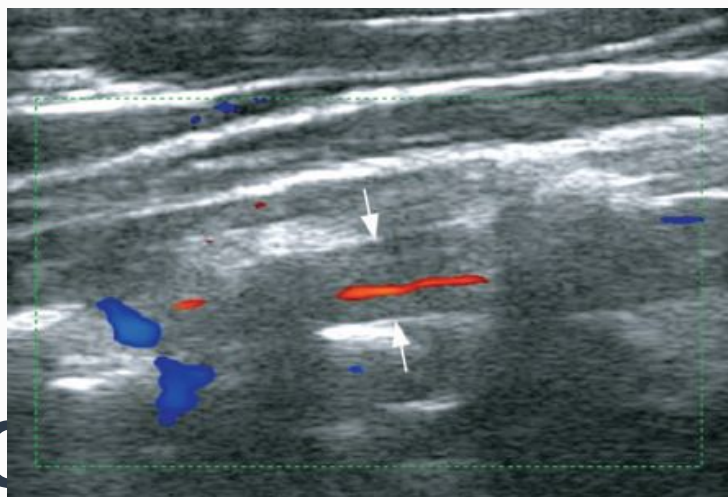
CUT OFF:

- ❖ Arterie temporali: **0,3-1 mm**
- ❖ Arterie ascellari: **1-2 mm**
- Visibile **entro 2 settimane** dall'avvio di terapia steroidea, ma **talvolta persistente** per anni (ai limiti di significatività)
- L'**ispessimento di parete** si può osservare **per anni** se è occorso halo sign o occlusione

Halo Grading	Common superficial TA halo thickness (mm)	Parietal TA halo thickness (mm)	Frontal TA halo thickness (mm)	Axillary artery halo thickness (mm)
Grade 0	0.3 or less	0.2 or less	0.1 or less	0.5 or less
Grade 1	0.4	0.3	0.2	0.6
Grade 2	0.5	0.4	0.3	0.7-0.8
Grade 3	0.6-0.7	0.5*	0.4	0.9-1.5
Grade 4	0.8 or more	0.6 or more	0.5 or more	1.6 or more

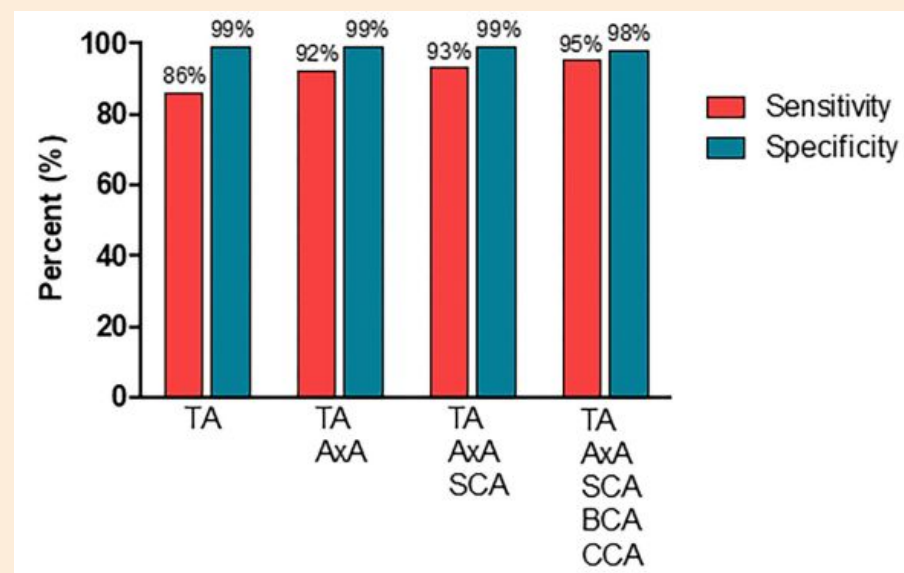
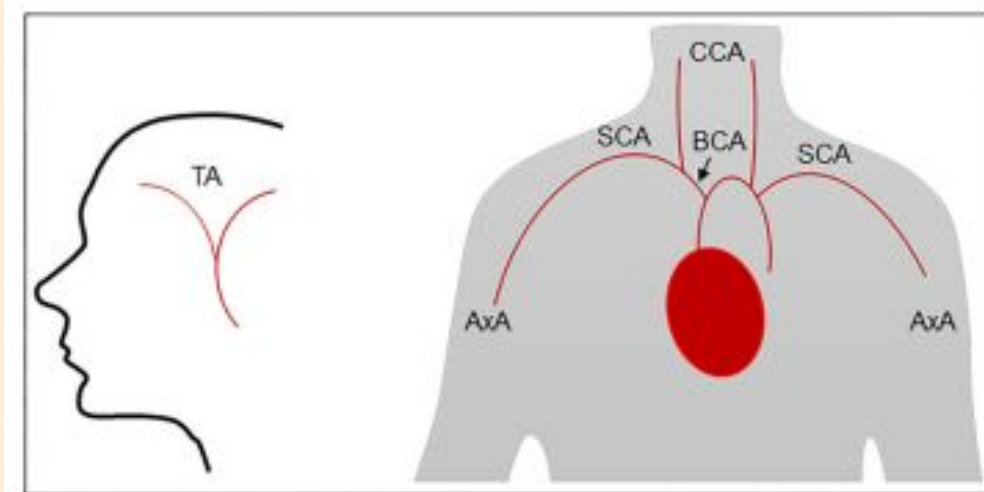


Vertebrali!



deg dell'alone

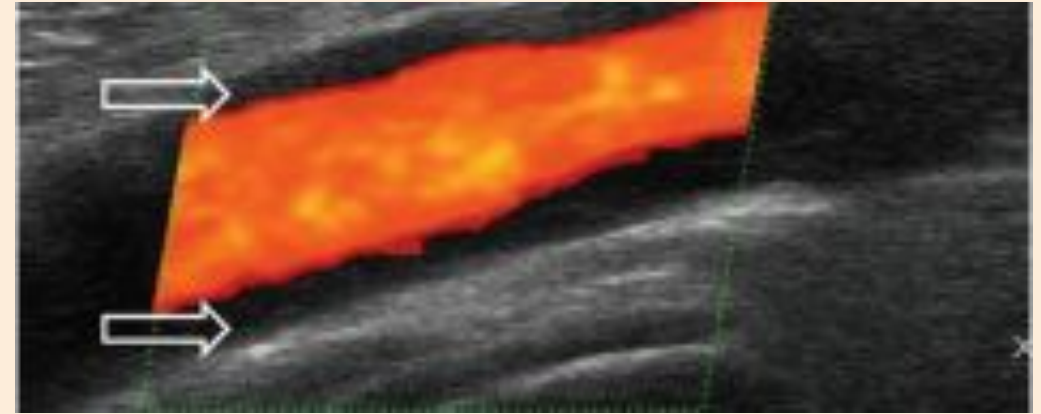
- **ESTENSIONE DEL PROTOCOLLO US**, anche in GCA e non solo TAK, comprendendo:
 - Arterie temporali e ascellari
 - Se possibile anche arterie carotidi e brachiocefaliche
- ◆ **Aumento della sensibilità** senza influenzare la specificità



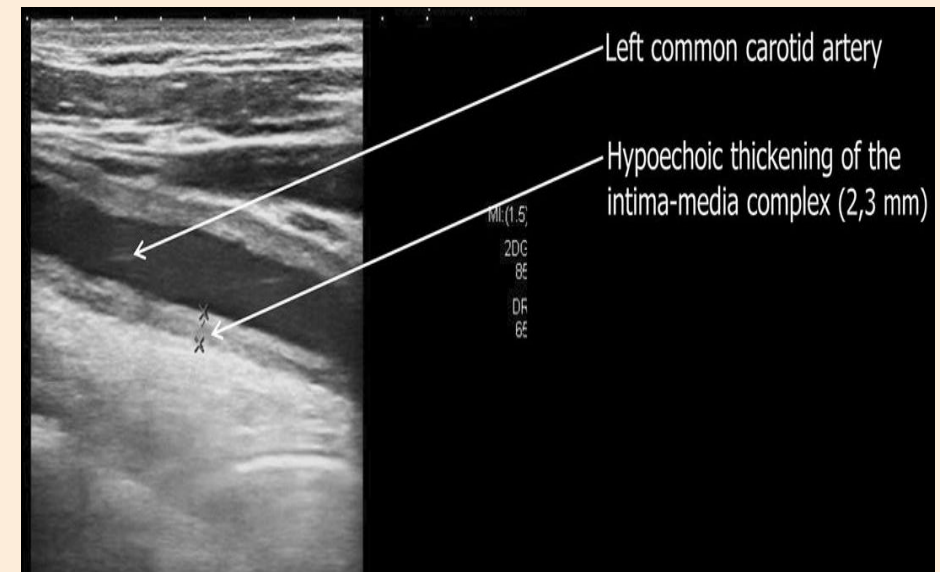
Halo sign e Macaroni sign

- Segno dell'alone: **ipoecogeno (GCA)**
- Segno di Macaroni: **media ecogenicità (TAK)**
- ◆ **Non chiara la ragione della differenza**

HALO SIGN

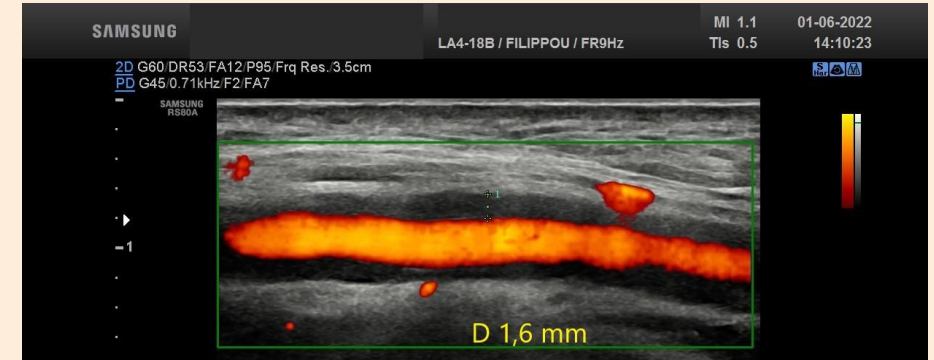
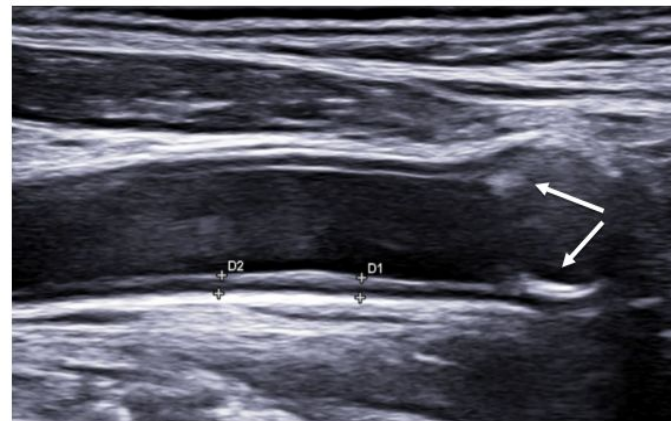
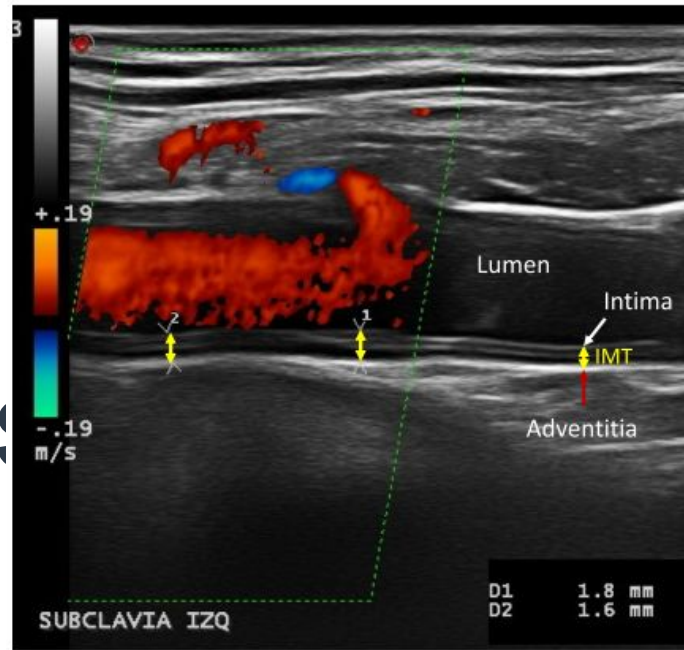


MACARONI SIGN

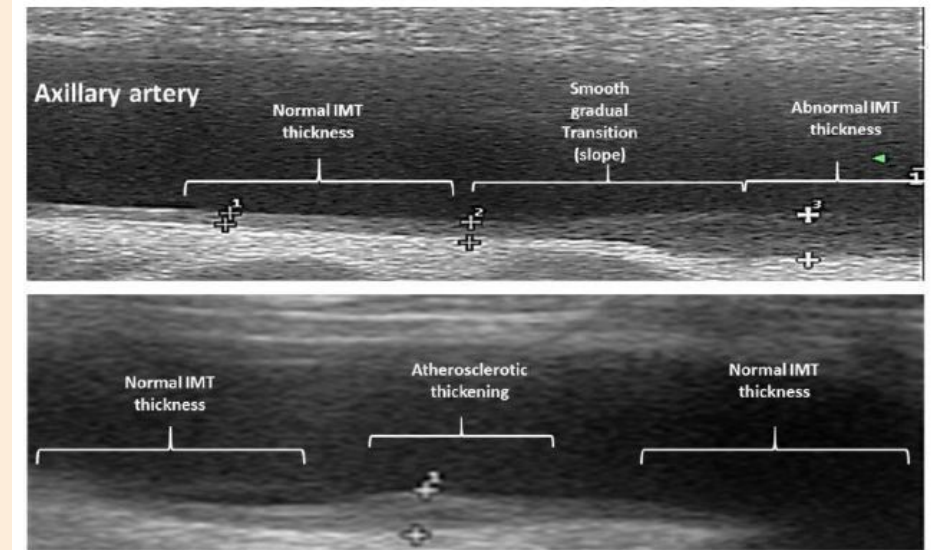


Pitfalls: aterosclerosis

- Maggiore ipoecogenicità del vaso in GCA/TAK
 - Perdita della doppia linea della IMT in GCA/TAK
- VS**
- Placche aterosclerotiche

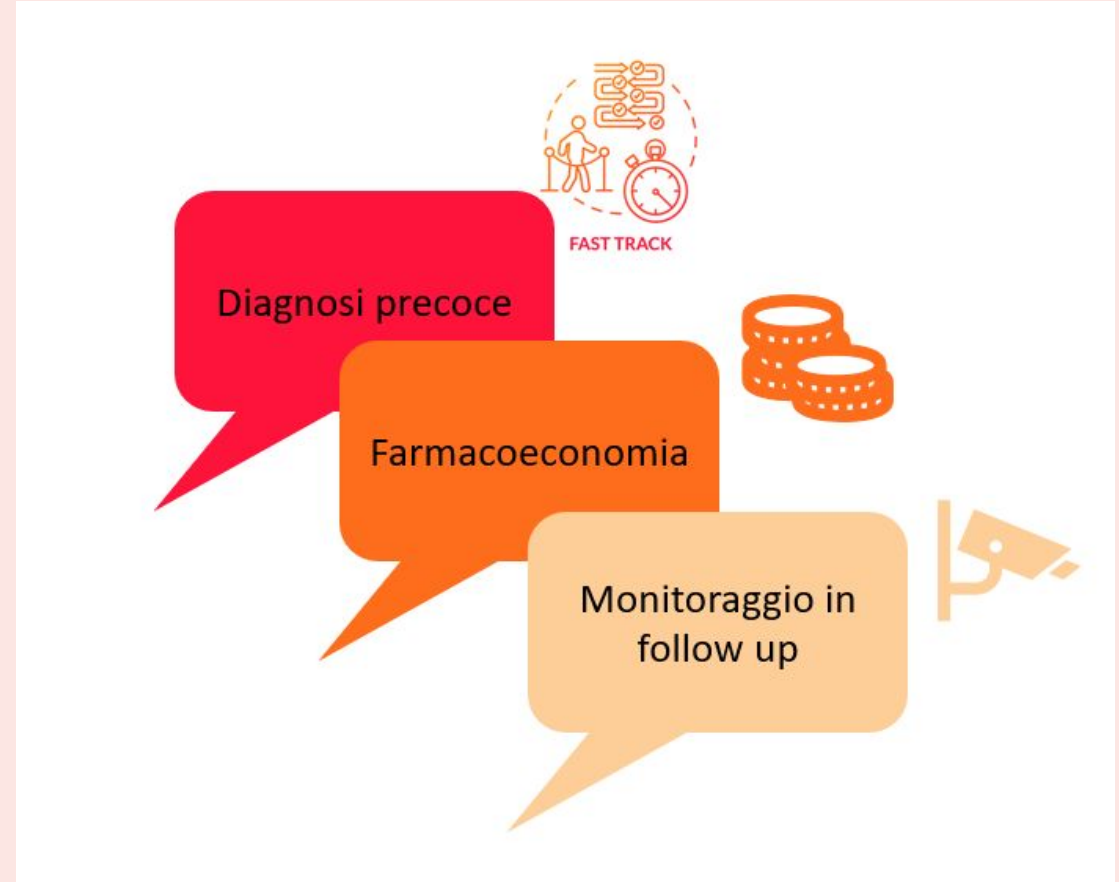


SLOPE SIGN



Take home messages

- **Diagnosi precoce:** evitare potenziali ritardi diagnostici e terapeutici, evitare misdiagnosi
- **Minor costo** dell'US rispetto a MRI o PET, **evitare complicanze** della biopsia
- **Monitoraggio**, anche frequente, in follow up



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Grazie per
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