

EchoDoppler des artères temporales dans l'artérite à cellules géantes (ACG)

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Avec le centre de compétence maladies auto-immunes
systémiques rares

JOURNÉE VASCULARITES

Hôpital de la Conception, AP-HM Marseille

Artérite à Cellules Géantes (ACG)

Vascularite des gros vaisseaux

La plus fréquente des vascularites du sujet âgé

Age > 50 ans (**Age moyen 70-75ans**)

Femmes (1%) > Hommes (0,5%)

Ce que l'on redoute → **complications ophtalmologiques 15-30% (NOIAA)**

Séquelles sévères +++ / risque de bilatéralisation

Quasiment exclusivement au diagnostic avant le début du traitement dans 95% des cas !



Artérite à Cellules Géantes (ACG)

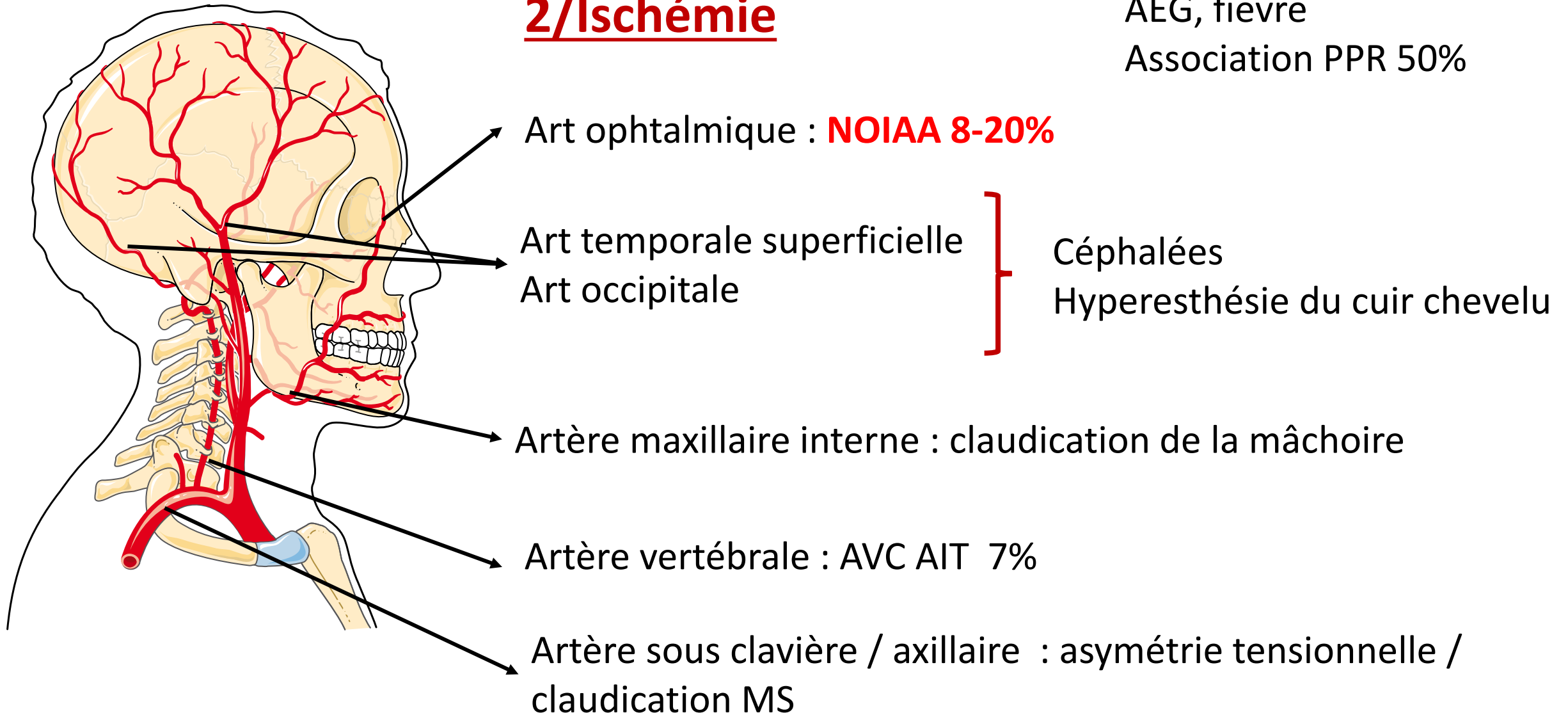
1/Inflammation

Syndrome inflammatoire
biologique +++

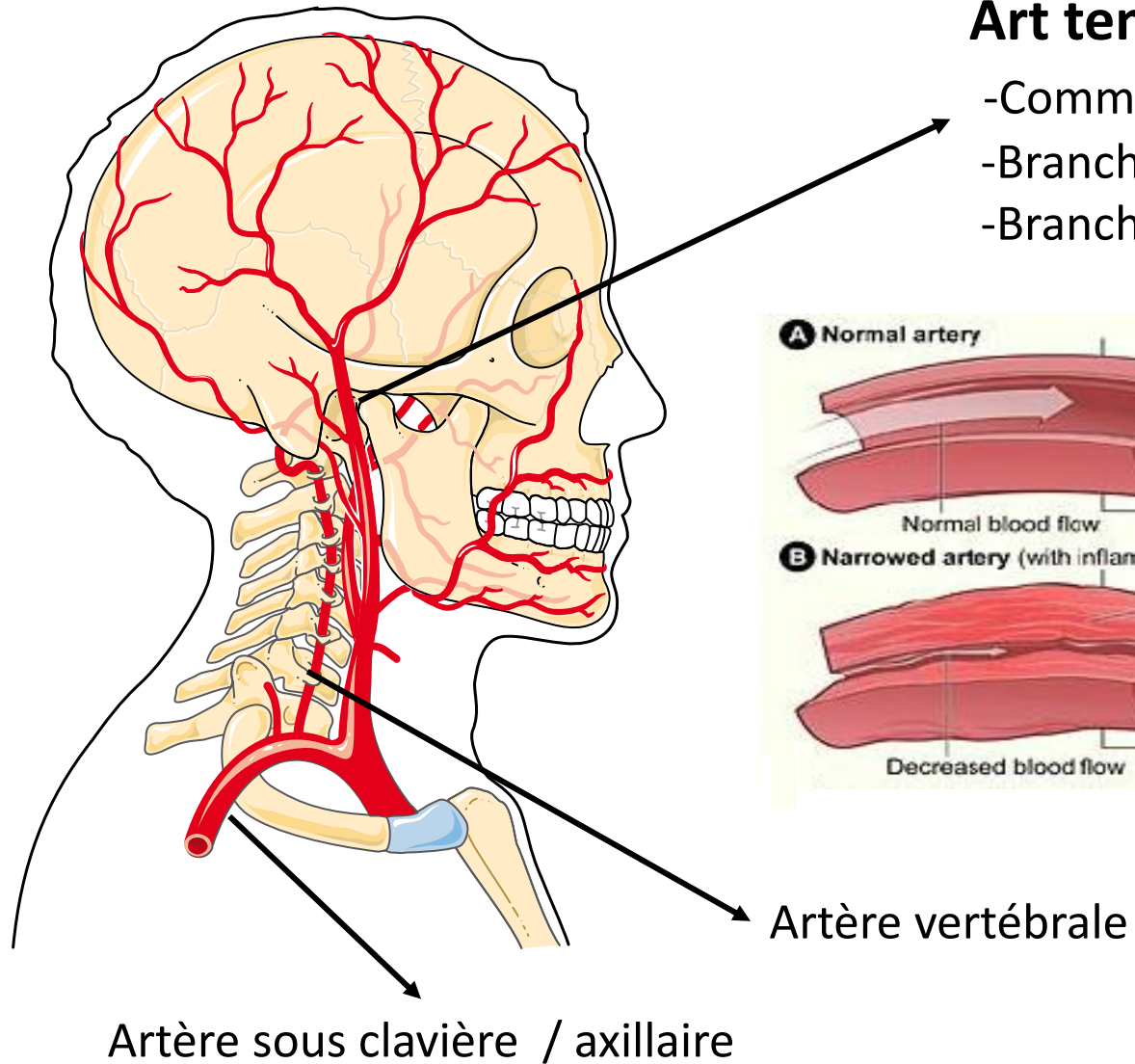
AEG, fièvre

Association PPR 50%

2/Ischémie

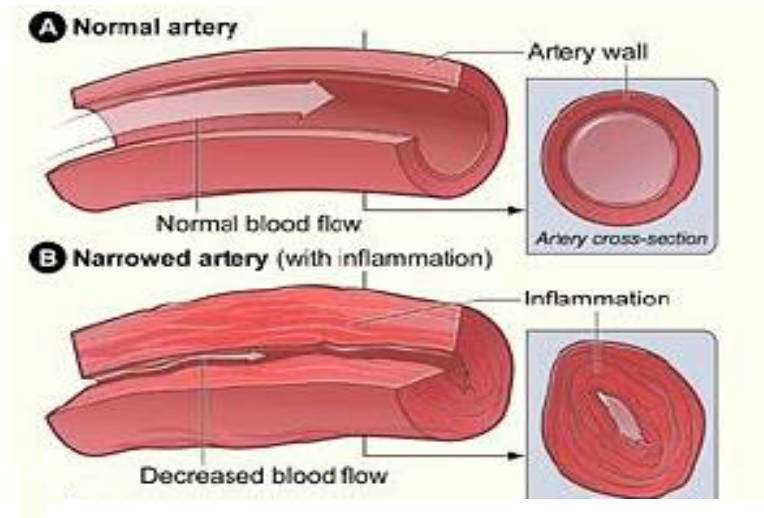


Artérite à Cellules Géantes (ACG)



Art temporelle superficielle

- Commune 1,5-1,9mm
- Branche frontale 0,7-0,8mm
- Branche pariétale 0,7-0,8mm



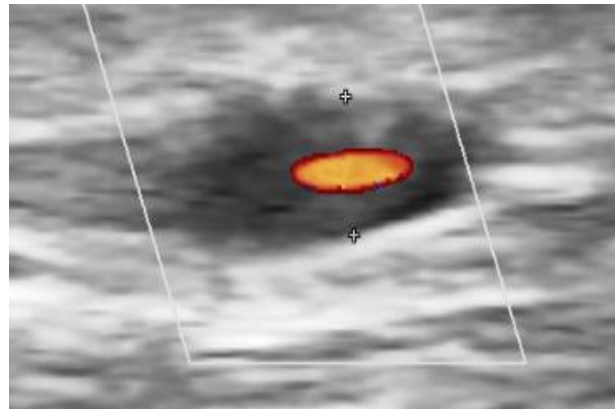
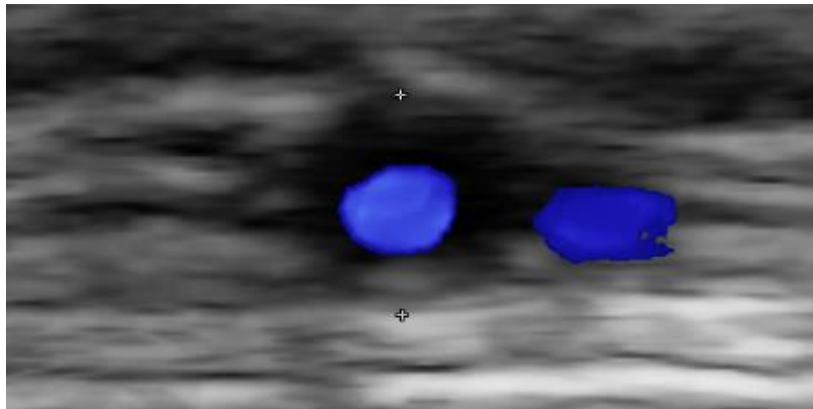
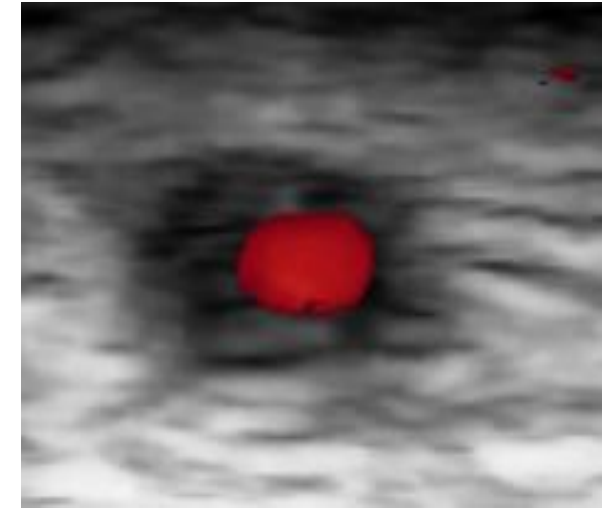
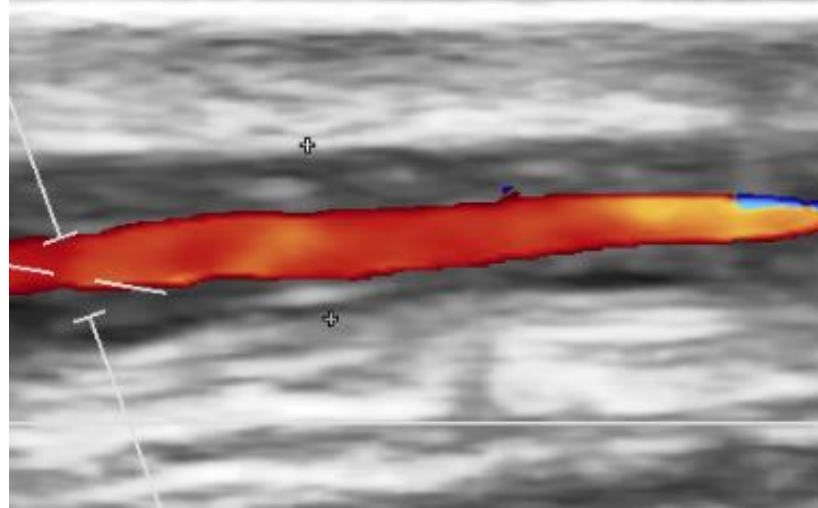
Sonde linéaire fréquence > 15 MHz



Place de l'échodoppler des artères temporales

Images échoD J. Bertolino

Signe du Halo



Cut off ? 0,3mm - 0,4 mm ?
> 0,7mm prédictif BAT +

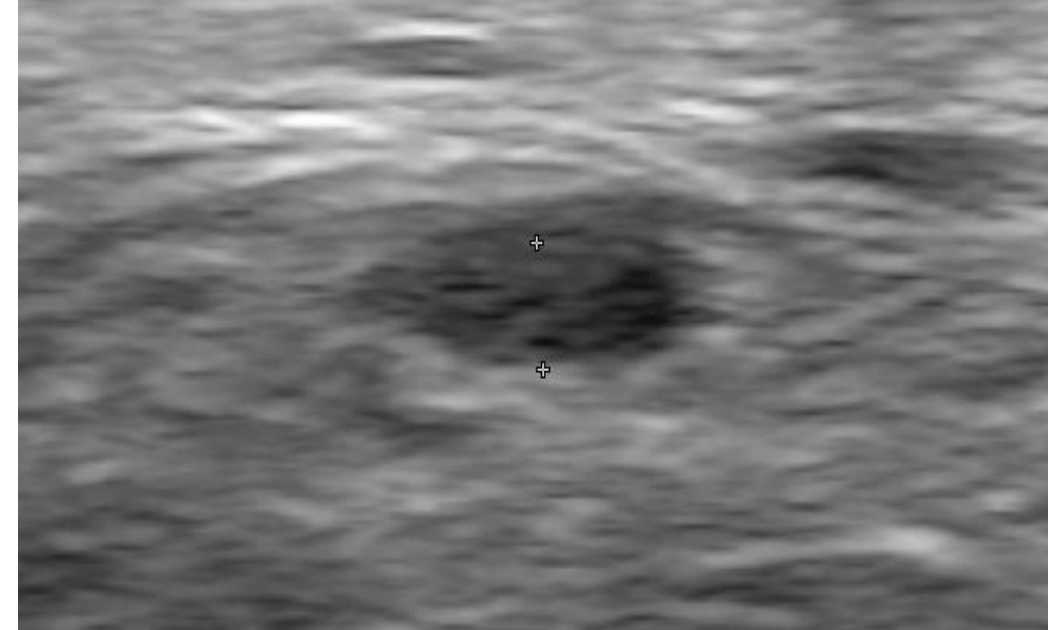
Schmidt WA. N Engl J Med 1997
Ješe R. Rheumatol Oxf Engl. 2021
Schäfer V. Rheumatol Oxf Engl. 2017

Place de l'échodoppler des artères temporales

Images échoD J. Bertolino

Signe de la compression

- Confirmer le halo
- Augmente la sensibilité?
- Diminuer la variabilité inter-opérateur



La présence de **sténoses** ou d'**occlusions** ?

Différentes formes d'ACG ?

L. Delaval, et al. Autoimmunity Reviews 2019

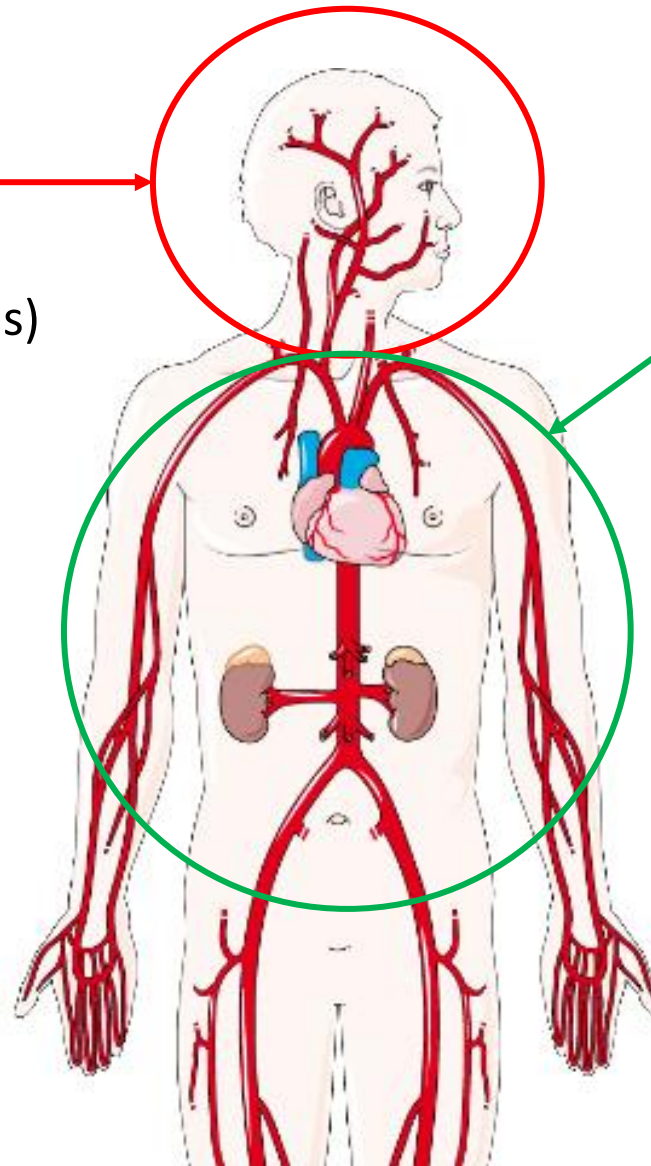
C. Dejaco et al. Rheumatology 2017

Molina-Collada J, et al. RMD Open 2023

Forme CEPHALIQUE

- Patients plus âgés > 60 ans (70 ans)
- Signes céphaliques 90%
- Signes oculaires 27%
- BAT positive 72%

- Moins d'aortite
- Syndrome inflammatoire plus modéré



Forme AORTIQUE

- Patients plus jeunes (50-60 ans)
- Plus d'aortite 78% et d'att vasc périph (sous clav, axillaires, fémorales...)
- Syndrome inflammatoire plus marqué

- Moins d'atteinte oculaire
- Moins de signes céphaliques
- BAT moins positive 59%

→ EchoD art temporal moins performant

L'artère temporale mais pas que !

Images échos Dr Bertolino

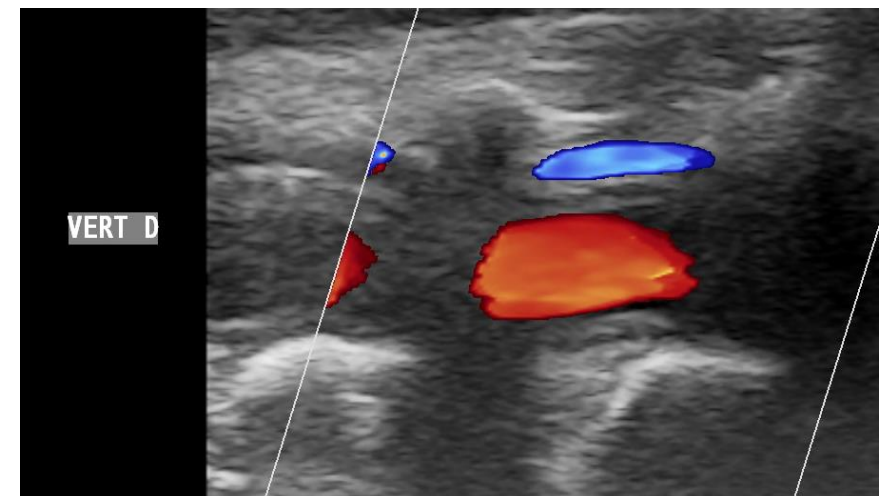
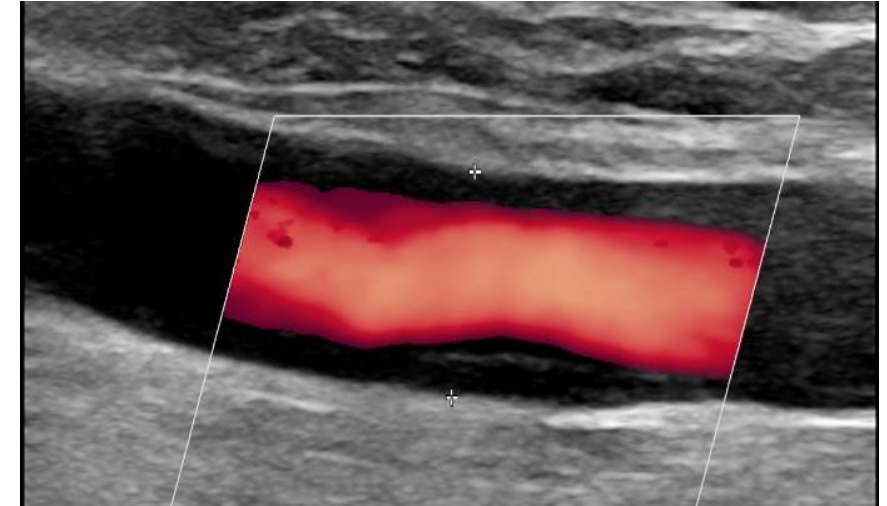
Environ **30%** des patients présentent une **atteinte périphérique**

Territoires artériels atteints

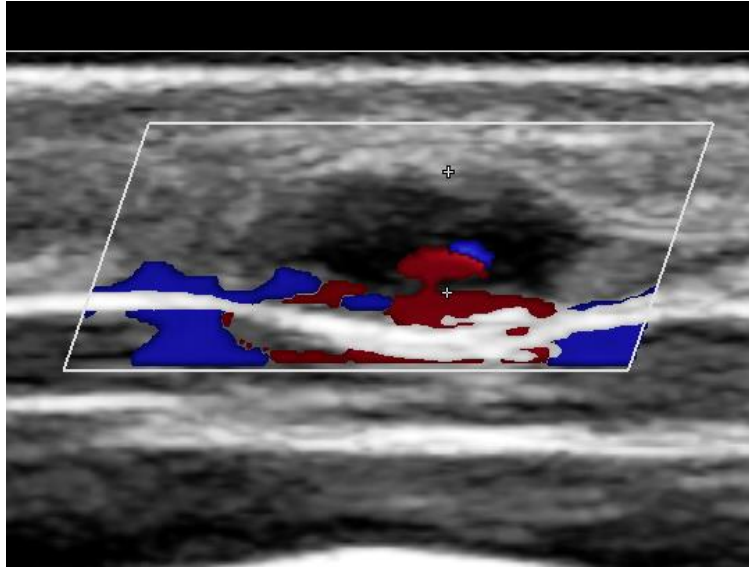
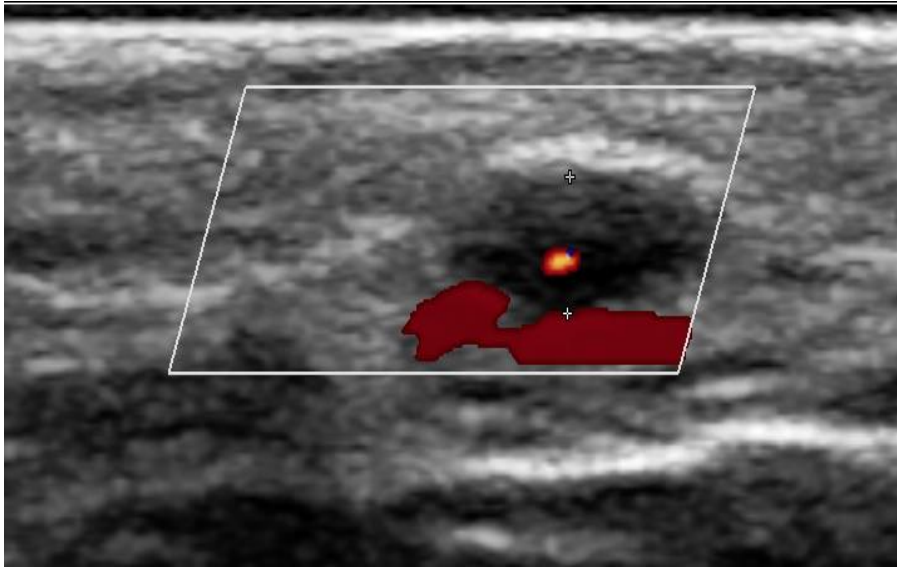
- Axillaire (29 à 50%)
- Fémorale superficielle (50%)
- Vertébrale (17%)
- Carotide commune (6 –25%)

Augmentation de la sensibilité de l'ED en cas de recherche d'une atteinte périphérique associée ?

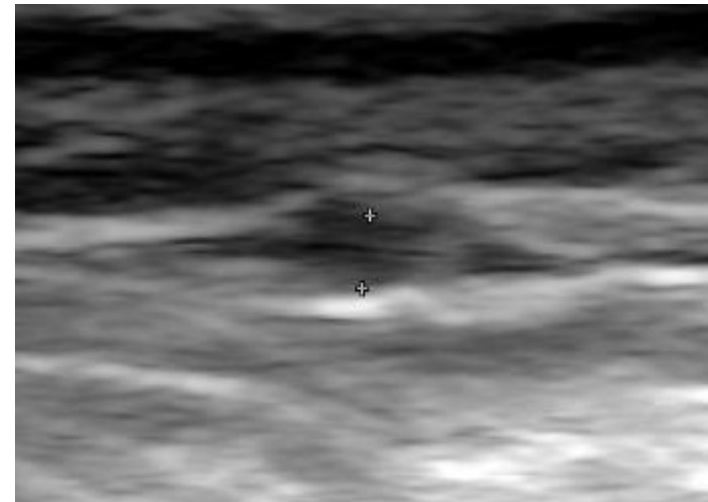
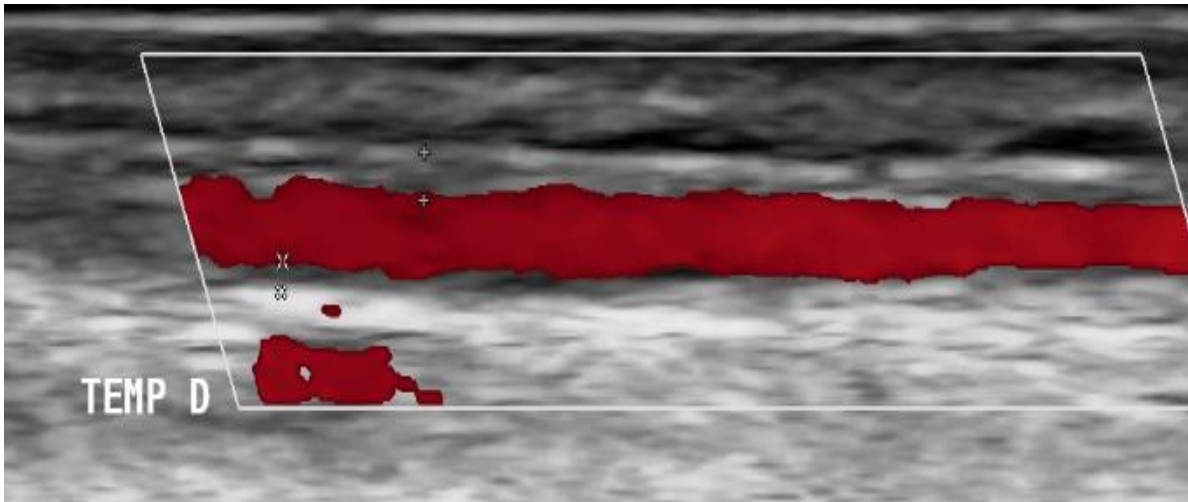
Van der Geest KSM. Ann Rheum Dis 2020



Diagnostics différentiels

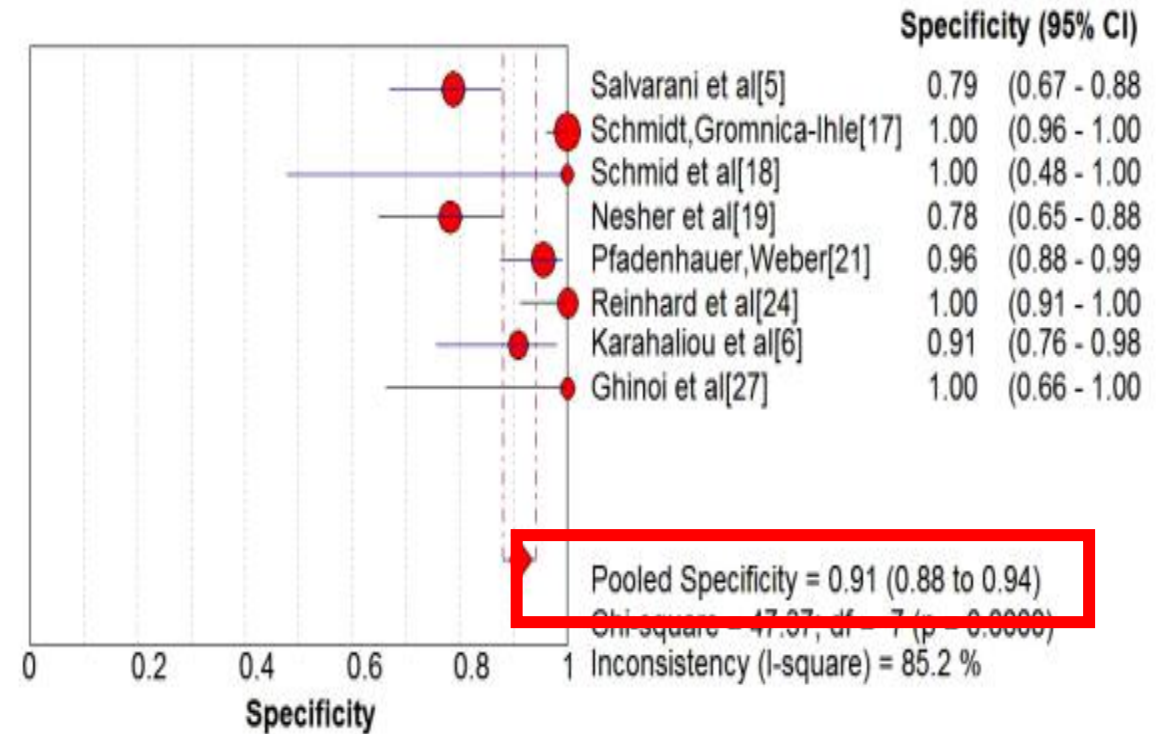
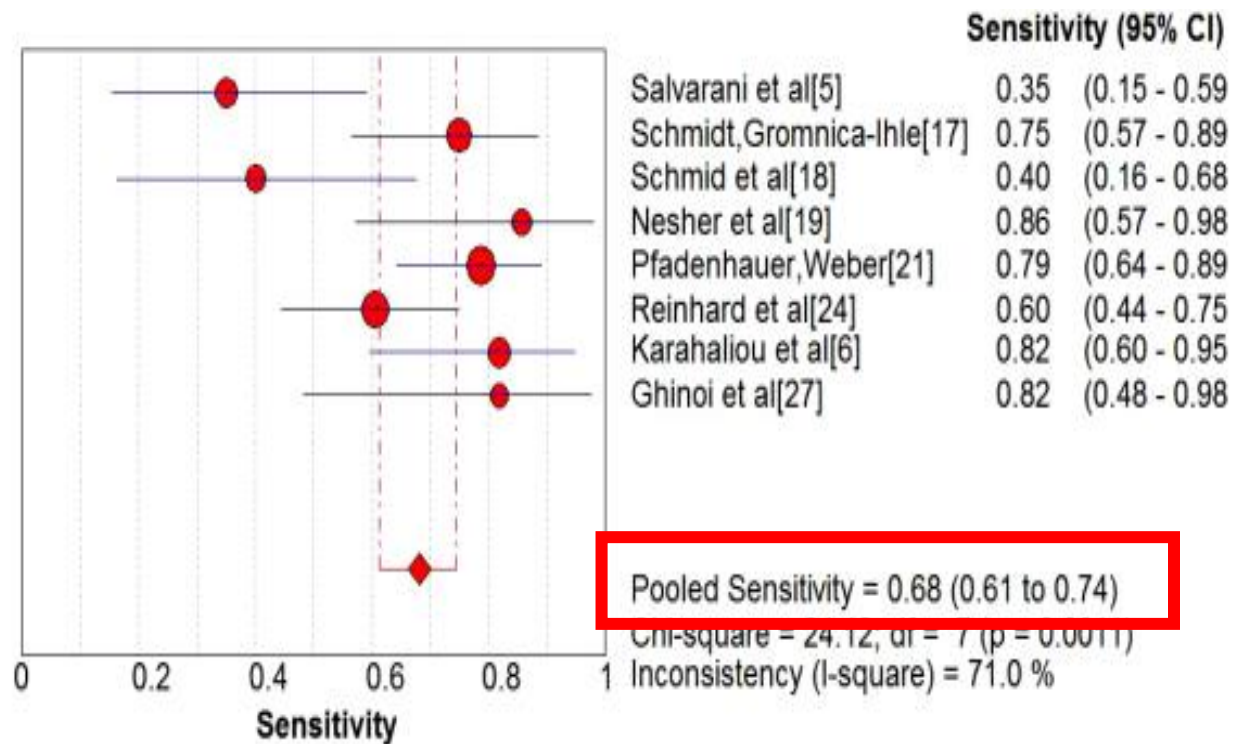


Autres vascularites :
ANCA, etc...



Athérome

Performance de l'ED des Art Temp



Sensibilité 68% Spécificité 91%

Performance de l'ED des Art Temp

meta-analysis informing the EULAR recommendations 2018

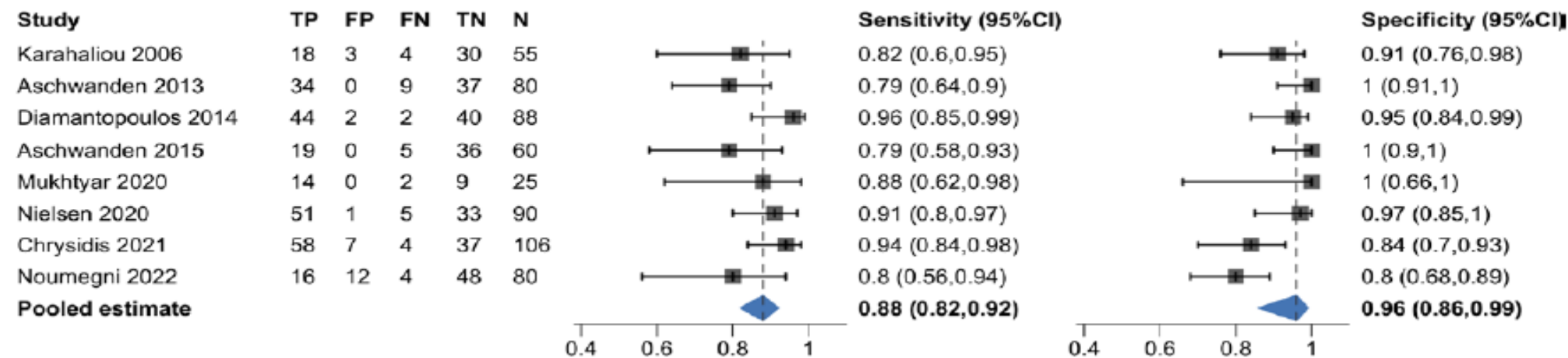
Index test	Reference standard	Number of patients (number of studies)	LR+ (95% CI)	LR- (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Ultrasound						
'Halo' sign*	Clinical diagnosis	605 (eight studies) ^{17 19 20 23 25 28 30 31}	19 (4.8 to 75.5)	0.2 (0.1 to 0.4)	77 (62 to 87)	96 (85 to 99)
'Halo' sign±stenosis±occlusion†	Clinical diagnosis	560 (three studies) ^{6 17 22}	6.9 (3 to 16.1)	0.3 (0.1 to 0.6)	78 (57 to 90)	89 (78 to 95)
'Compression' sign‡	Clinical diagnosis	140 (two studies) ^{30 32}	‡	‡	‡	‡
'Halo' sign*	TAB	289 (seven studies) ^{17-21 23 27}	4.3 (2.4 to 7.8)	0.4 (0.2 to 0.6)	70 (56 to 81)	84 (73 to 91)
'Halo' sign±stenosis†	TAB	50 (two studies) ^{18 27}	8.4 (2.4 to 30.1)	0.3 (0 to 1.6)	77 (23 to 97)	91 (75 to 97)
'Halo' sign±stenosis±occlusion*	TAB	611 (five studies) ^{6 17 22-24}	8.3 (2.5 to 27.4)	0.2 (0.1 to 0.7)	78 (48 to 93)	91 (70 to 98)

Sensibilité 77% Spécificité 96%

Performance de l'ED des Art Temp

Bosch P et al. meta-analysis informing the 2023 update of the EULAR recommendations. RMD Open 2023

Ultrasound



Sensibilité 88% Spécificité 96%

Table 4 Subgroup and sensitivity analyses of all studies on diagnostic properties for giant cell arteritis using imaging as index test and clinical diagnosis as reference standard

	No of patients (n)				
Ultrasound					
Main analysis (all studies)*	1981 (23) ^{3 5 7 16-24 49-59}	0.75 (0.66 to 0.83)	0.91 (0.86 to 0.94)	8.28 (4.98 to 13.74)	0.27 (0.19 to 0.39)
Only cranial arteries†	1291 (18) ^{5 16-20 22-24 49 50 52 53 55-59}	0.70 (0.59 to 0.79)	0.91 (0.84 to 0.95)	7.60 (4.15 to 13.91)	0.33 (0.23 to 0.47)
Cranial and extracranial arteries	690 (5) ^{3 7 21 51 54}	0.89 (0.73 to 0.96)	0.91 (0.83 to 0.95)	9.34 (4.79 to 18.23)	0.13 (0.05 to 0.33)

Toutes les études Sensibilité 75% Spécificité 91%

Que disent les recommandations?

2022 AMERICAN COLLEGE OF RHEUMATOLOGY / EULAR

CLASSIFICATION CRITERIA FOR GIANT CELL ARTERITIS

CONSIDERATIONS WHEN APPLYING THESE CRITERIA

- These classification criteria should be applied to classify the patient as having giant cell arteritis when a diagnosis of medium-vessel or large-vessel vasculitis has been made
- Alternate diagnoses mimicking vasculitis should be excluded prior to applying the criteria

ABSOLUTE REQUIREMENT

Age $\geq$ 50 years at time of diagnosis

ADDITIONAL CLINICAL CRITERIA

Morning stiffness in shoulders/neck	+2
Sudden visual loss	+3
Jaw or tongue claudication	+2
New temporal headache	+2
Scalp tenderness	+2
Abnormal examination of the temporal artery ¹	+2

LABORATORY, IMAGING, AND BIOPSY CRITERIA

Maximum ESR $\geq$ 50 mm/hour or maximum CRP $\geq$ 10 mg/liter ²	+3
Positive temporal artery biopsy or halo sign on temporal artery ultrasound ³	+5
Bilateral axillary involvement ⁴	+2
FDG-PET activity throughout aorta ⁵	+2

Sum the scores for 10 items, if present. A score of $\geq$ 6 points is needed for the classification of GIANT CELL ARTERITIS.

EULAR :

Forte suspicion d'ACG, l'EULAR → **écho-Doppler** à la recherche d'un signe du halo.

→ **suffit à confirmer le diagnostic d'ACG** et qu'il n'est donc plus nécessaire de réaliser de biopsie d'artère temporale (BAT) dans cette situation.

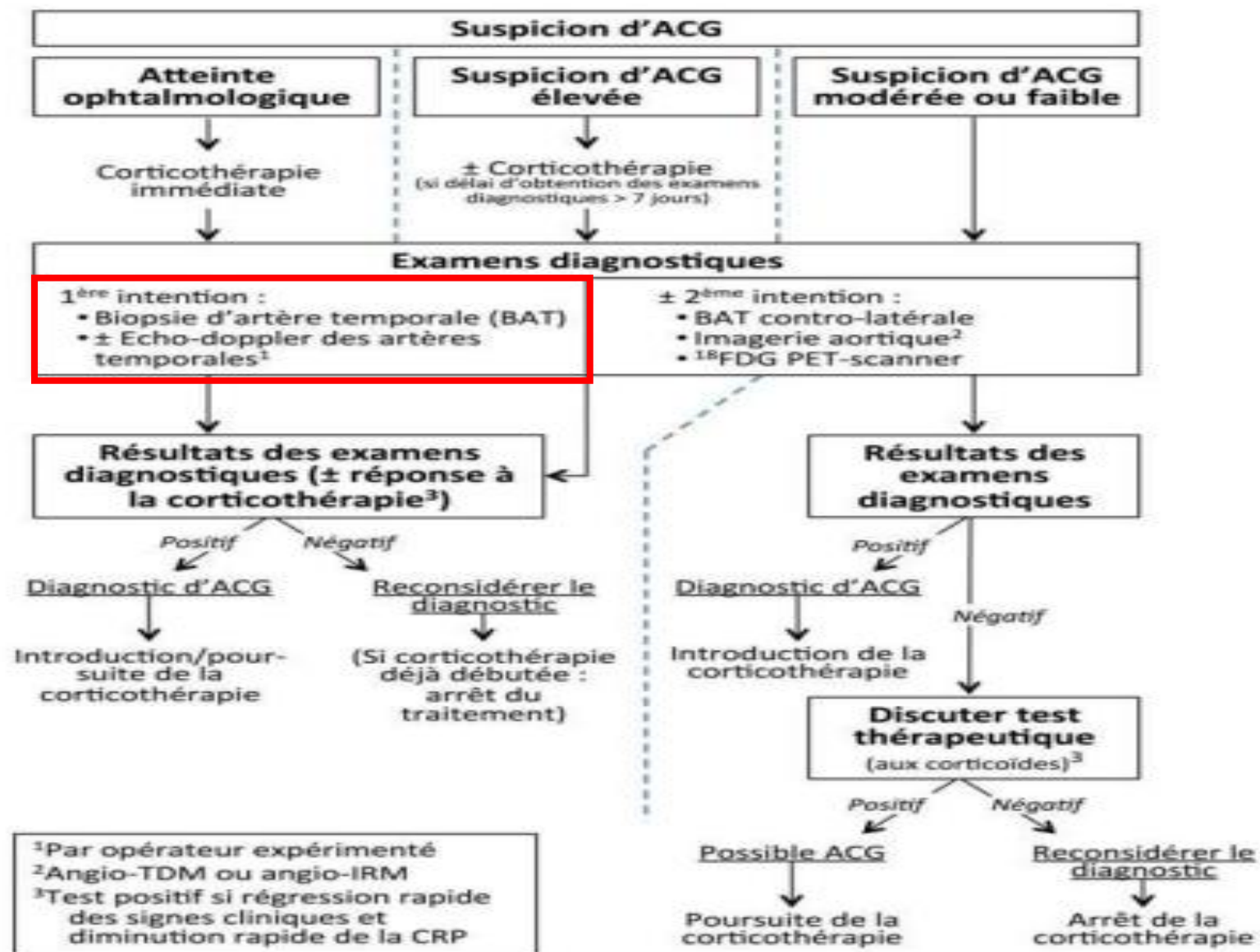
A l'inverse, si la suspicion diagnostique est faible, la normalité de l'imagerie des artères temporales permet d'exclure le diagnostic.

Dejaco C. EULAR recommendations for the use of imaging in large vessel vasculitis in clinical practice. Ann Rheum Dis. 2018

ACR : **la BAT reste préférée à l'écho-Doppler** des artères temporales pour confirmer le diagnostic d'ACG

Maz M. American College of Rheumatology/Vasculitis Foundation Guideline for the Management of Giant Cell Arteritis and Takayasu Arteritis. Arthritis Rheumatol. 2021

Que disent les recommandations?



Que disent les recommandations?

EULAR recommendations for the use of imaging in large vessel vasculitis in clinical practice: 2023 update

Recommendations

1. Ultrasound of temporal and axillary arteries should be considered as the first imaging modality to investigate mural inflammatory changes in patients with suspected GCA.

Despite these interesting developments, the task force was reluctant to recommend any ultrasound composite score at this stage outside the research setting, encouraging their further validation.

Box 1 Suggestions for technical and operational parameters on imaging modalities in large vessel vasculitis

Ultrasound

- ⇒ **High-quality modern equipment is essential.** Linear probes are recommended for supra-aortic arteries; sector or convex probes for ascending aorta; convex, sector or linear probes for the aortic arch; and convex or linear probes for abdominal aorta. Settings may vary slightly according to equipment.
- ⇒ The B-mode frequency should be ≥ 15 MHz (preferably ≥ 18 MHz) for temporal arteries and 7–15 MHz for extracranial supra-aortic arteries. Image depth should be 10–20 mm for temporal arteries and 30–40 mm for extracranial supra-aortic arteries.
- ⇒ The focus should be at the level of the artery. The B-mode gain should be adjusted to avoid anechoic appearance of the artery wall.
- ⇒ Colour Doppler is the preferred modality to show the blood flow, but other techniques may be used as well. The gain should be adjusted to avoid underfilling or overfilling of the vessel lumen.
- ⇒ Doppler frequency and pulse repetition frequency (PRF) settings depend on the equipment. Frequencies of 7–12 MHz and 4–8 MHz as well as PRFs of 2–7 KHz and 3–8 KHz are commonly applied for temporal and extracranial supra-aortic arteries, respectively. The colour box should be angled in longitudinal scans to avoid perpendicularity between sound waves and artery.

« FAST TRACK ACG »

Fig. 1 The fast-track US GCA outpatient clinic algorithm

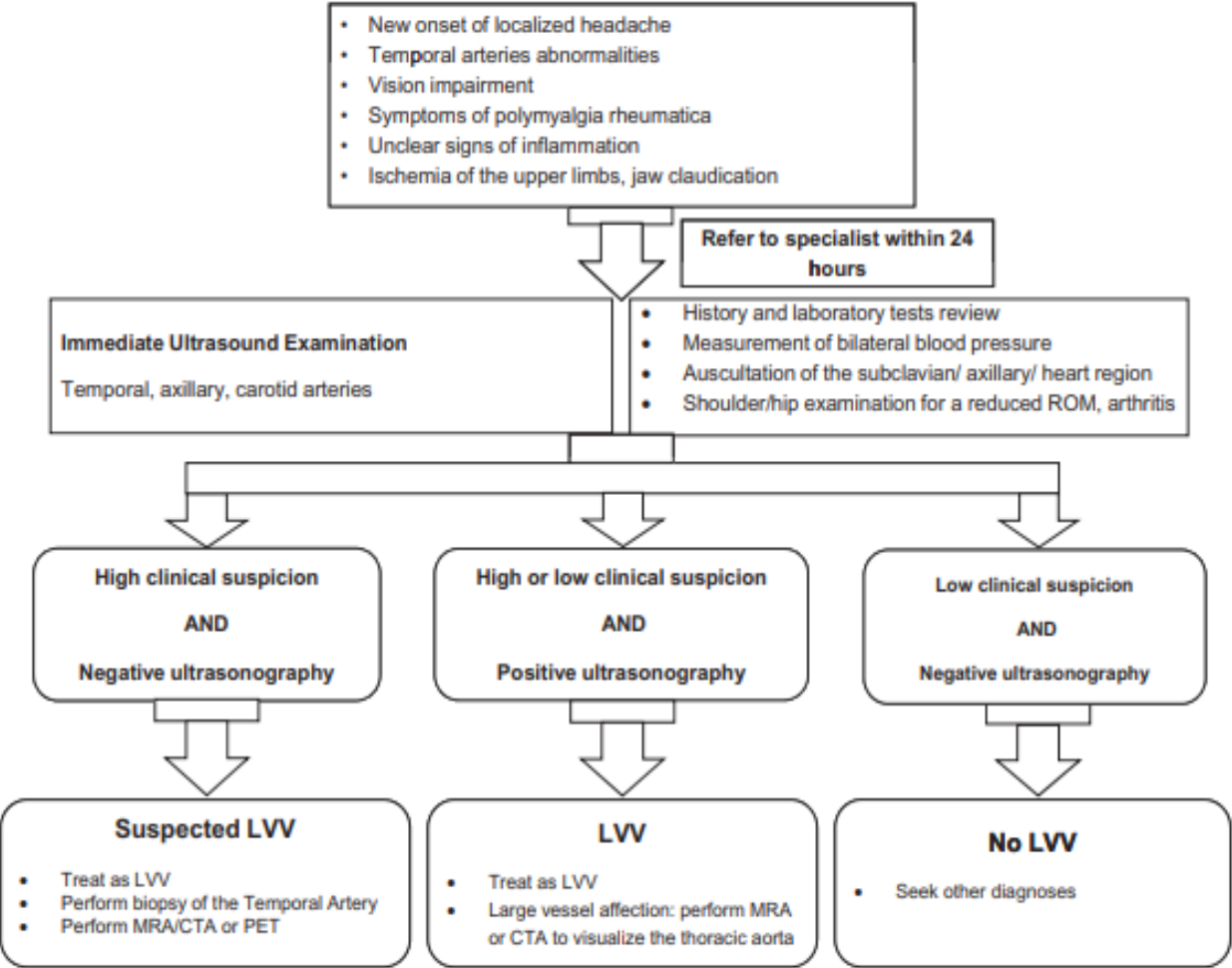


TABLE 1 Comparison of the visual outcomes between the FTC and the conventionally evaluated group

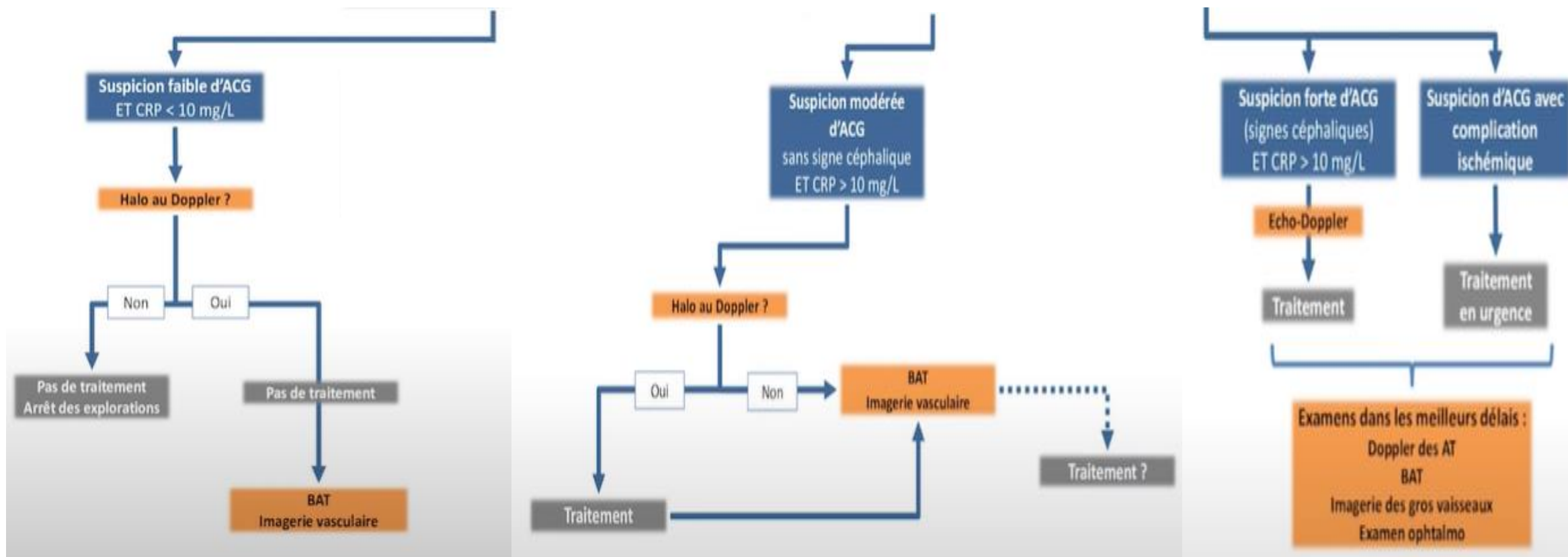
Outcome	Fast-track group	Conventionally evaluated group	RR (95% CI)	P-values
Visual disturbances	9	9	0.74 (0.33, 1.66)	0.40
Permanent visual impairment	1	6	0.12 (0.01, 0.97)	0.01
Inpatient days of care	0.60	3.60	NA	<0.0005

FTC: fast-track outpatient GCA clinic; NA: not applicable; RR: relative risk.

10 x moins de complications ophtalmologiques !

« FAST TRACK ACG »

Recherche de signes d'ACG + Dosage CRP



Quel impact de l'ED pour le suivi ?

La sensibilité de l'échodoppler décroît lorsque l'examen est réalisé plus de 2 jours après l'initiation de la corticothérapie (64 vs 47%)

Lugmani R. Health Technol Assess 2016

Steroids before examination	n	TP	TN	FP	FN	Sensitivity, % (95% CI)	Specificity, % (95% CI)
Reference value clinical diagnosis							
0-1 day before CCDS	28	14	11	1	2	87.5 (61.7, 98.5)	91.7 (61.5, 99.8)
2-4 days before CCDS	16	5	6	0	5	50.0 (18.7, 81.3)	100.0
>4 days before CCDS	15	5	4	1	5	50.0 (18.7, 81.3)	80.0 (28.4, 99.5)

Hauenstein C. Rheumatology, 2012

Le signe du halo disparaît dans les 2 à 6 semaines suivant le début de la corticothérapie
Avec 50% de persistance à 6 mois....

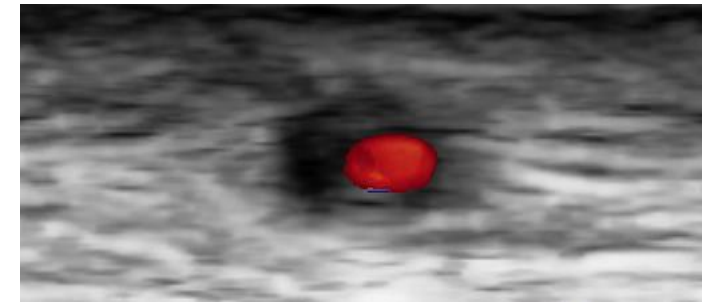
Habib HM. Clin Rheumatol 2012

Aschwanden M. Ann Rheum Dis 2010

Pérez López J. Clin Exp Rheumatol 2009

Réapparition du Halo en cas de rechute ? Karahaliou M. Arthritis Res Ther 2006

Conclusion



- **Ne pas négliger** l'apport de l'échodoppler de l'artère temporale
- **Bonne performance diagnostique** et « facilement » accessible
- Opérateur **entraîné** et avec du **matériel adapté**
- Apport diagnostique à préciser en France? **Fast track** ?
- Son **apport dans le suivi** ou les rechutes est encore **à préciser**

Abrégé **78010**

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MERCI
de votre attention

