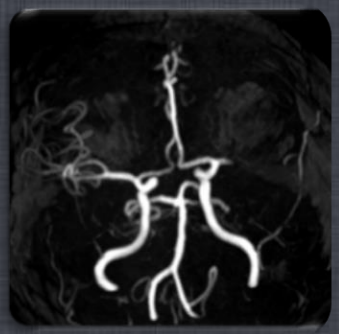
Ecole de la Thrombectomie

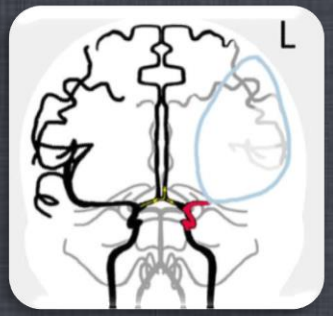
« T » CAROTIDIEN, OCCLUSIONS DISTALES, CÉRÉBRALE ANTÉRIEURE

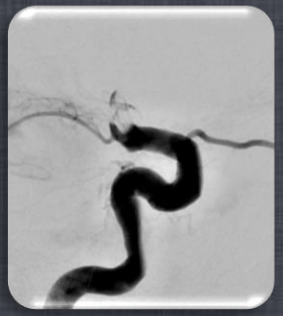
Aymeric Rouchaud, Suzana Saleme, Géraud Forestier, Charbel Mounayer

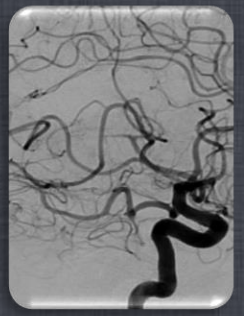
CHU Limoges

EMIS RESEARCH









Terminaison Carotidienne

European Journal of Neurology 2013, **20:** 1017–1024 doi:10.1111/ene.12094

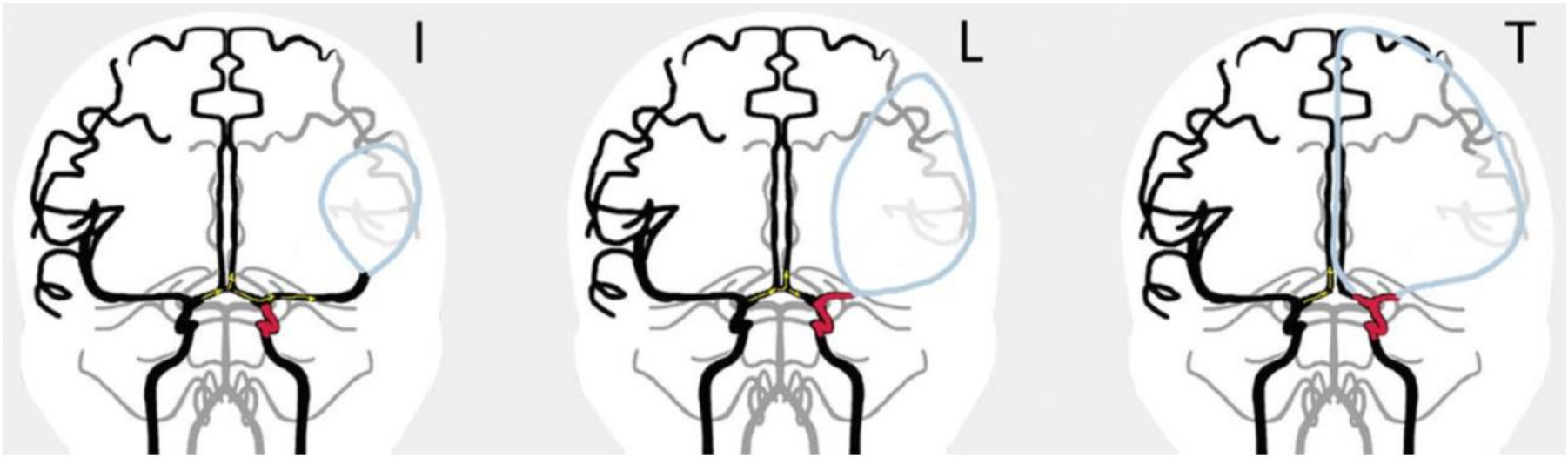
Endovascular therapy in 201 patients with acute symptomatic occlusion of the internal carotid artery

U. Fischer[a], M.-L. Mono[a], G. Schroth[b], S. Jung[a,b], P. Mordasini[b], M. El-Koussy[b], A. Weck[a], C. Brekenfeld[b], O. Findling[a], A. Galimanis[a], M. R. Heldner[a], M. Arnold[a], H. P. Mattle[a] and J. Gralla[b]

- Recanalisation par thrombolyse IV : 5 - 12%
- Taux de recanalisation (TICI 2B/3): 57%
- mRS 0-3 46%, mRS 0-2 28%
- Les pires résultats cliniques sont les occlusions en T, mortalité de 39%

Terminaison Carotidienne

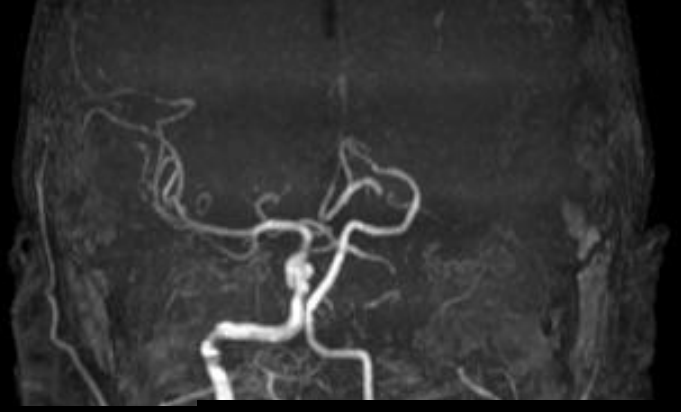
- Occlusions en I , L et T

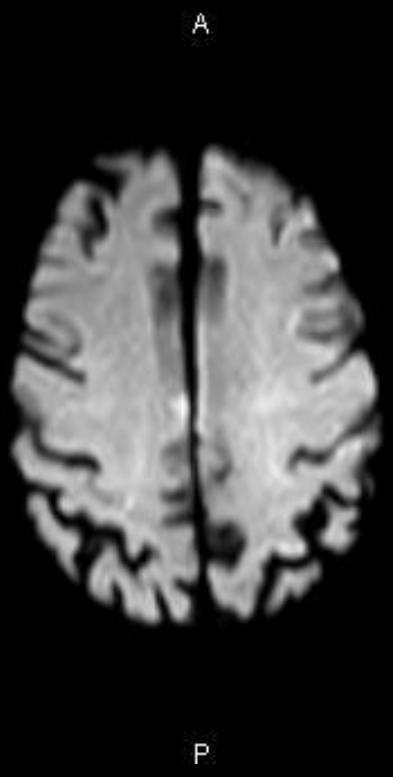


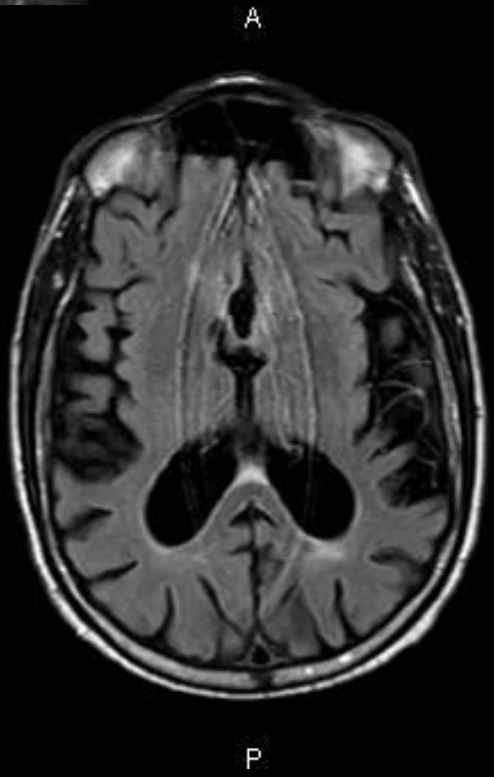
Liebeskind DS, *et al*. *J NeuroIntervent Surg* 2014;**0**:1–6. doi:10.1136/neurintsurg-2014-011231

- M, 85 ans
- Hospitalisé en Cardio pour trouble de rythme
- Anti-coagulant
- Déficit brutal de l’hémicorps gauche à 12:30
- NIHSS 26

IRM
13:40



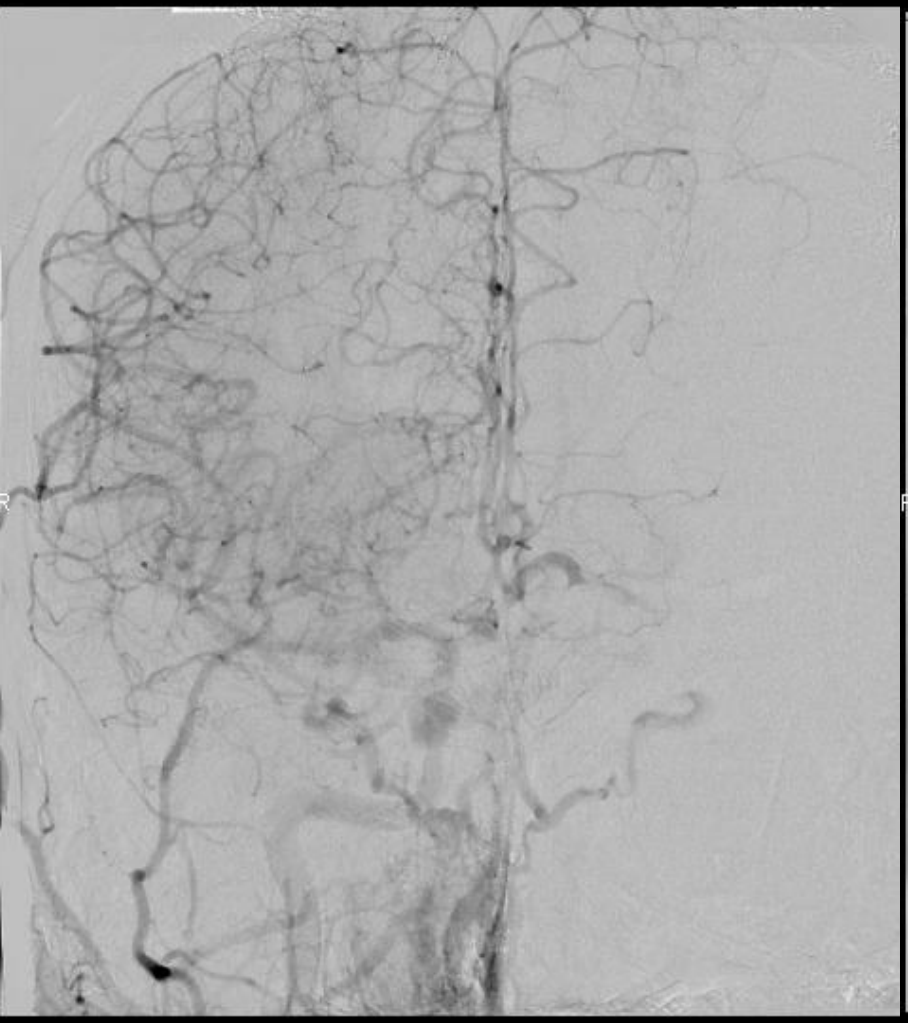


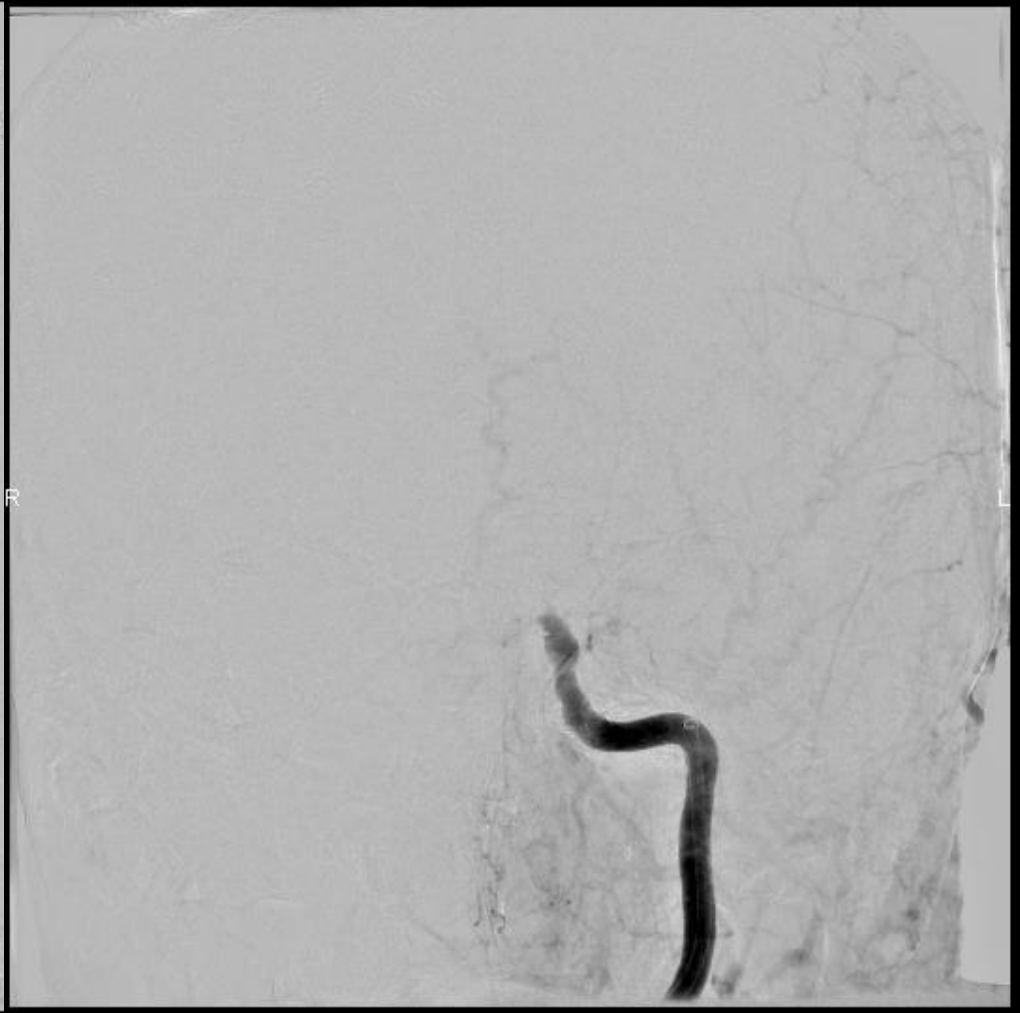


R

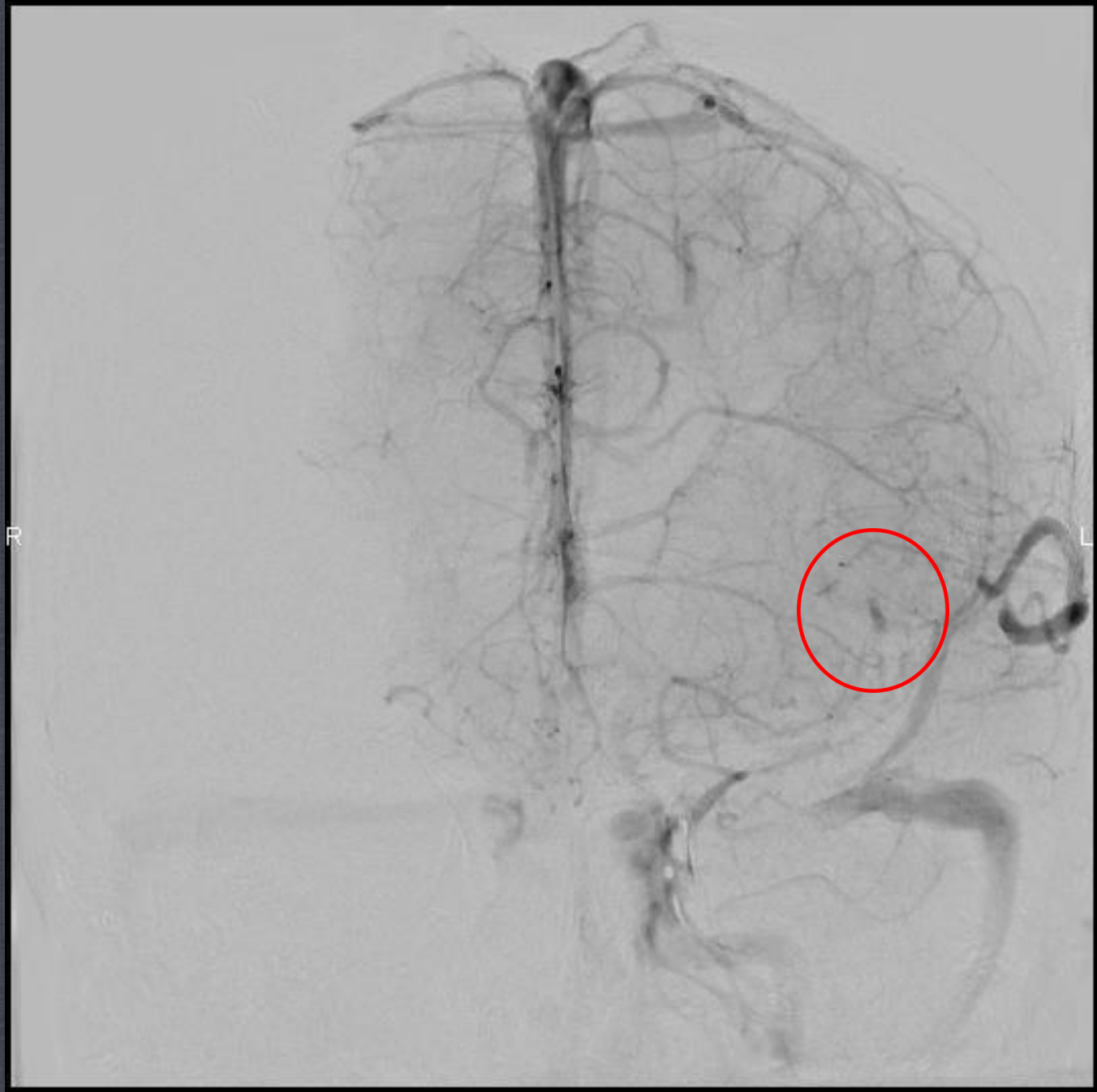
ASPECT 9

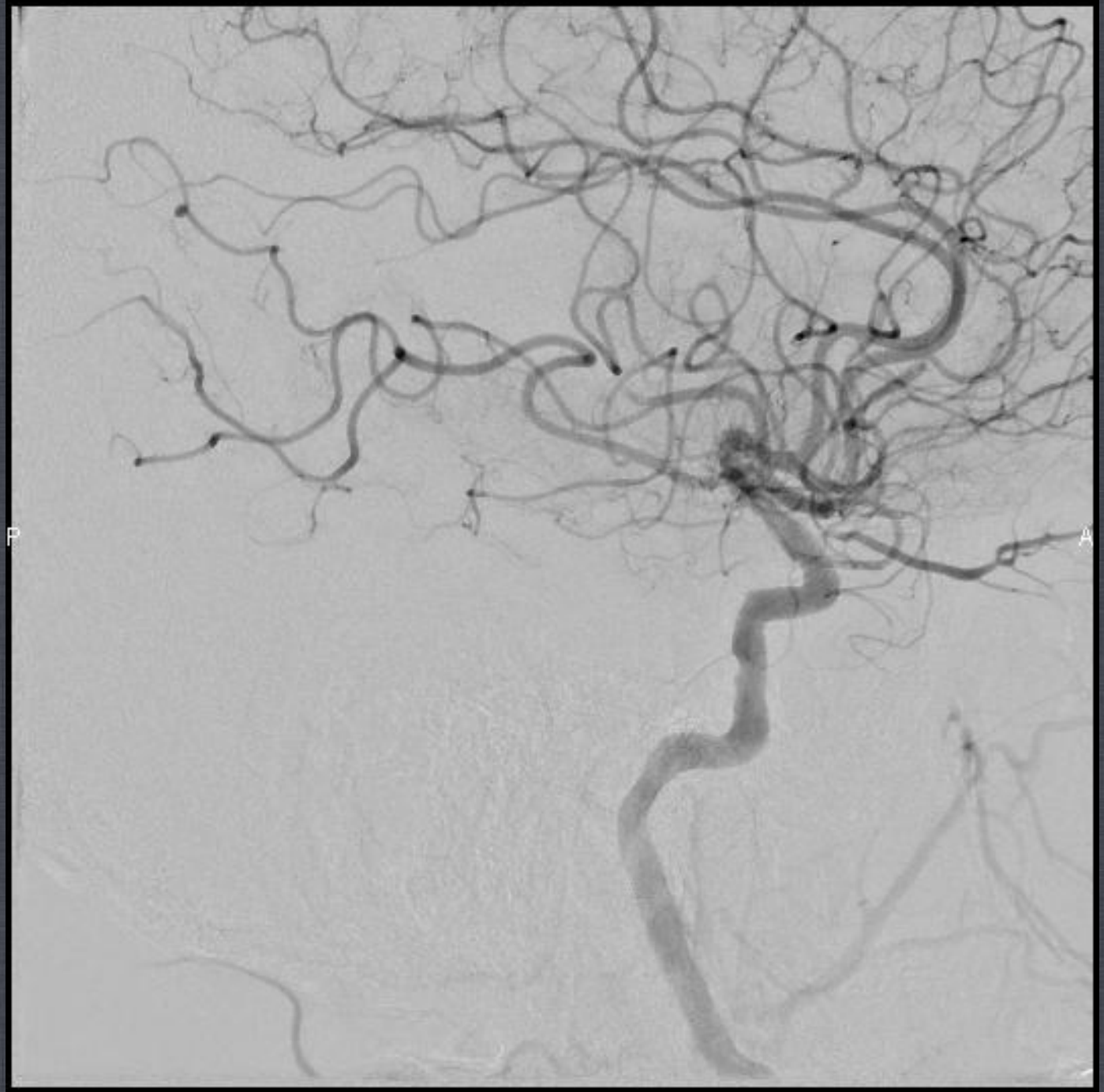
Bloc NRI 14:00



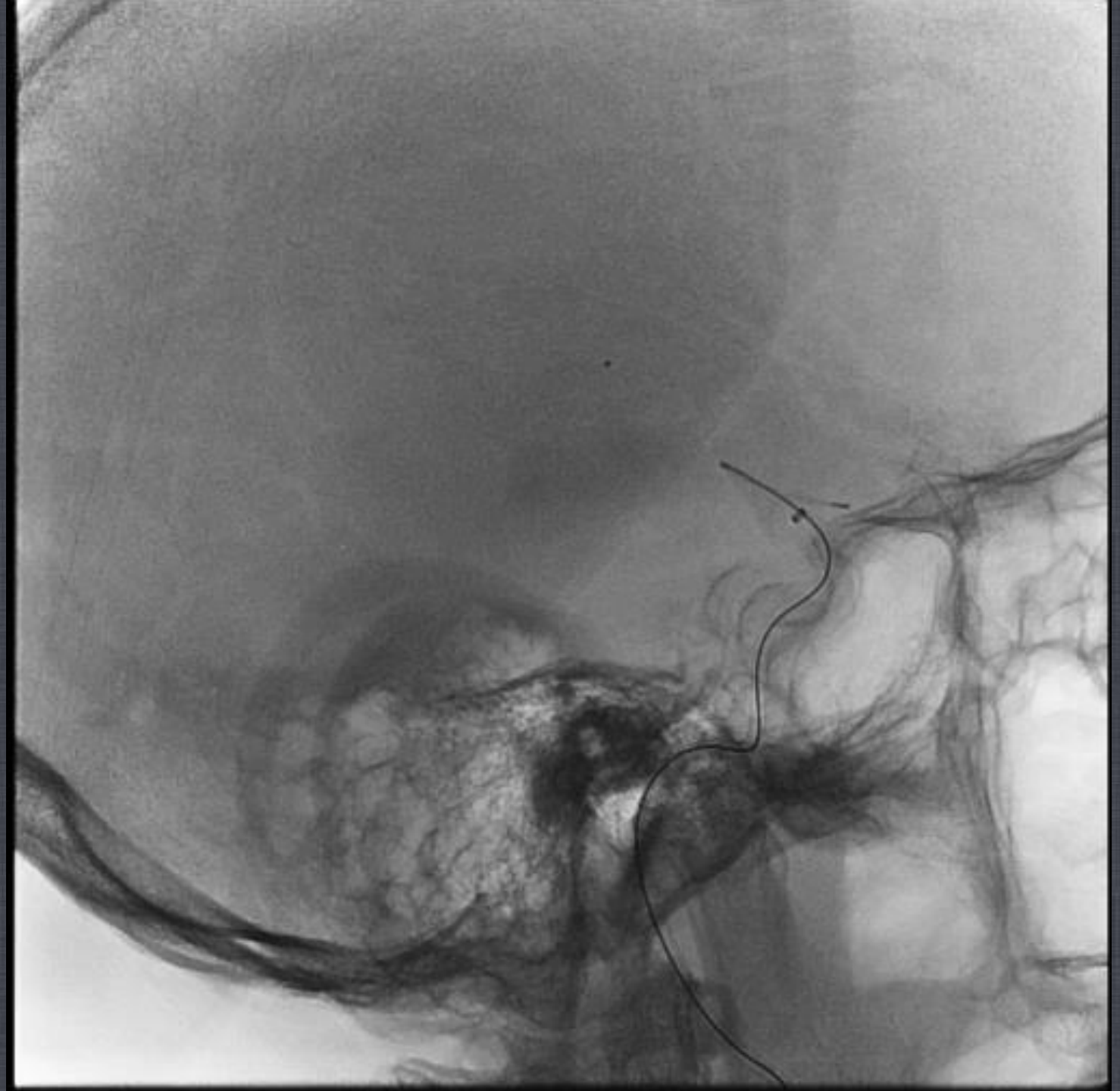


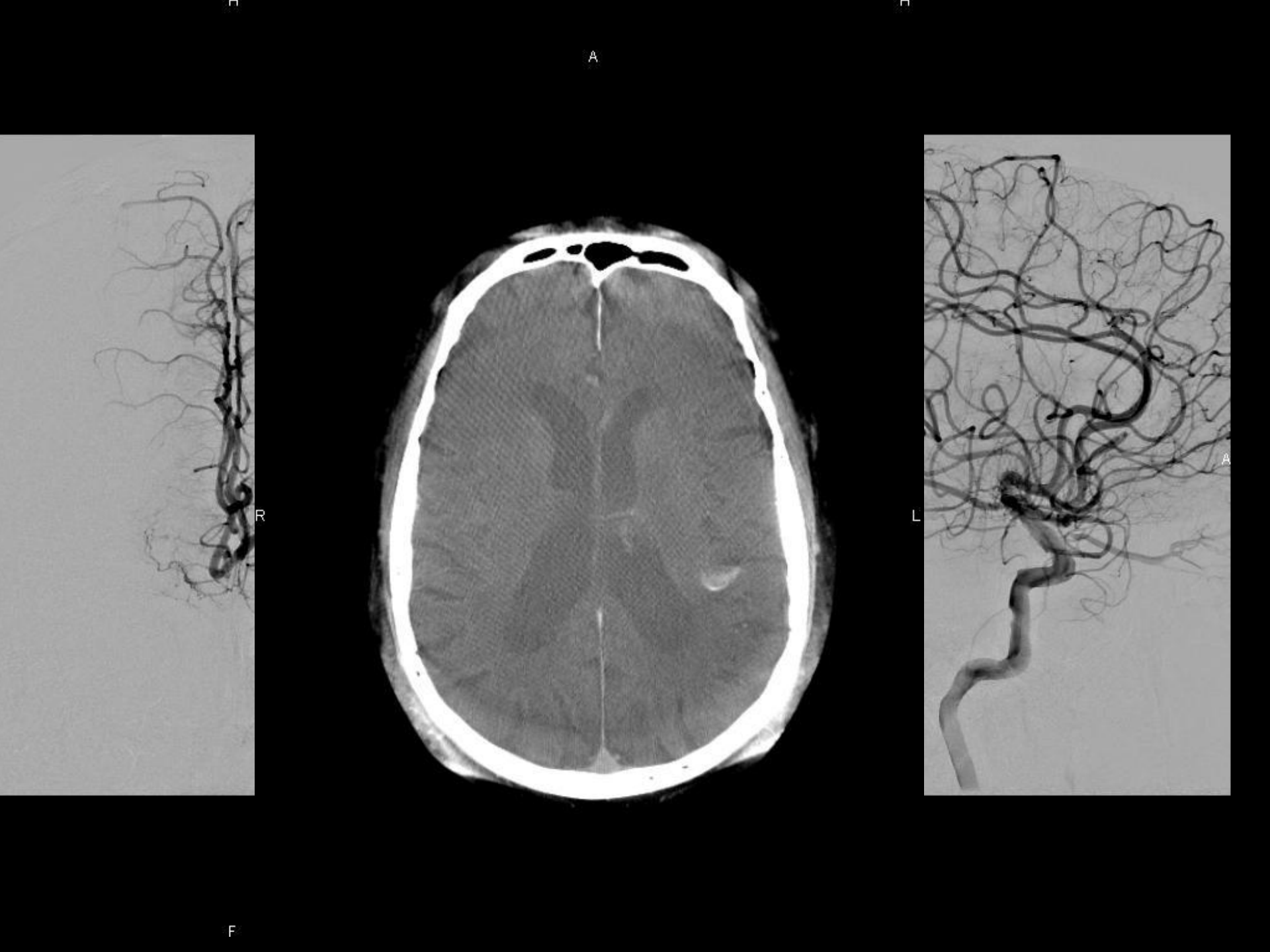
Sofia +
Velocity
Solitaire 6x40




P
A

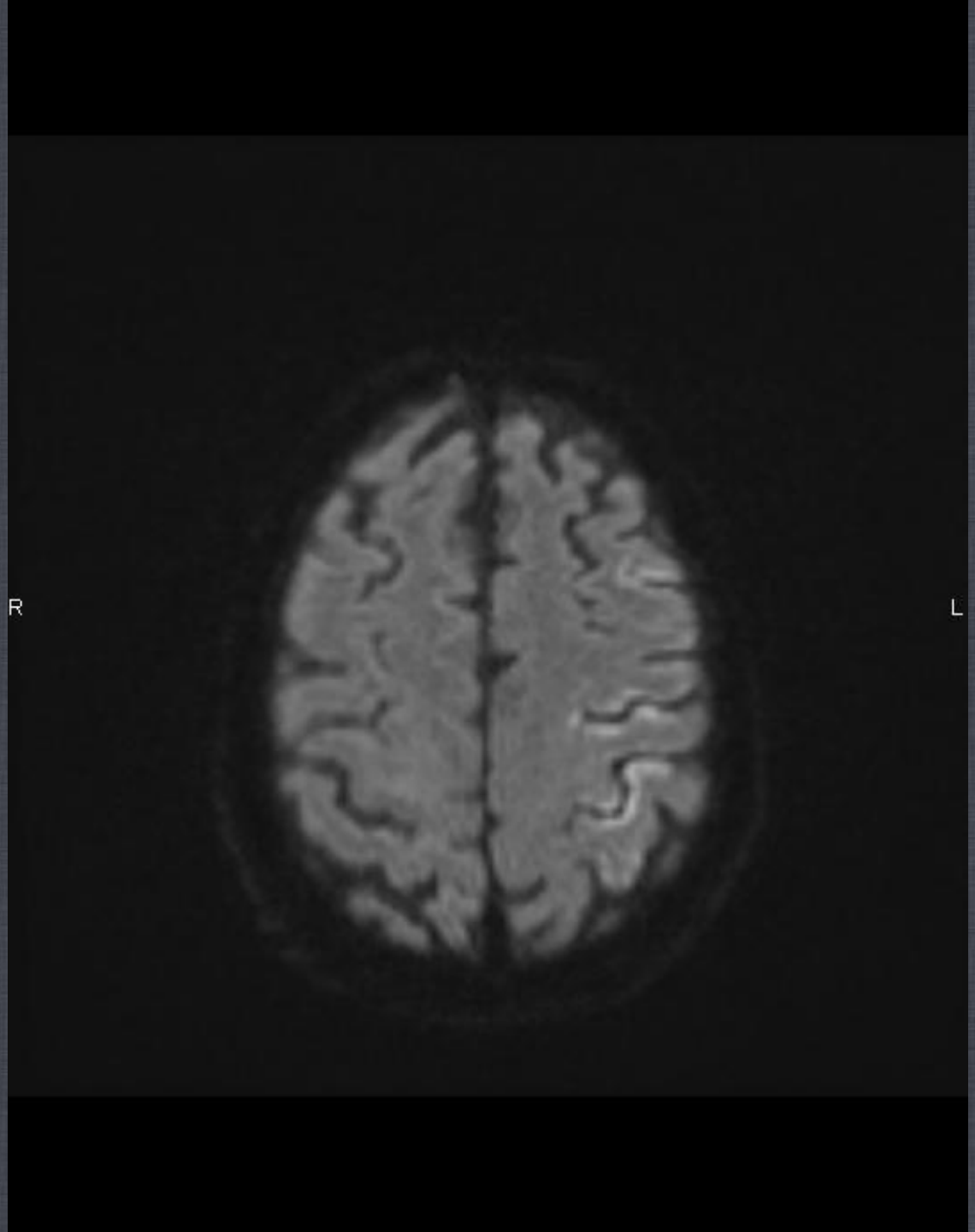
Sofia +
Velocity
Eric 3x20



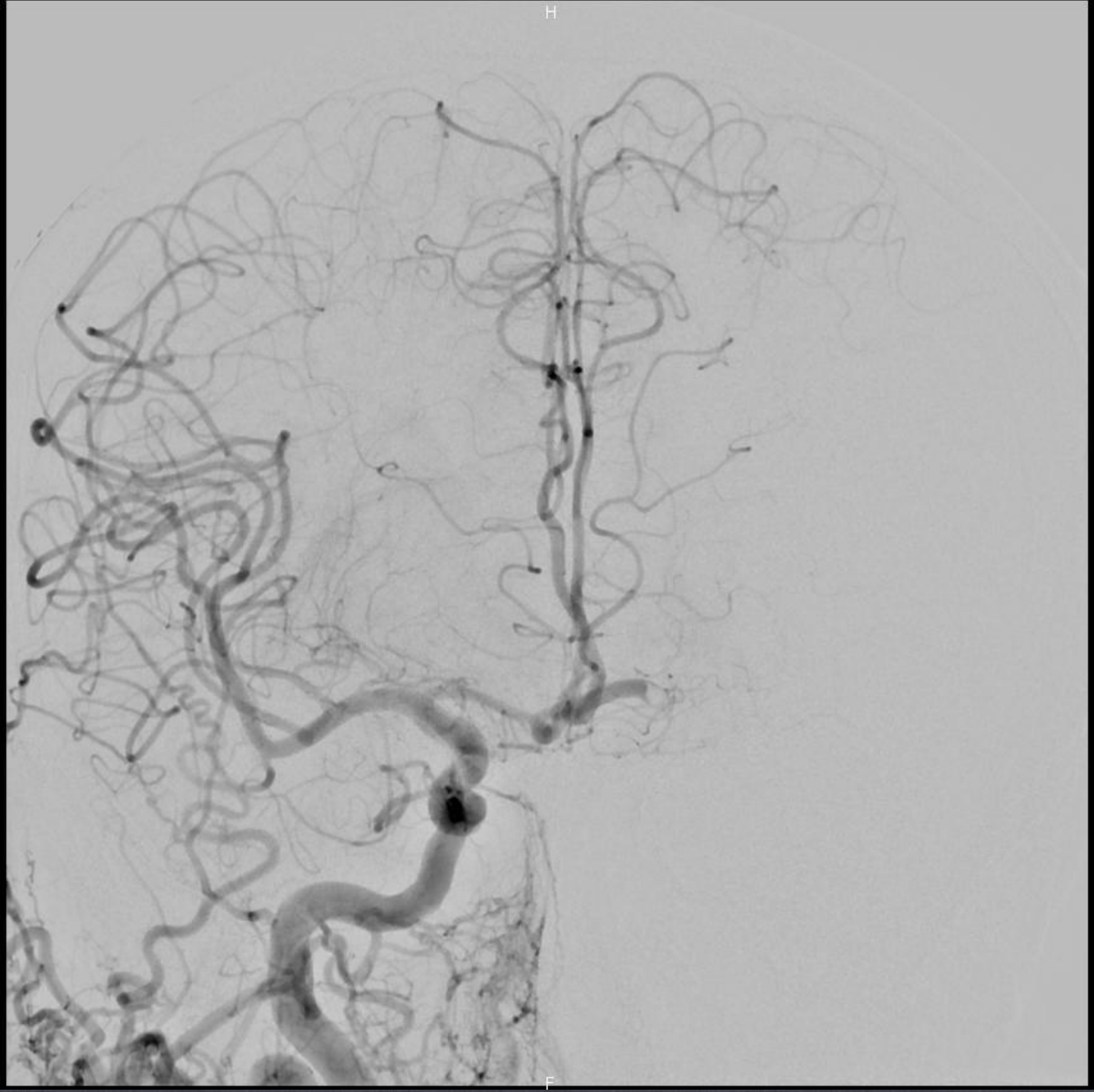

H
A
H
R
L
A
F

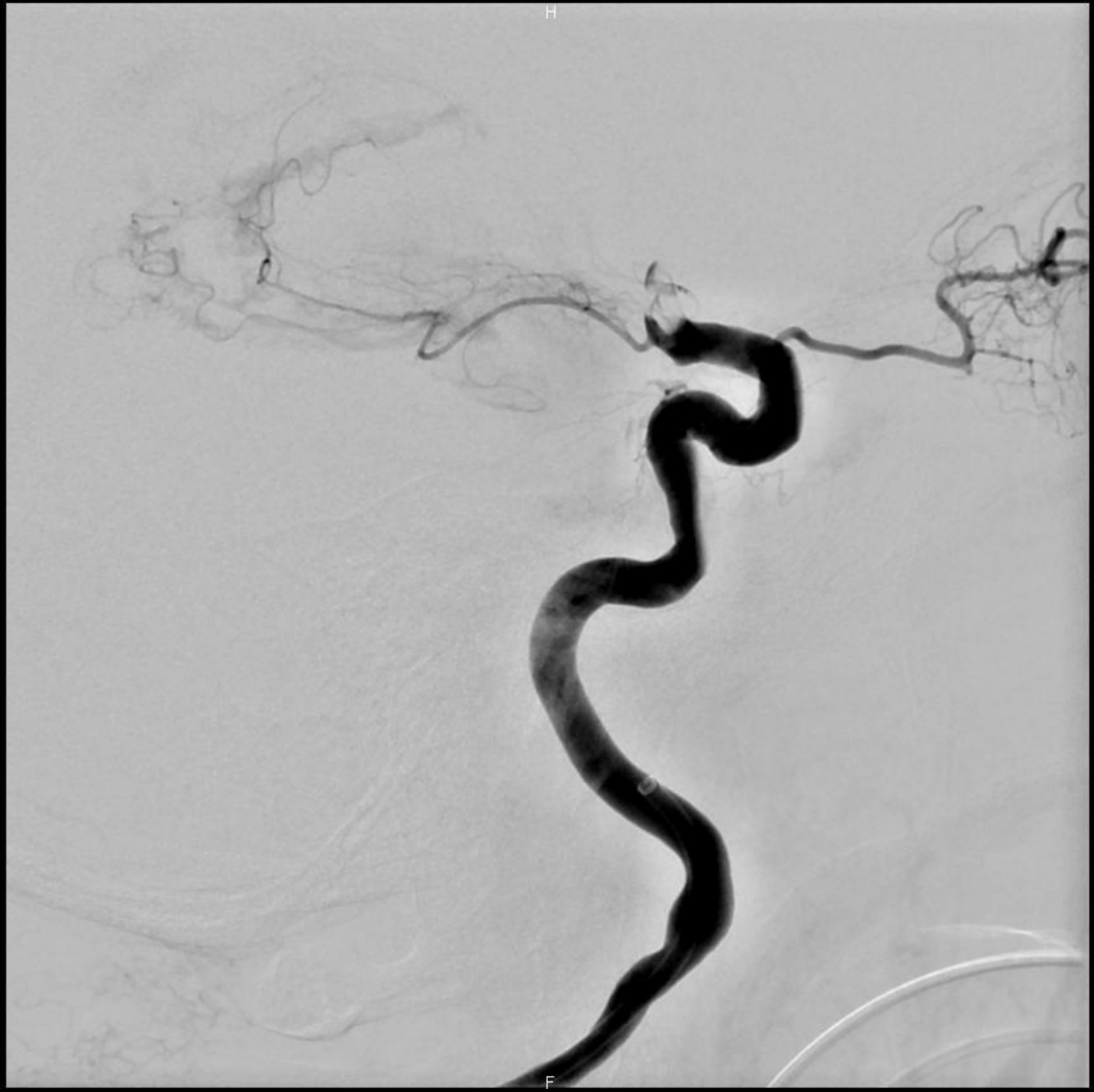
NIHSS 24H

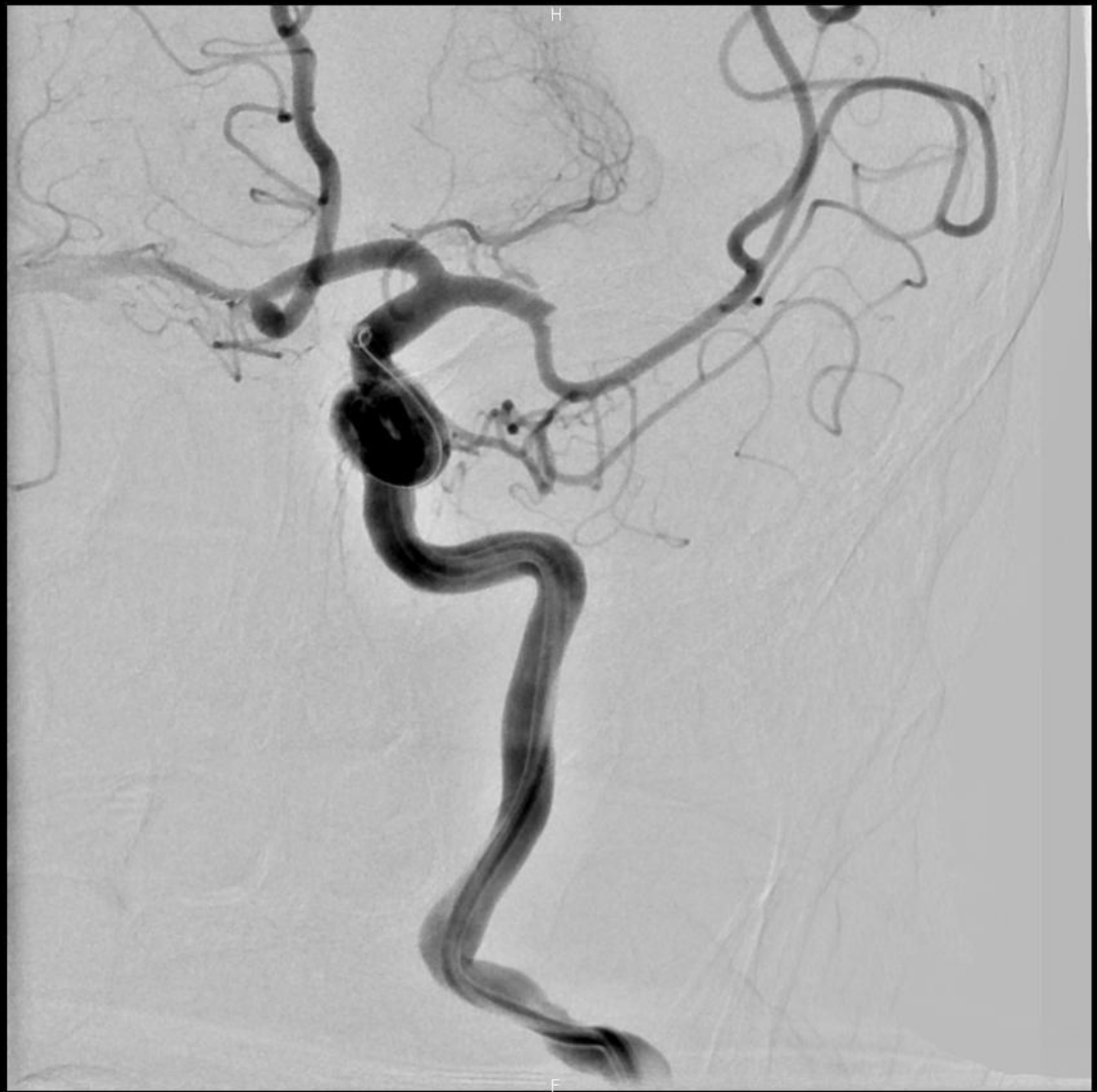
8

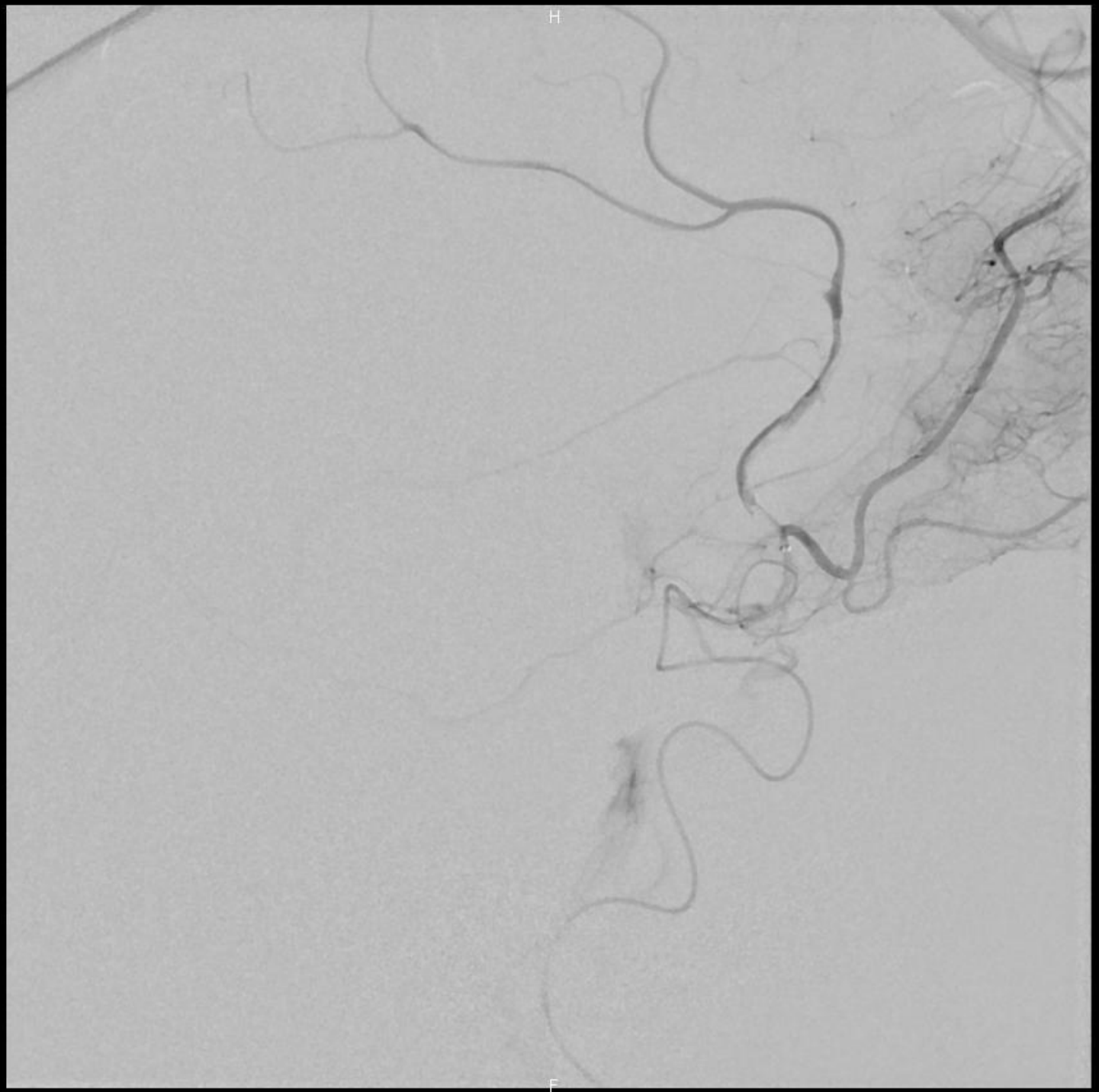


- F, 83 ans
- NIHSS 15
- IRM à Brive, score Aspect 6
- Suspicion occlusion T carotidien G

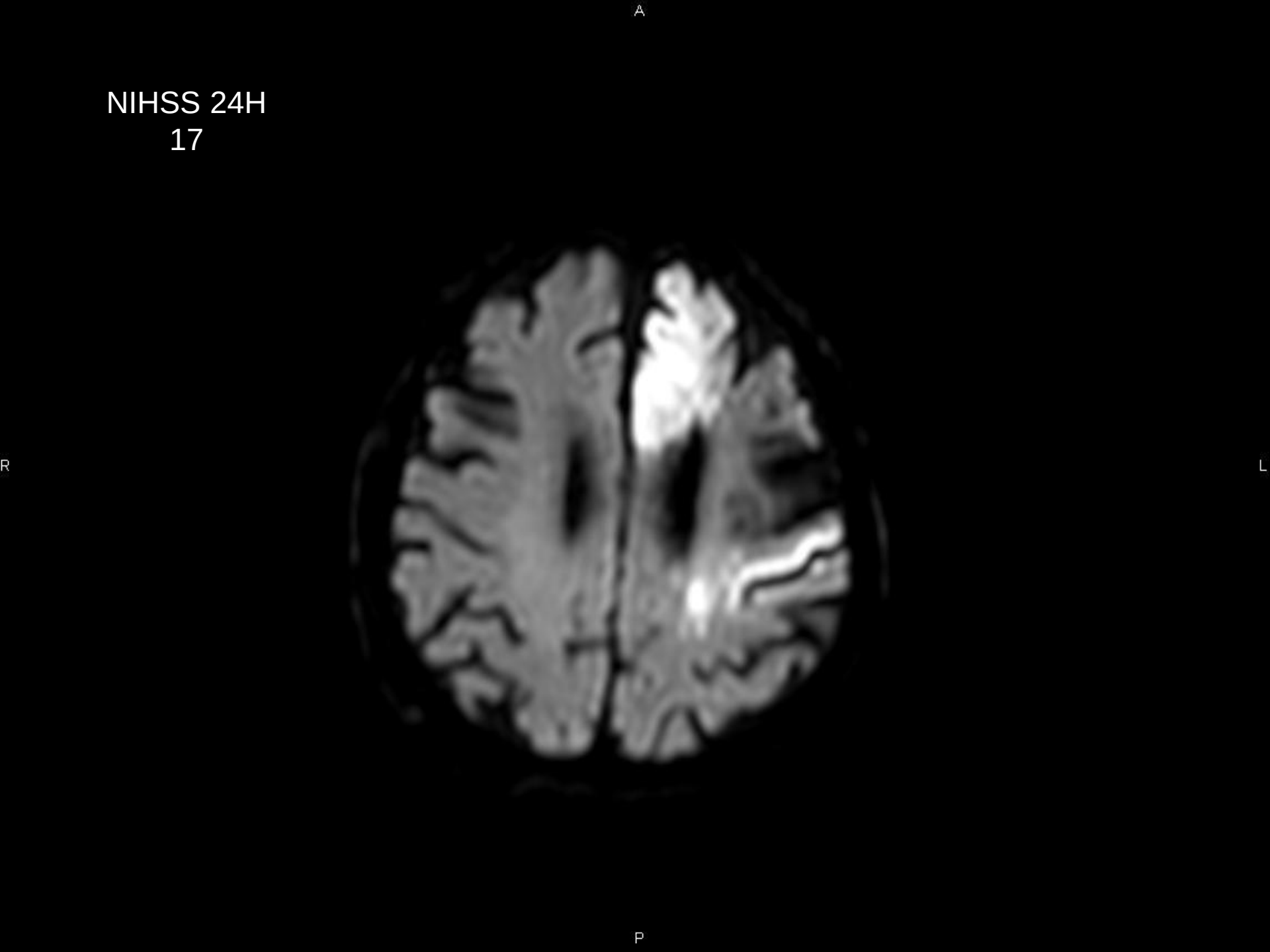

H
R
L
F


H
P
A
F


H
R
L
F


H
AL
F

NIHSS 24H
17



Homme, 90 ans

HTA

AC/FA sous Rivaroxaban

Alzheimer débutant

Vit à domicile avec sa femme, conduit

Homme, 90 ans

Au réveil (8h30), le patient constate un déficit partiel de l'hémicorps gauche

Le patient conduit pour se rendre chez son médecin

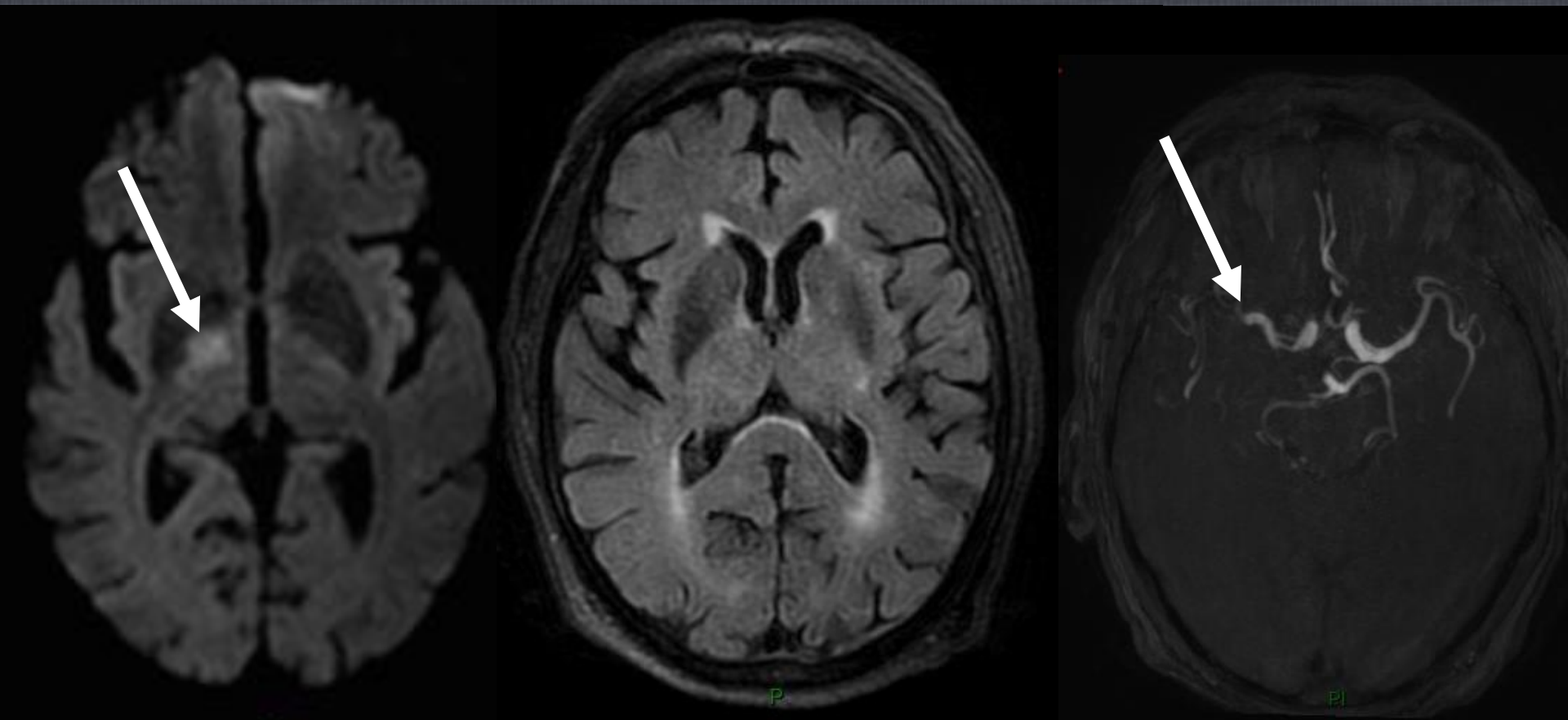
Accident

Transfert au CHU pour alerte thrombolyse

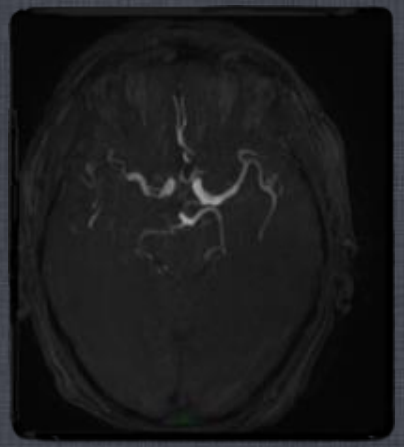
Homme, 90 ans

Déficit partiel ½ corps gauche + PFg + HLH

NIHSS: 9



Homme, 90 ans



Pas de thrombolyse IV car anticoagulation et pas d’heure de début des symptômes

Decision de thrombectomie seule

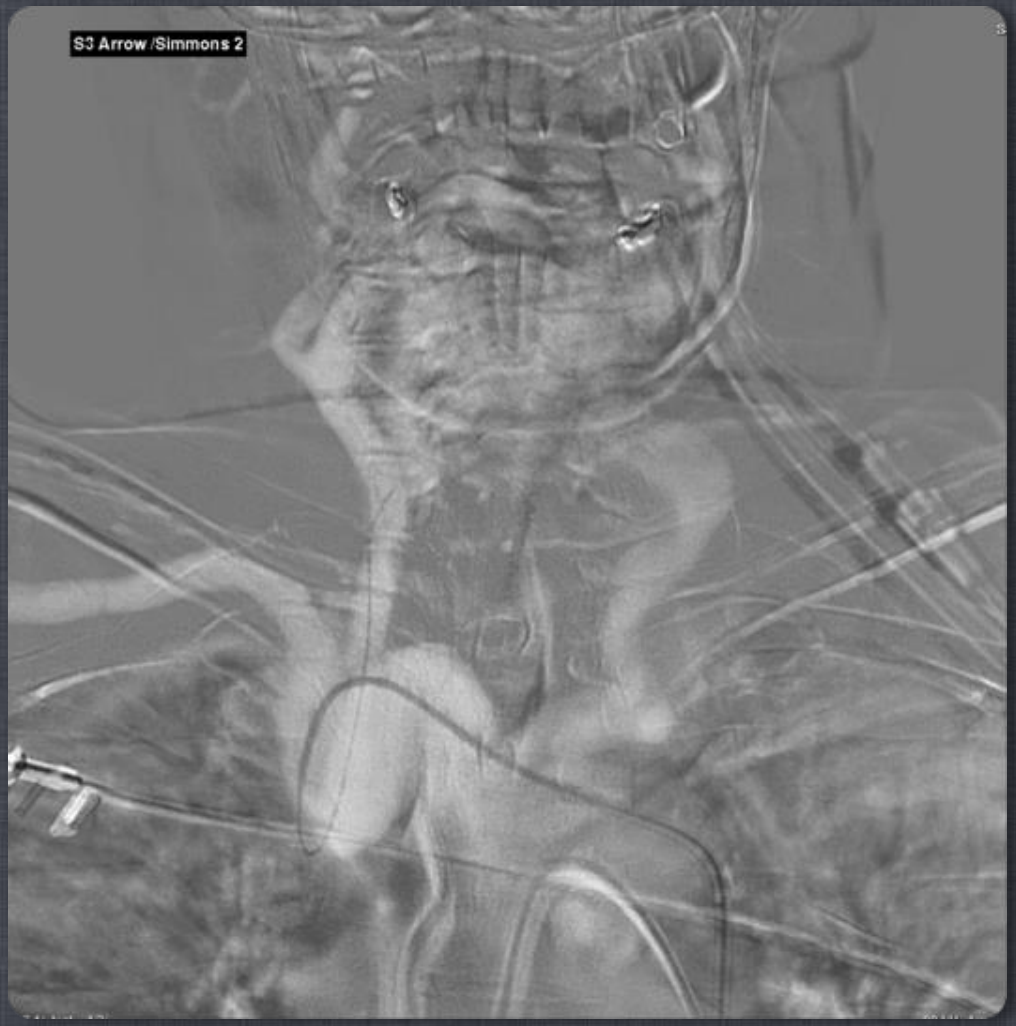
Homme, 90 ans

Sous sédation

Ponction fémorale

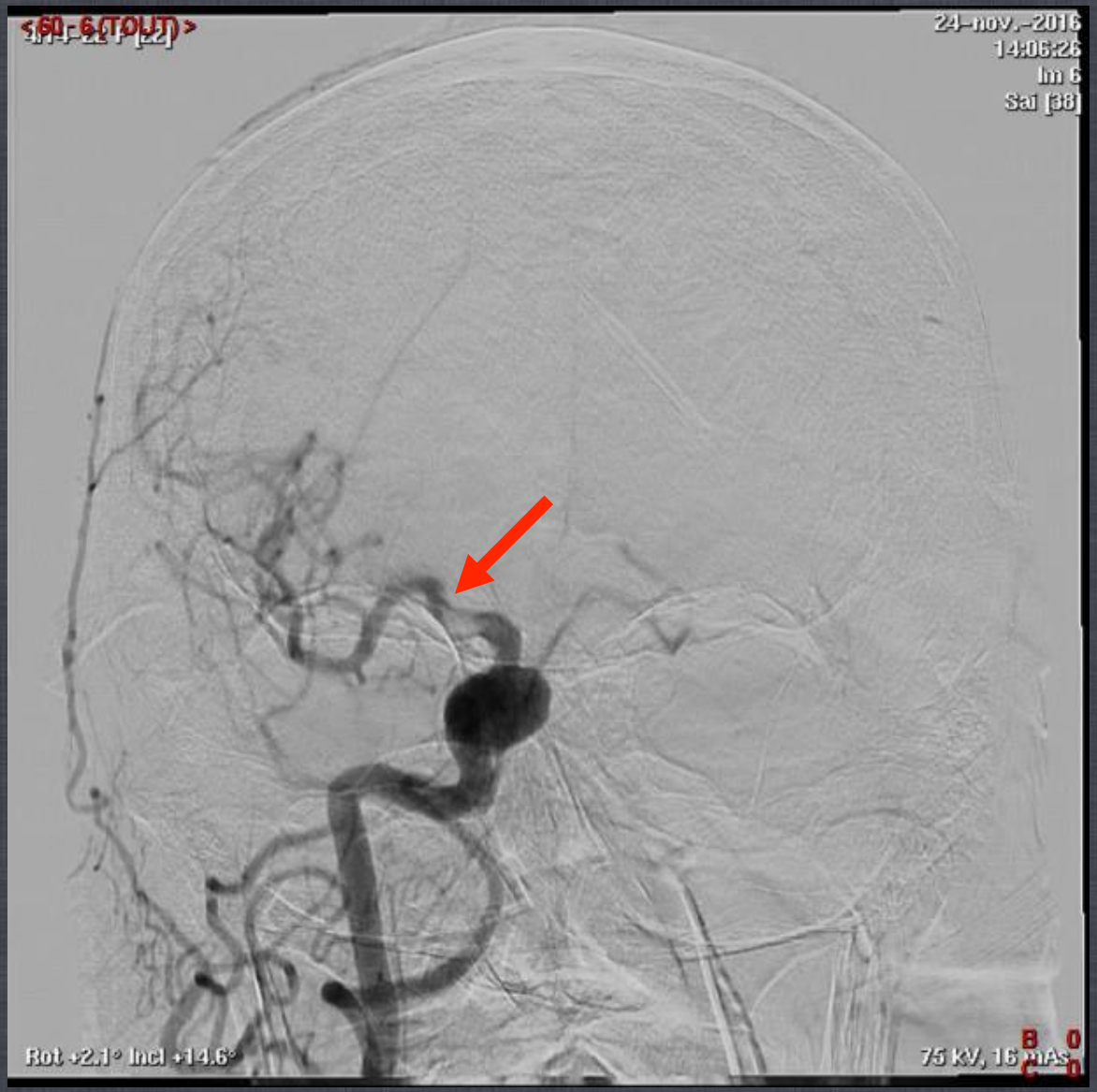
8 F Arrow

125 cm Simmons

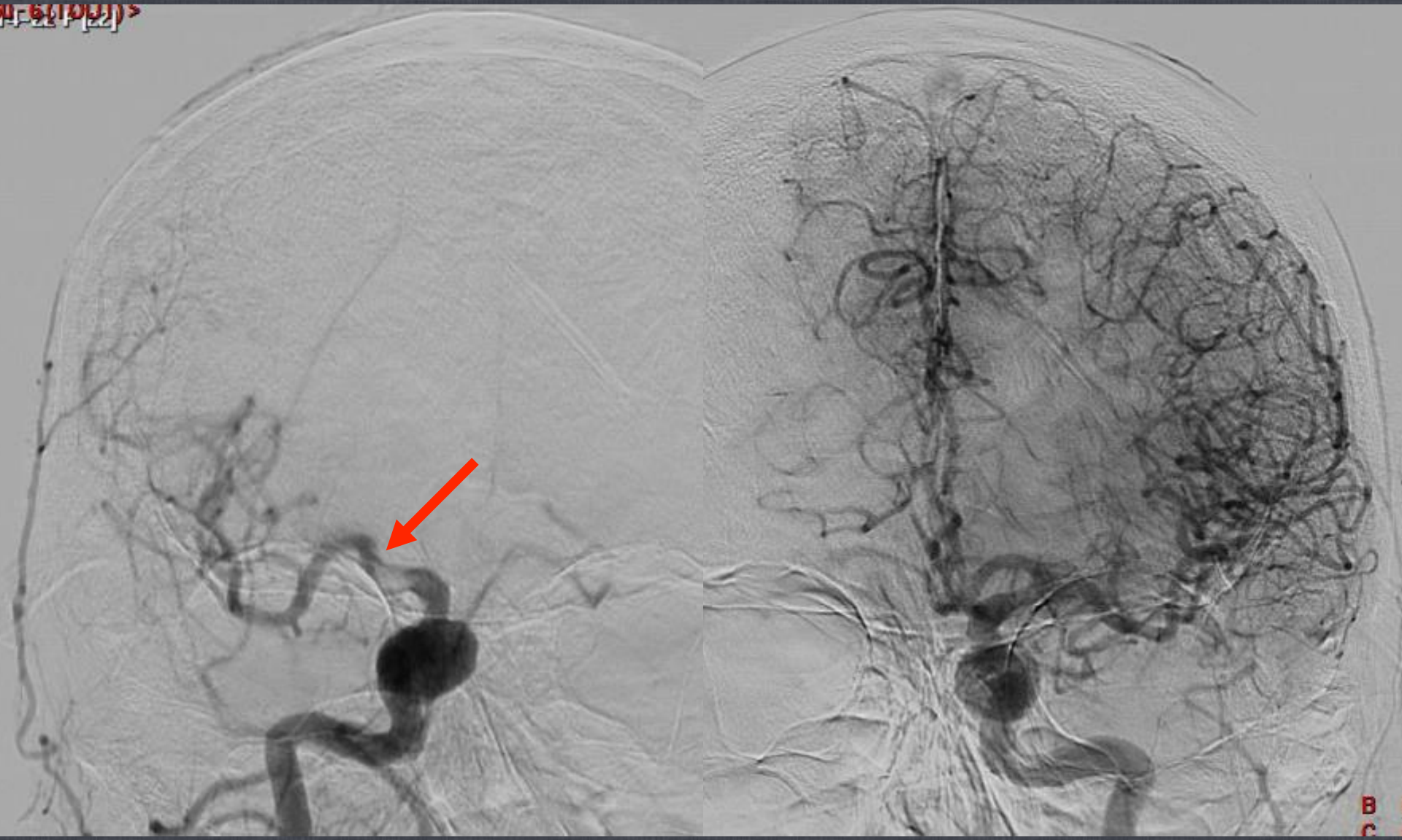


Echec de cathétérisme depuis la fémorale

Homme, 90 ans



Homme, 90 ans

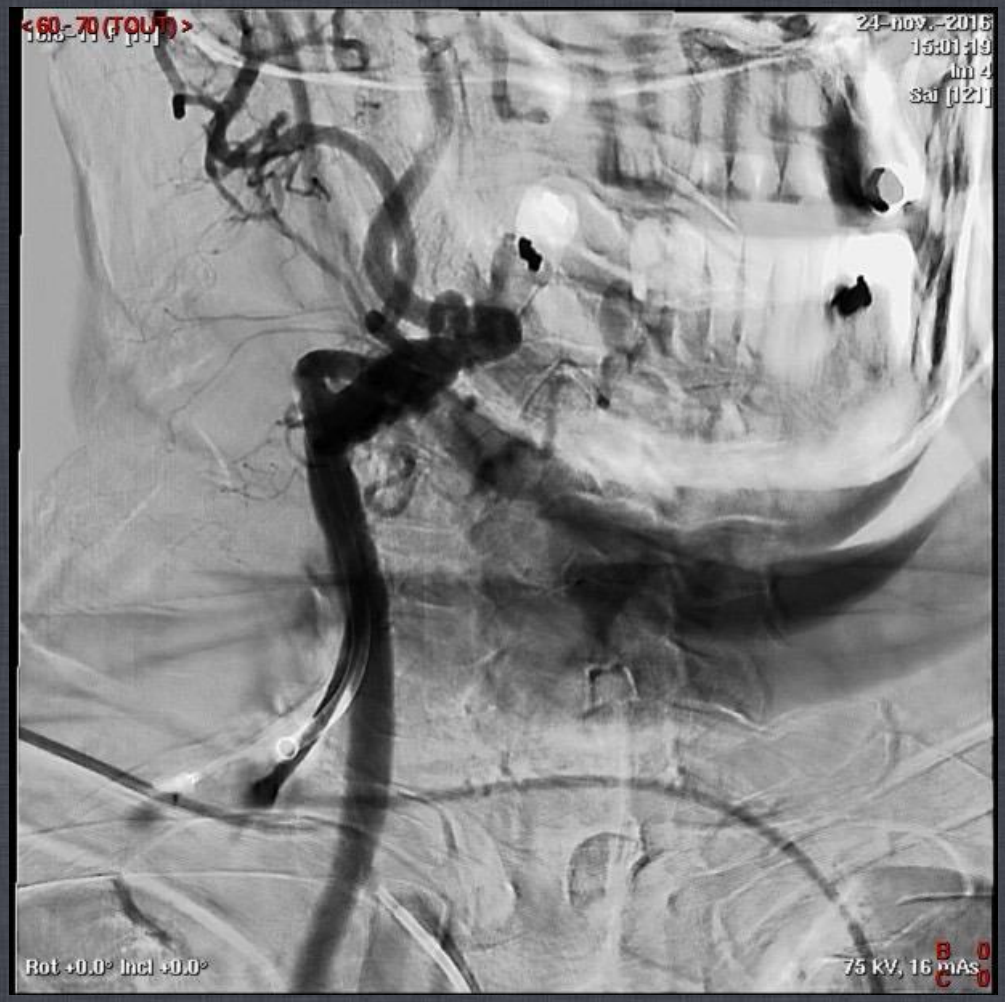


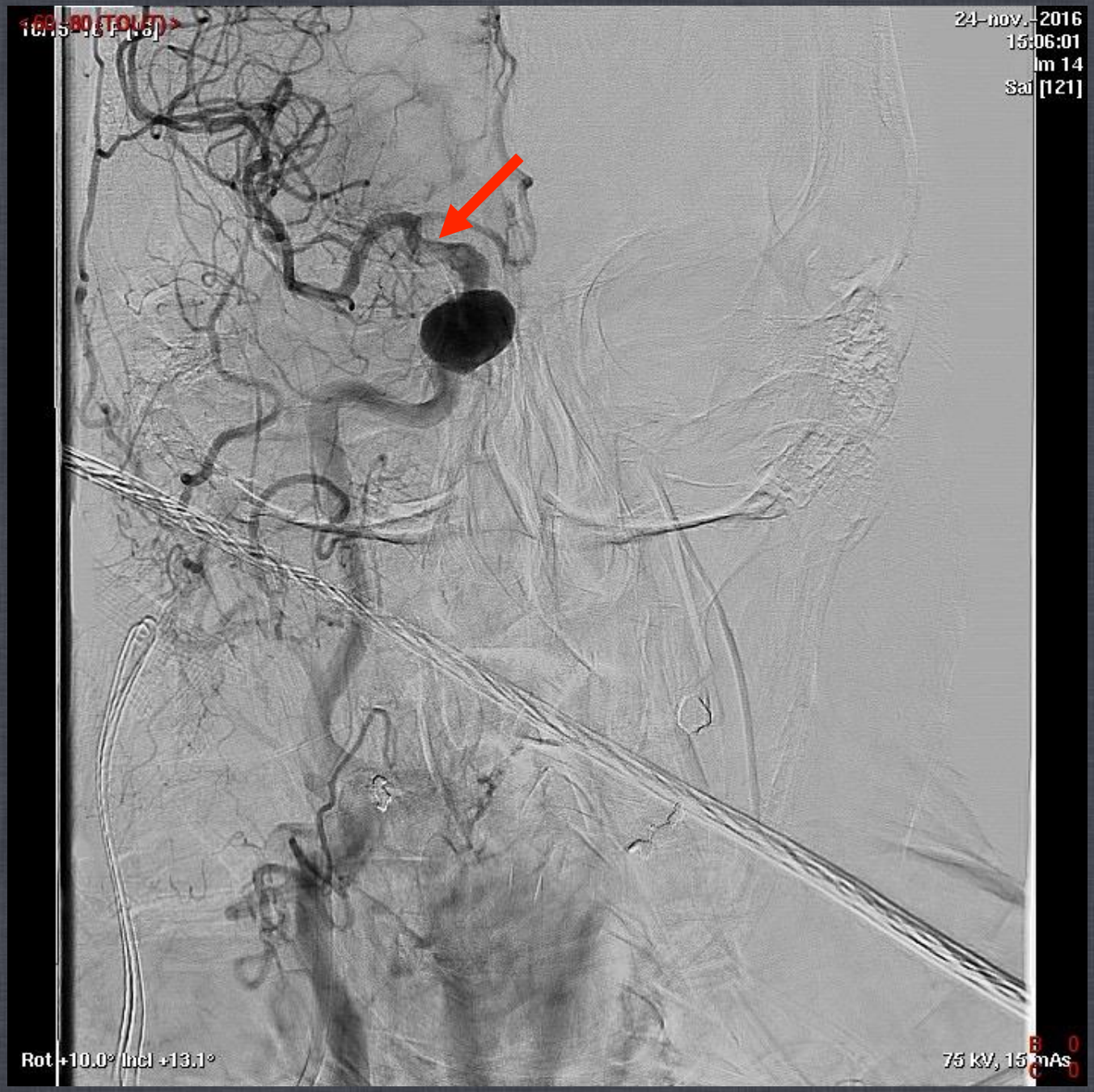
Homme, 90 ans

Ponction carotidienne

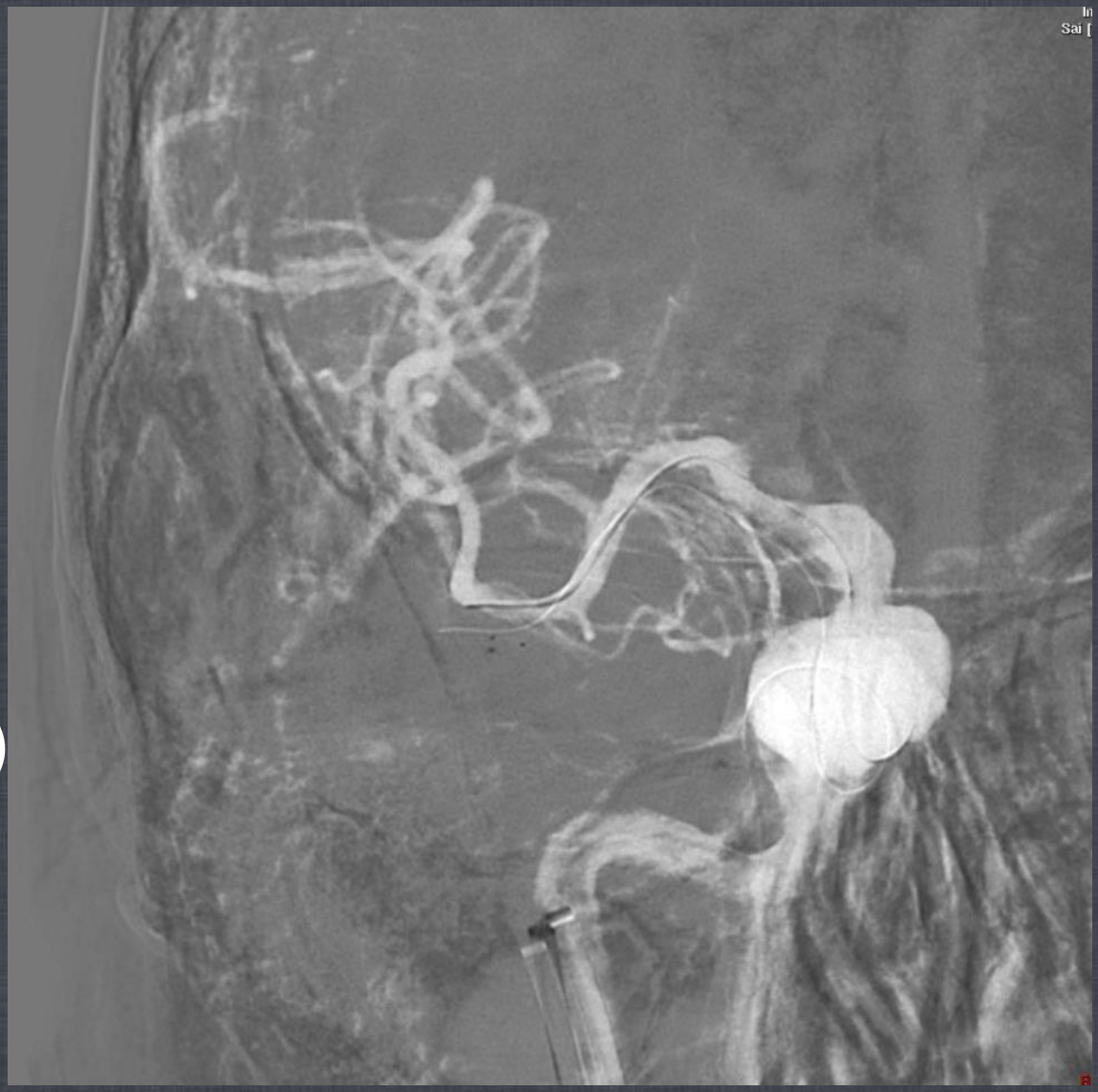
Sous sédation

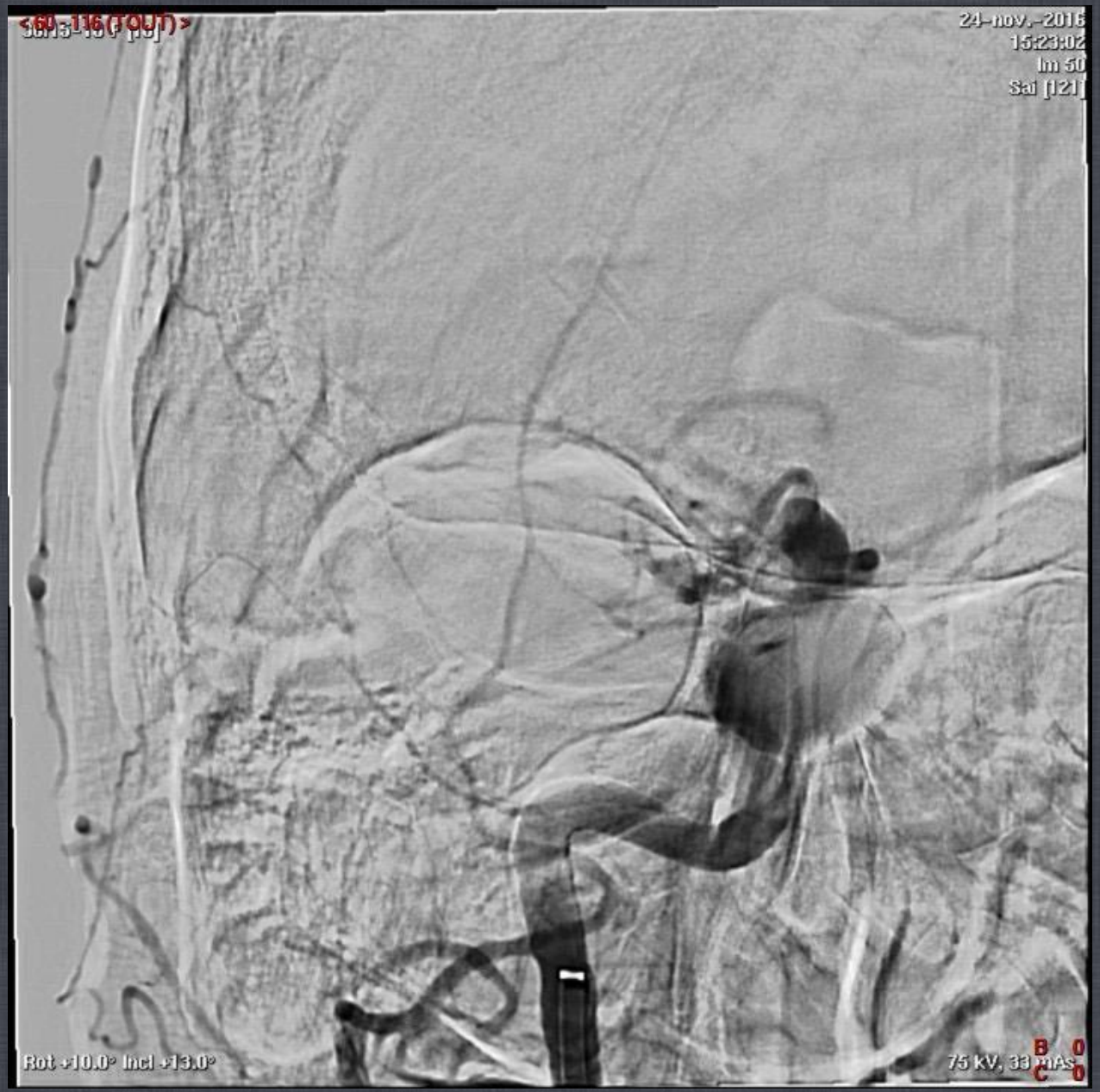
Introducteur 6 F

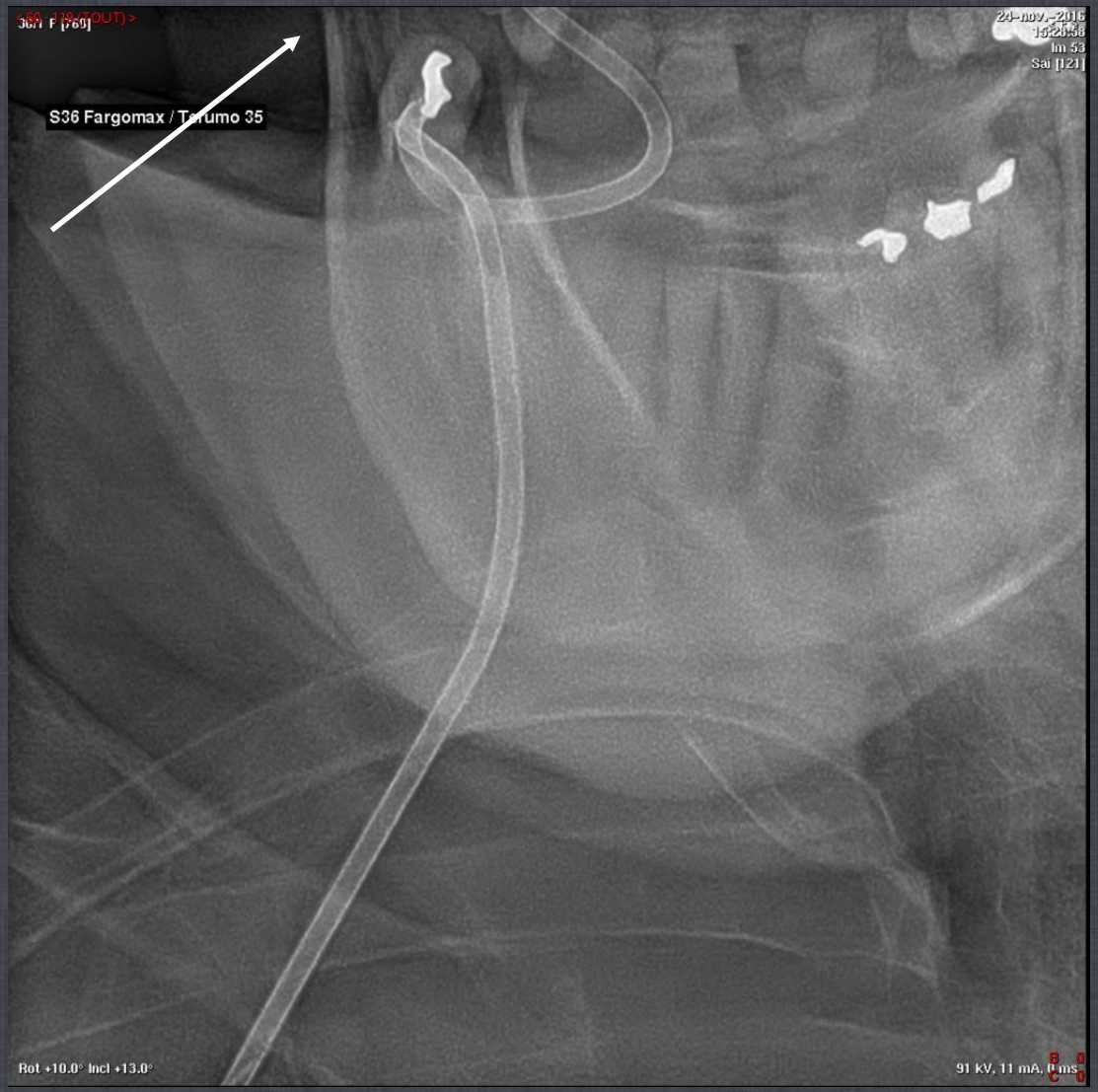



24-nov.-2016
15:06:01
Im 14
Sai [121]
Rot +10.0° Incl +13.1°

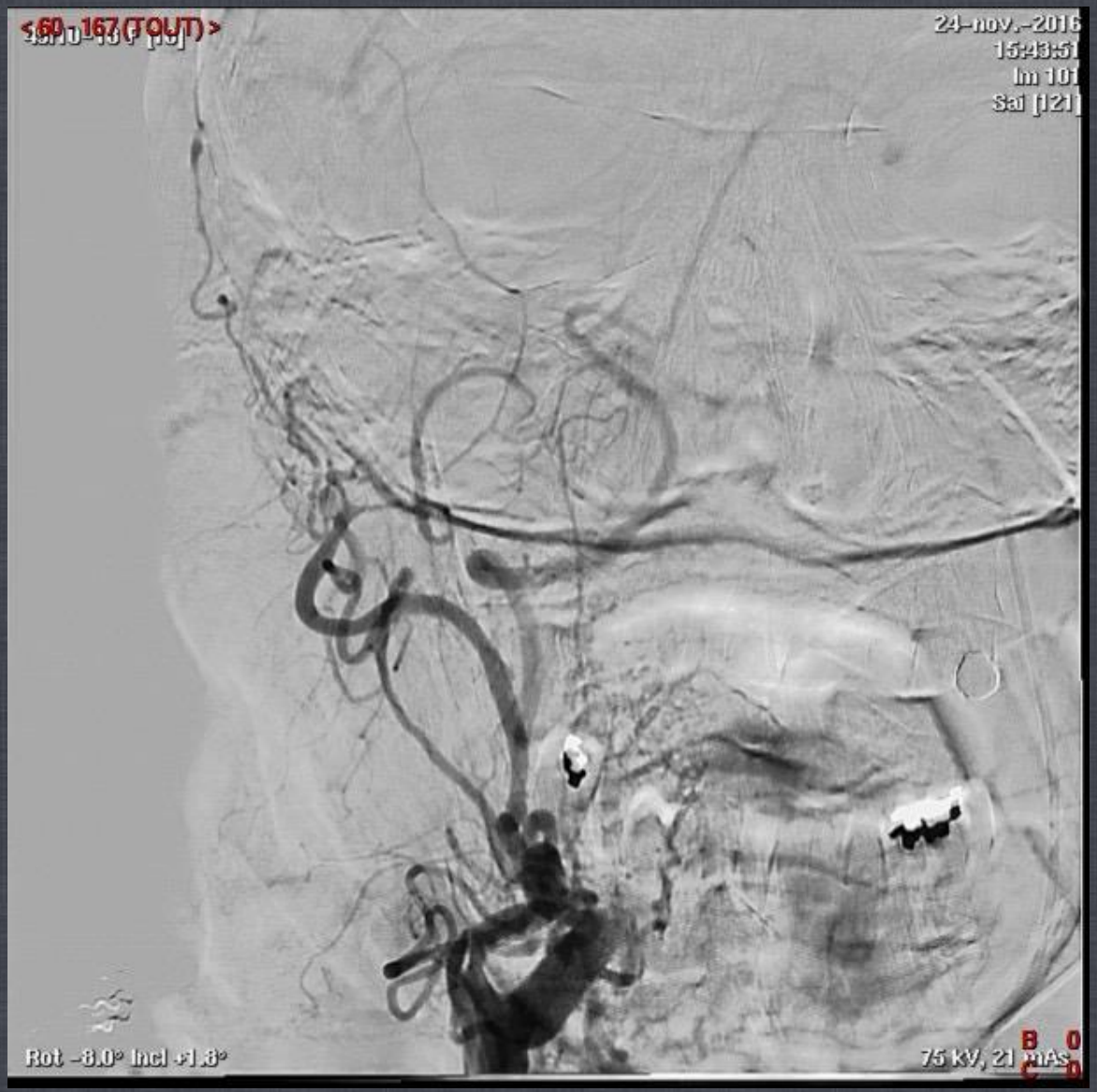
- FargoMax
- Rebar 27
- Solitaire 6 x 30 (1 passage)

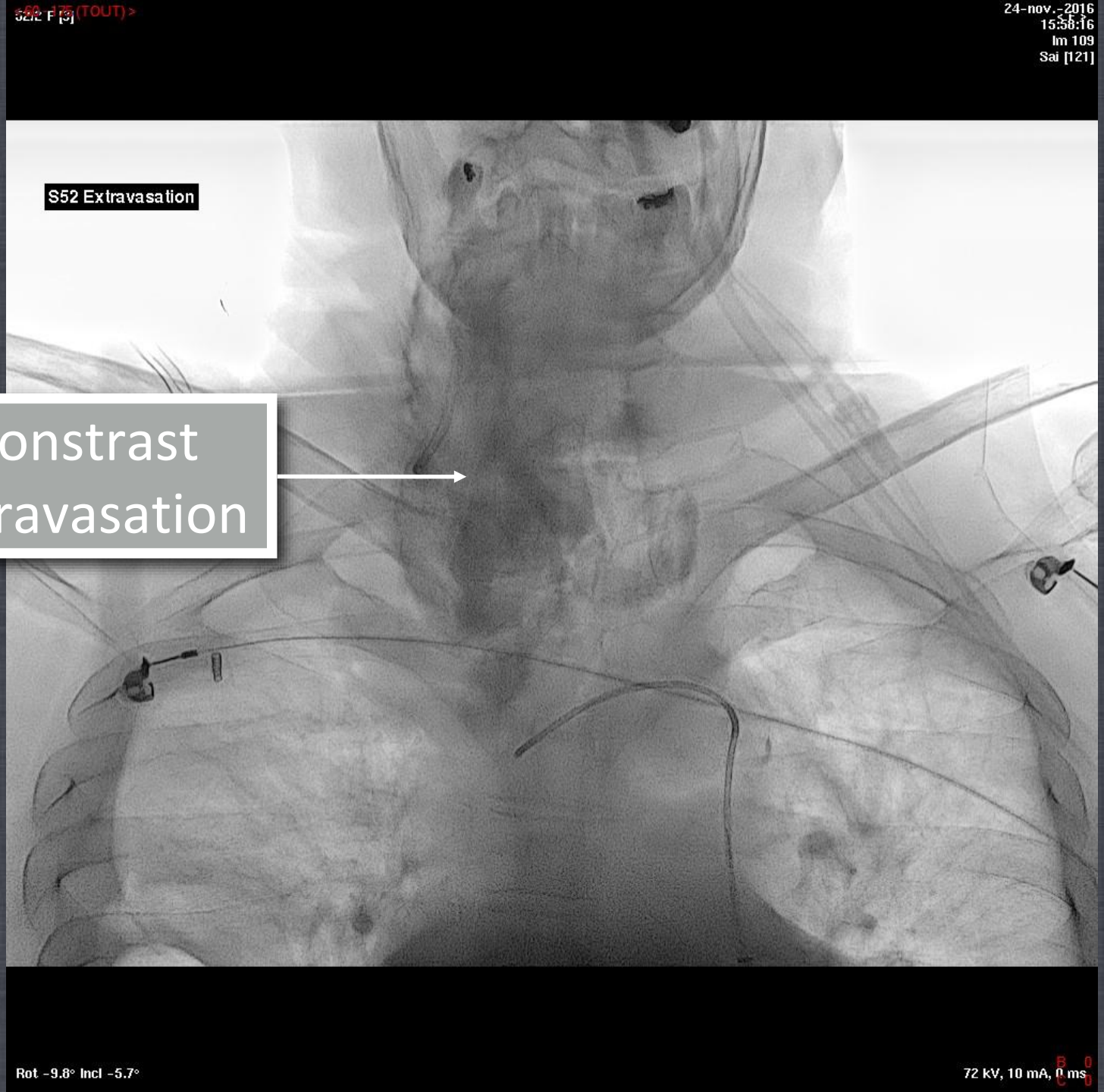


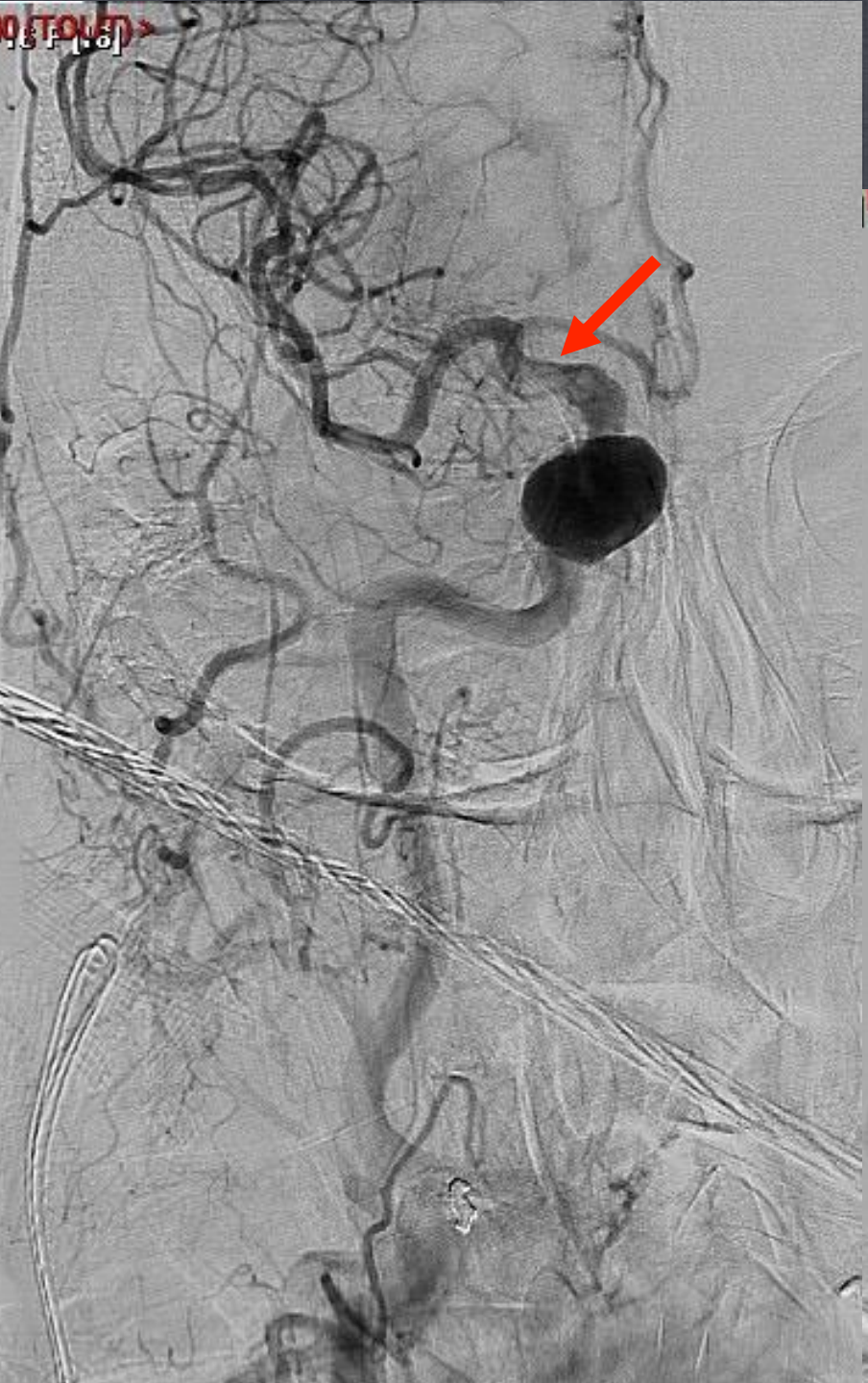
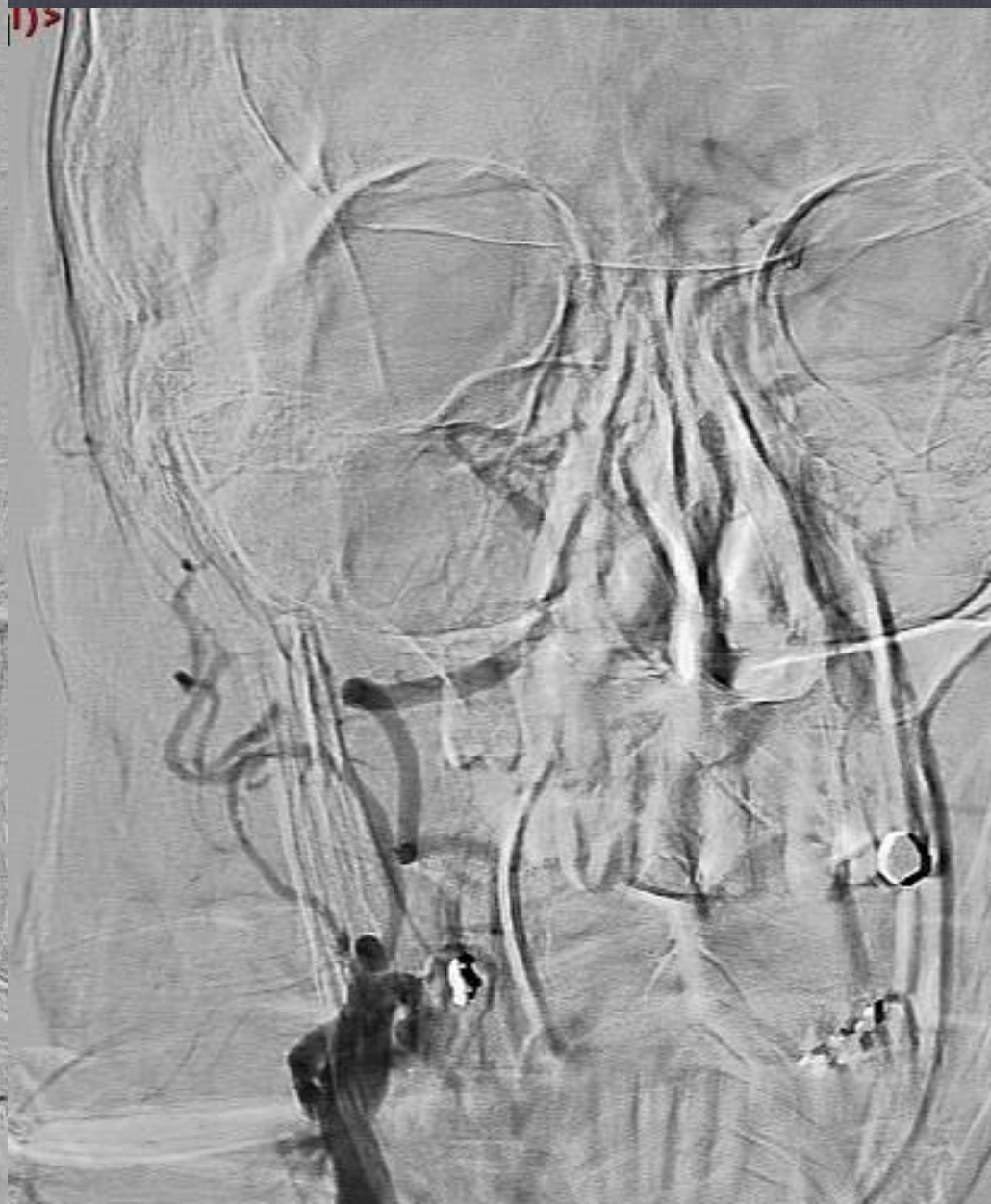

24-nov.-2016
15:23:02
Im 50
Sai [121]
Rot +10.0° Incl +13.0°
75 kV, 38 mAs



- Twist du FargoMax
- Impossibilité de déboucler


<60 167 (TOUT) >
24-nov.-2016
15:43:51
Im 101
Sai [121]
Rot -8.0° Incl +1.8°
75 kV, 21 mAs


24-nov.-2016
15:58:16
Im 109
Sai [121]
S52 Extravasation
Constrast extravasation
Rot -9.8° Incl -5.7°
72 kV, 10 mA, 0 ms

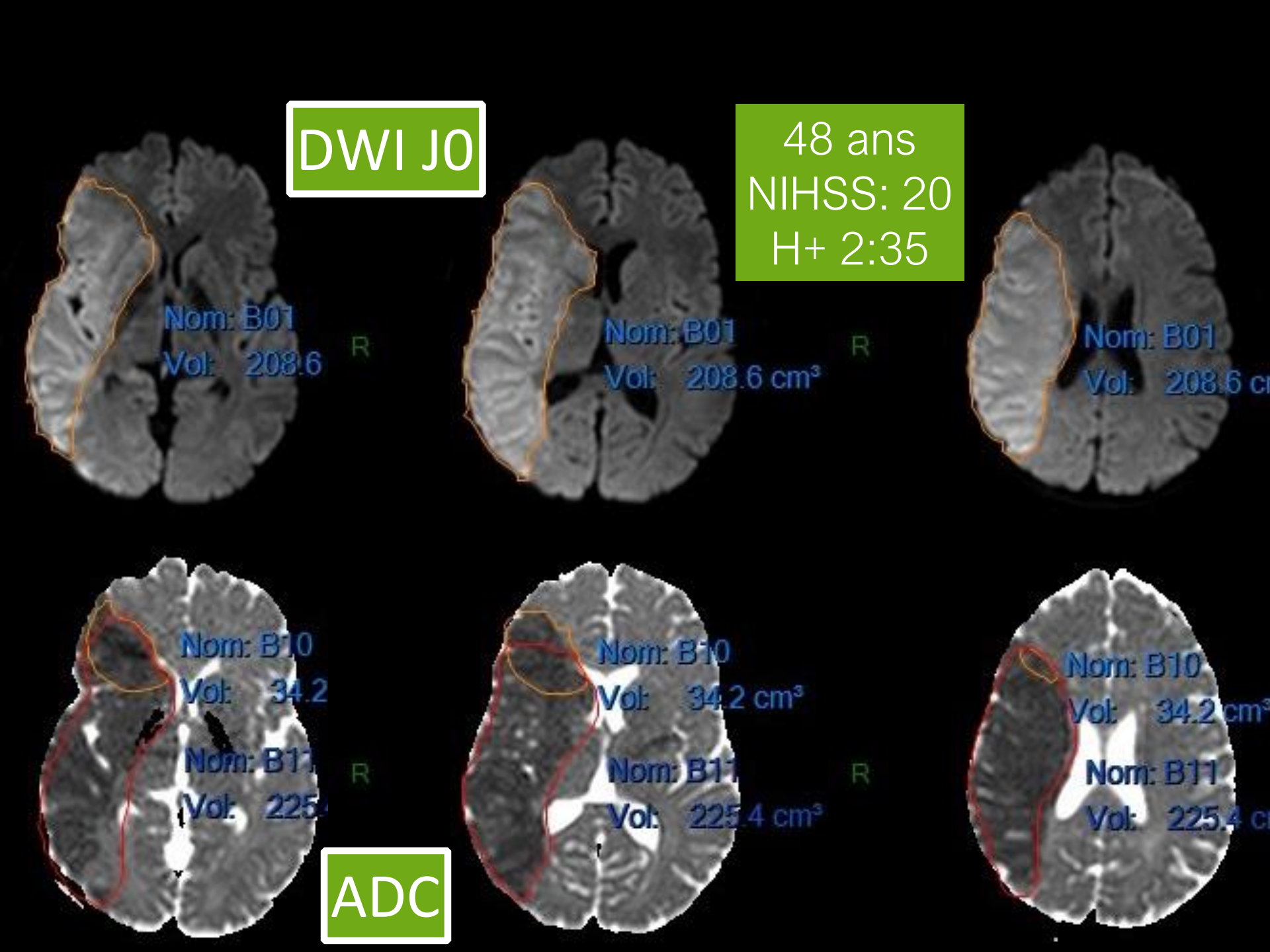
Homme, 90 ans

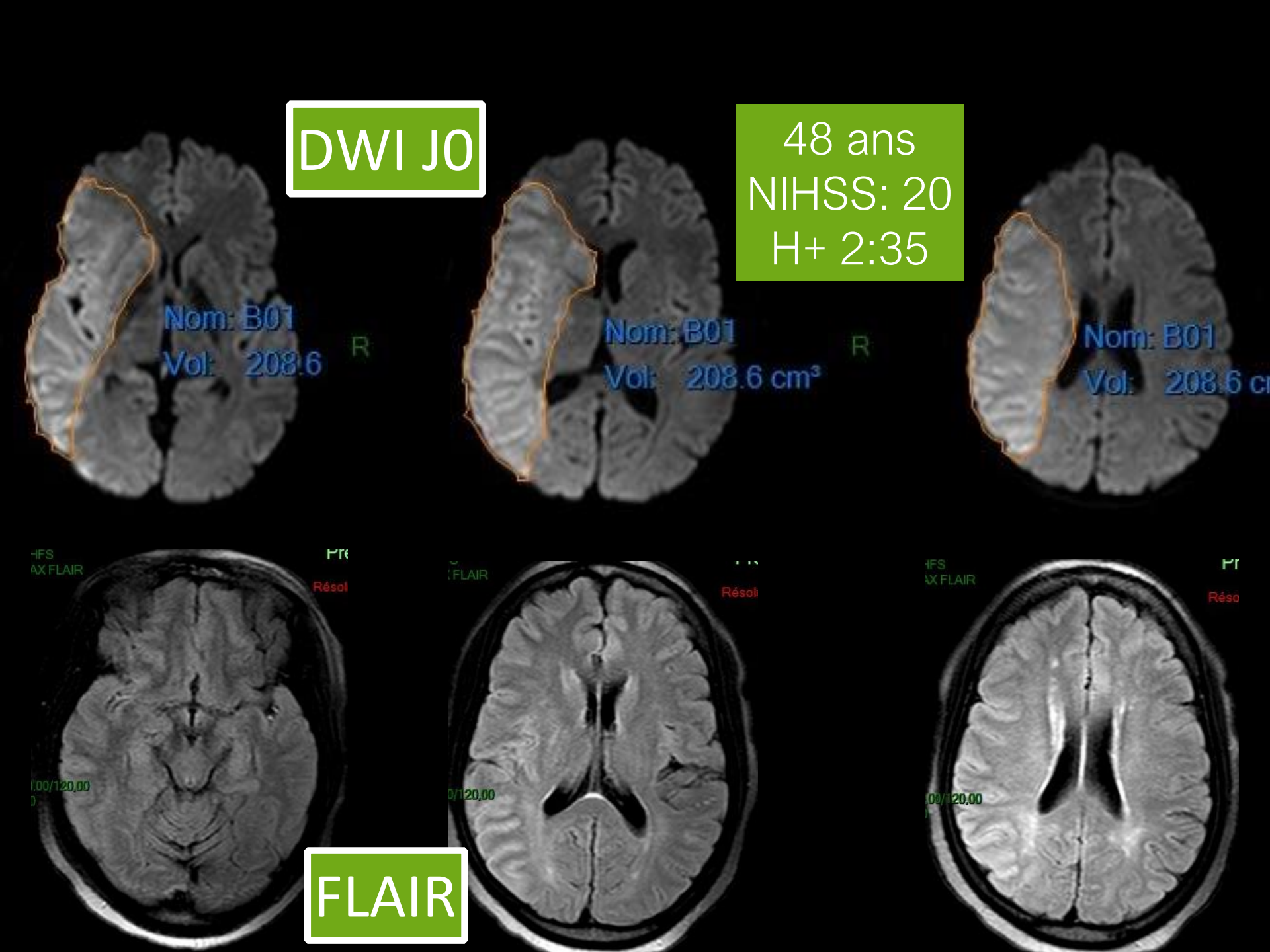
Détérioration clinique

Défaillance cardiaque aigue

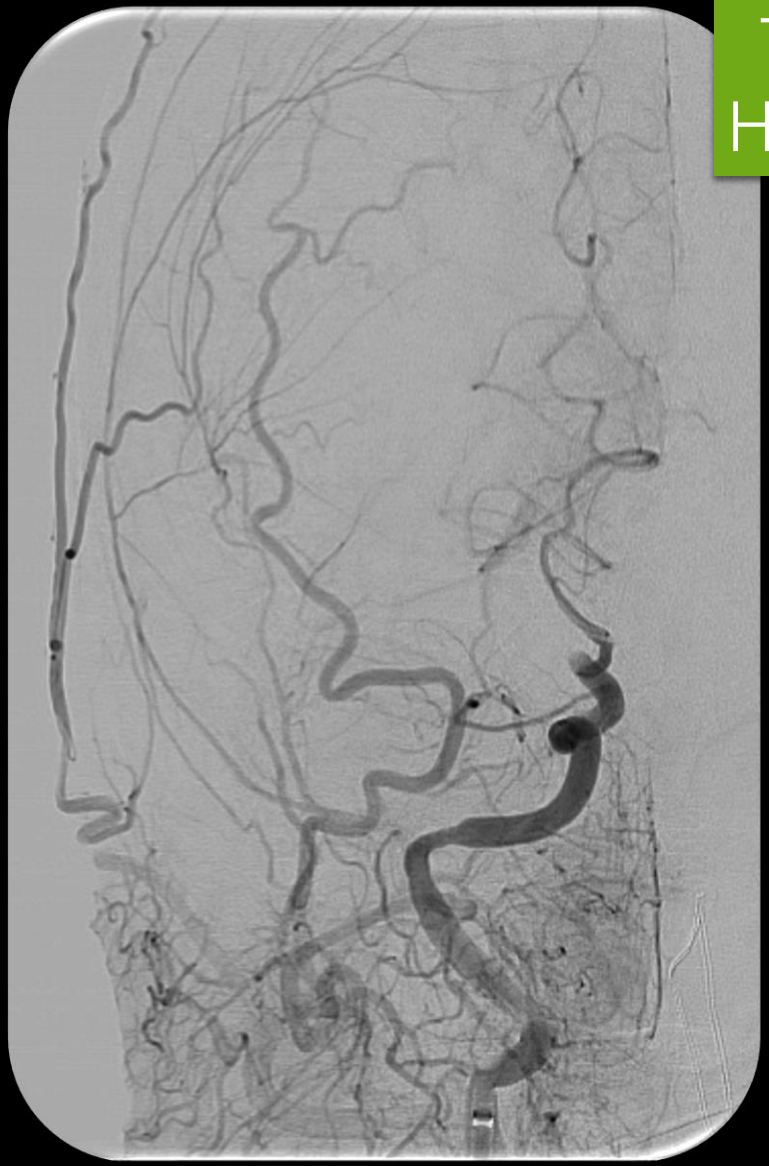
Intubation en urgence

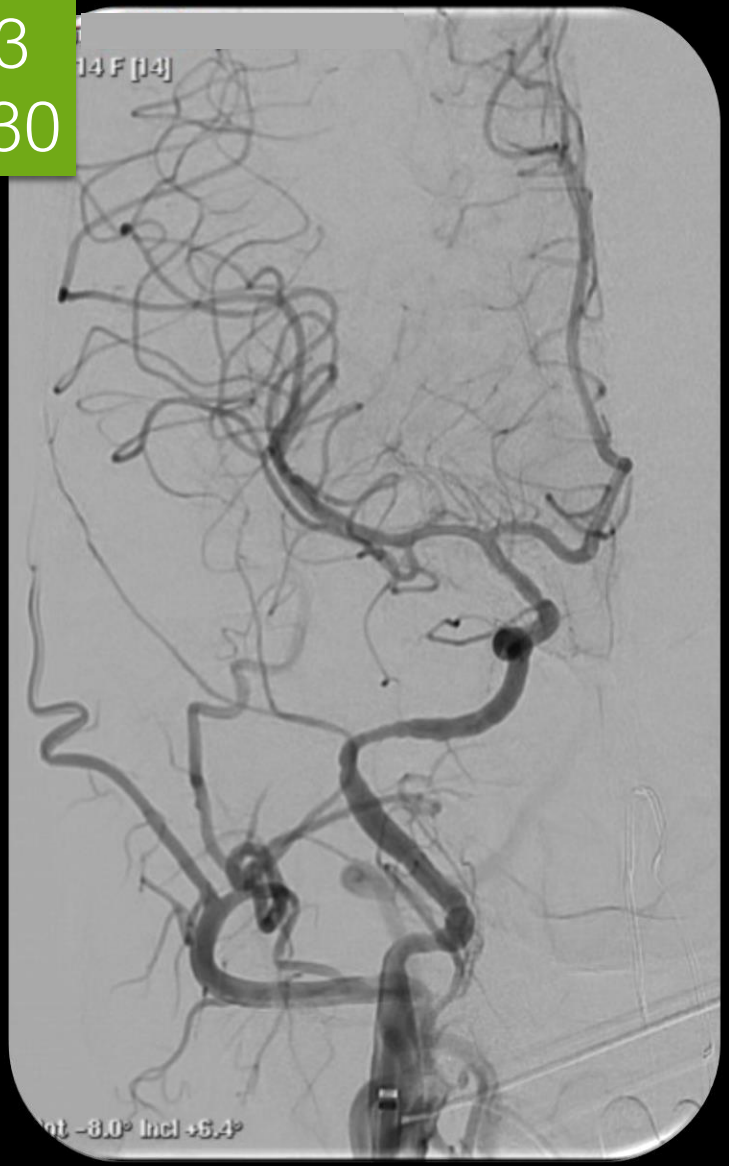
Décès à J1

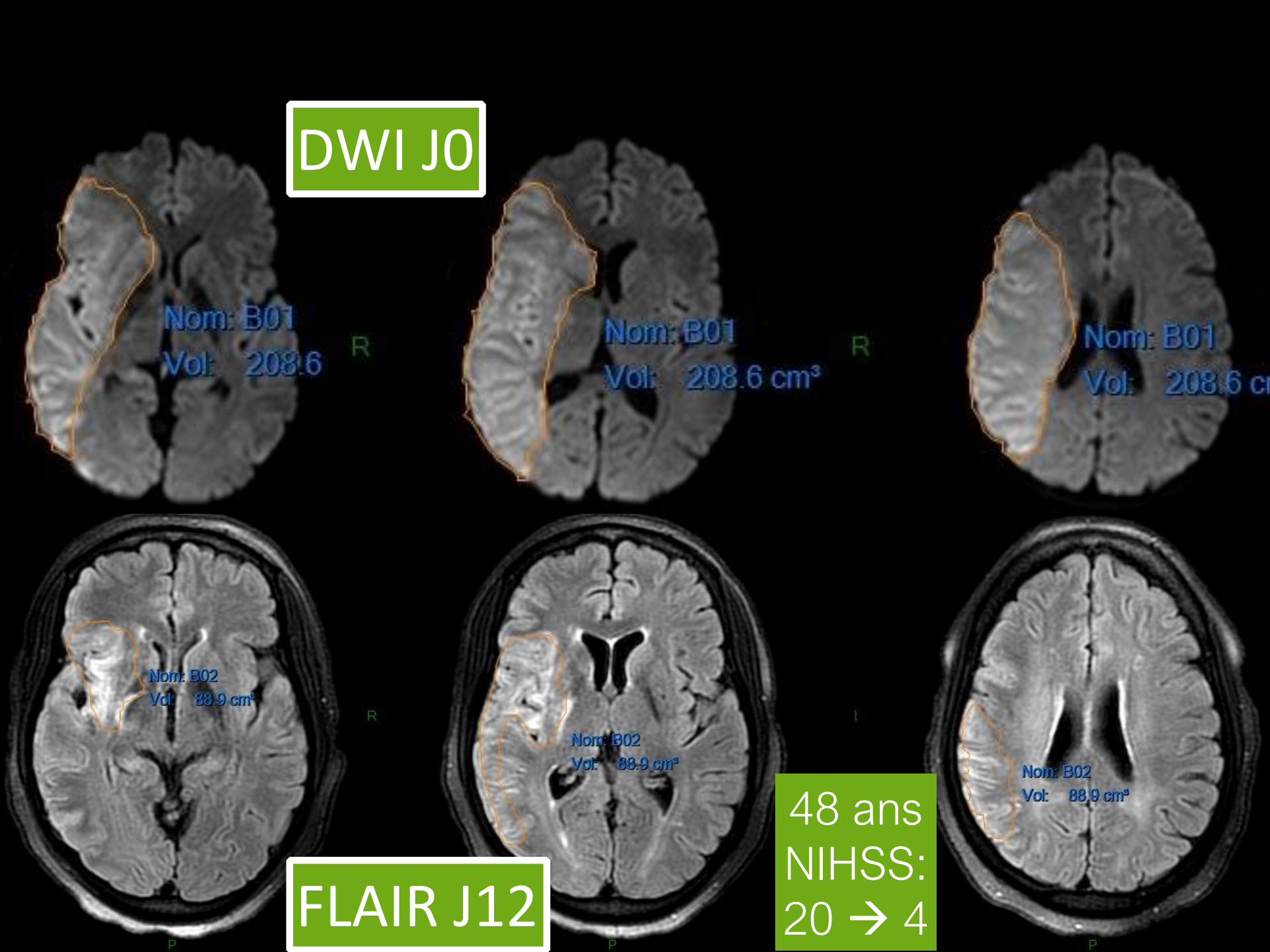

DWI J0
48 ans
NIHSS: 20
H+ 2:35
Nom: B01
Vol: 208.6
R
Nom: B01
Vol: 208.6 cm³
R
Nom: B01
Vol: 208.6 cm³
Nom: B10
Vol: 34.2
Nom: B11
Vol: 225
R
Nom: B10
Vol: 34.2 cm³
Nom: B11
Vol: 225.4 cm³
R
Nom: B10
Vol: 34.2 cm³
Nom: B11
Vol: 225.4 cm³
ADC


DWI J0
48 ans
NIHSS: 20
H+ 2:35
Nom: B01
Vol: 208.6
R
Nom: B01
Vol: 208.6 cm³
R
Nom: B01
Vol: 208.6 c
FLAIR

48 ans
TICI 3
H+ 3:30

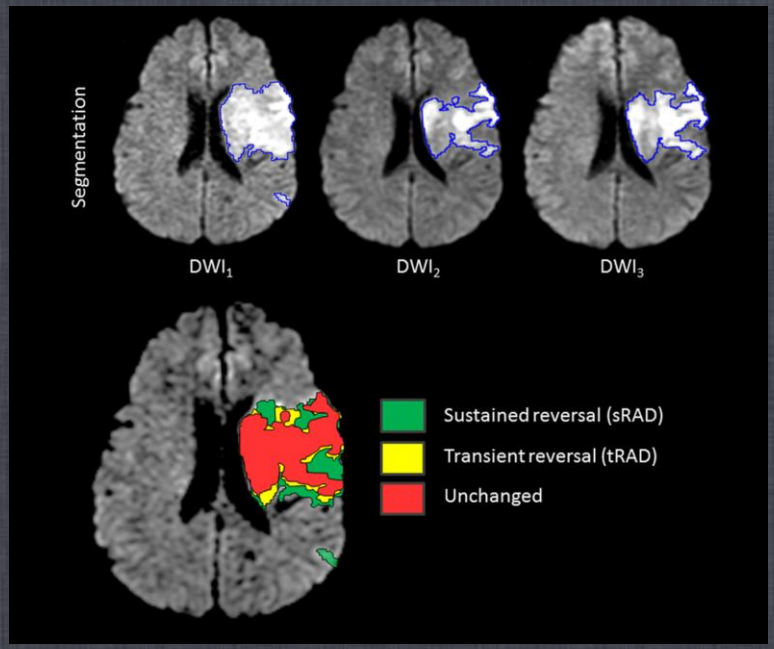


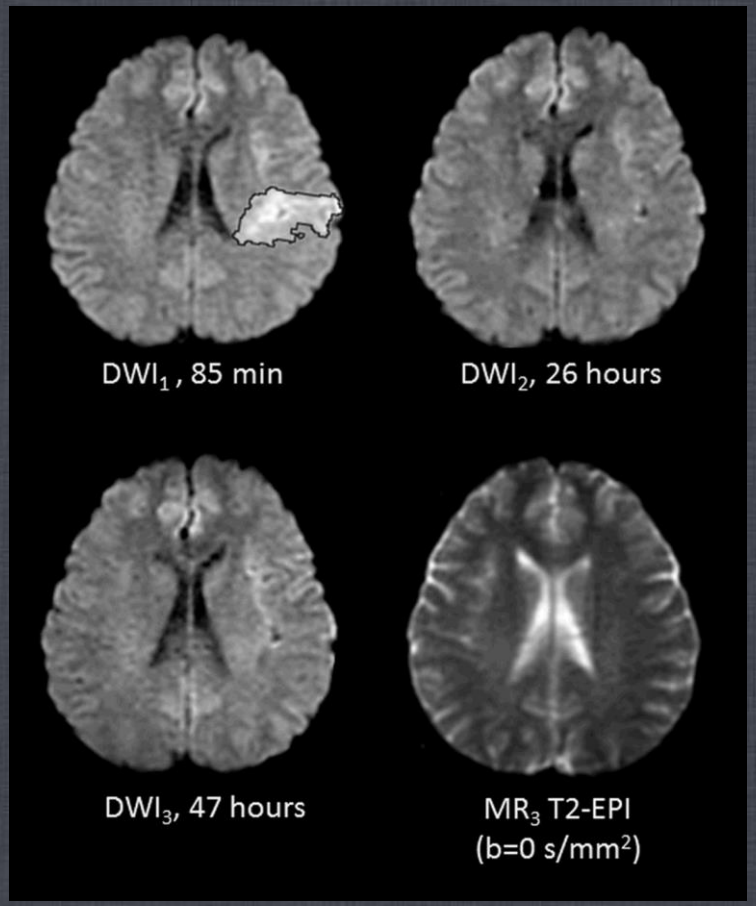



DWI J0
Nom: B01
Vol: 208.6
R
Nom: B01
Vol: 208.6 cm³
R
Nom: B01
Vol: 208.6 cm
Nom: B02
Vol: 88.9 cm³
R
Nom: B02
Vol: 88.9 cm³
Nom: B02
Vol: 88.9 cm³
FLAIR J12
48 ans
NIHSS:
20 → 4

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

How sustained is 24-hour diffusion-weighted imaging lesion reversal? Serial magnetic resonance imaging in a patient cohort thrombolyzed within 4.5 hours of stroke onset





Soize et al. Stroke. 2015 Mar;46(3):704-10.

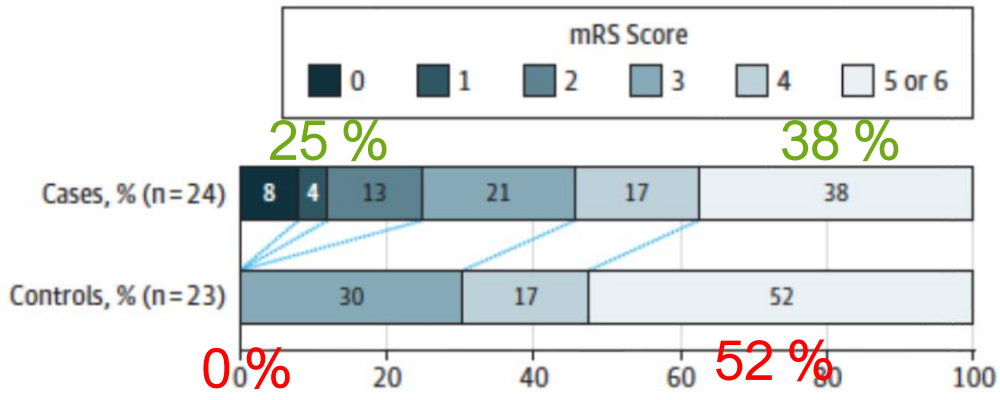
Gros infarctus

JAMA Neurology | Original Investigation

Endovascular Treatment for Patients With Acute Stroke Who Have a Large Ischemic Core and Large Mismatch Imaging Profile

Leticia C. Rebello, MD; Mehdi Bouslama, MD; Diogo C. Haussen, MD; Seena Dehkharghani, MD; Jonathan A. Grossberg, MD; Samir Belagaje, MD; Michael R. Frankel, MD; Raul G. Nogueira, MD

Figure. Functional Outcomes at 90 Days According to the Score on the Modified Rankin Scale (mRS) (Baseline Ischemic Core >50 mL on Computed Tomographic Perfusion)



JAMA Neurol. 2017 Jan 1;74(1):34-40

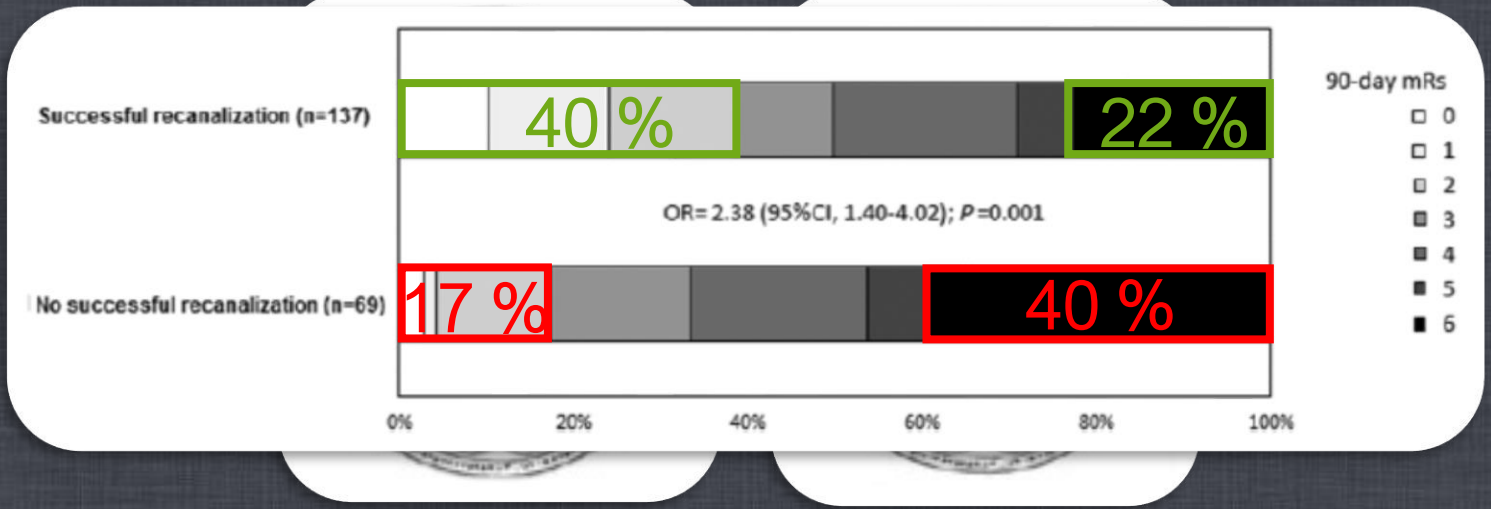
Gros infarctus

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association | American Stroke Association

Successful Reperfusion With Mechanical Thrombectomy Is Associated With Reduced Disability and Mortality in Patients With Pretreatment Diffusion-Weighted Imaging–Alberta Stroke Program Early Computed Tomography Score ≤6

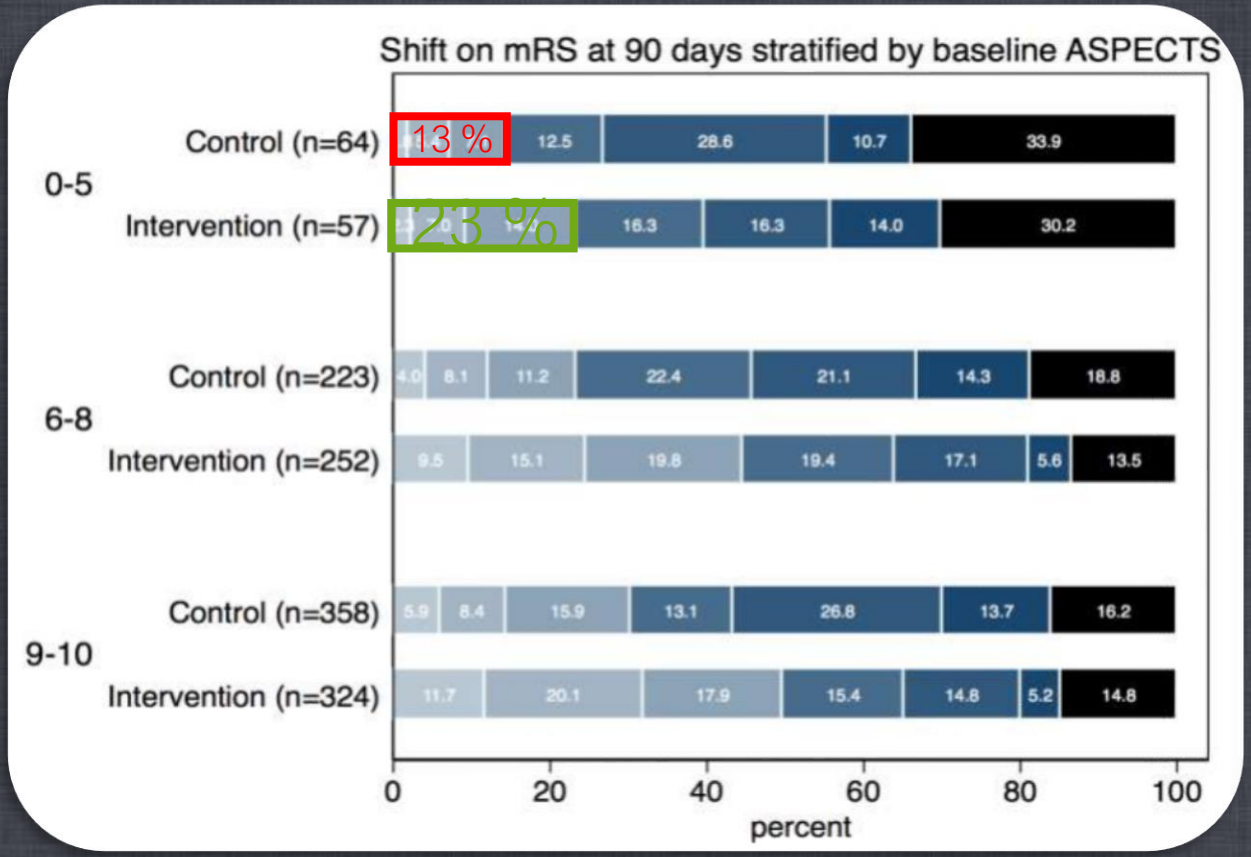
Jean-Philippe Desilles, Arthuro Consoli, Hocine Redjem, Oguzhan Coskun, Gabriele Ciccio, Stanislas Smajda, Julien Labreuche, Cristian Preda, Clara Ruiz Guerrero, Jean-Pierre Decroix, Georges Rodesch, Mikael Mazighi, Raphaël Blanc, Michel Piotin, Bertrand Lapergue and on behalf of the ETIS (Endovascular Treatment in Ischemic Stroke) Research Investigators



Stroke. 2017 Apr;48(4):963-969

Hermes

ESCAPE REVASCAT MR CLEAN EXTEND-IA SWIFT PRIME



Lancet. 2016 Apr 23;387(10029):1723-31

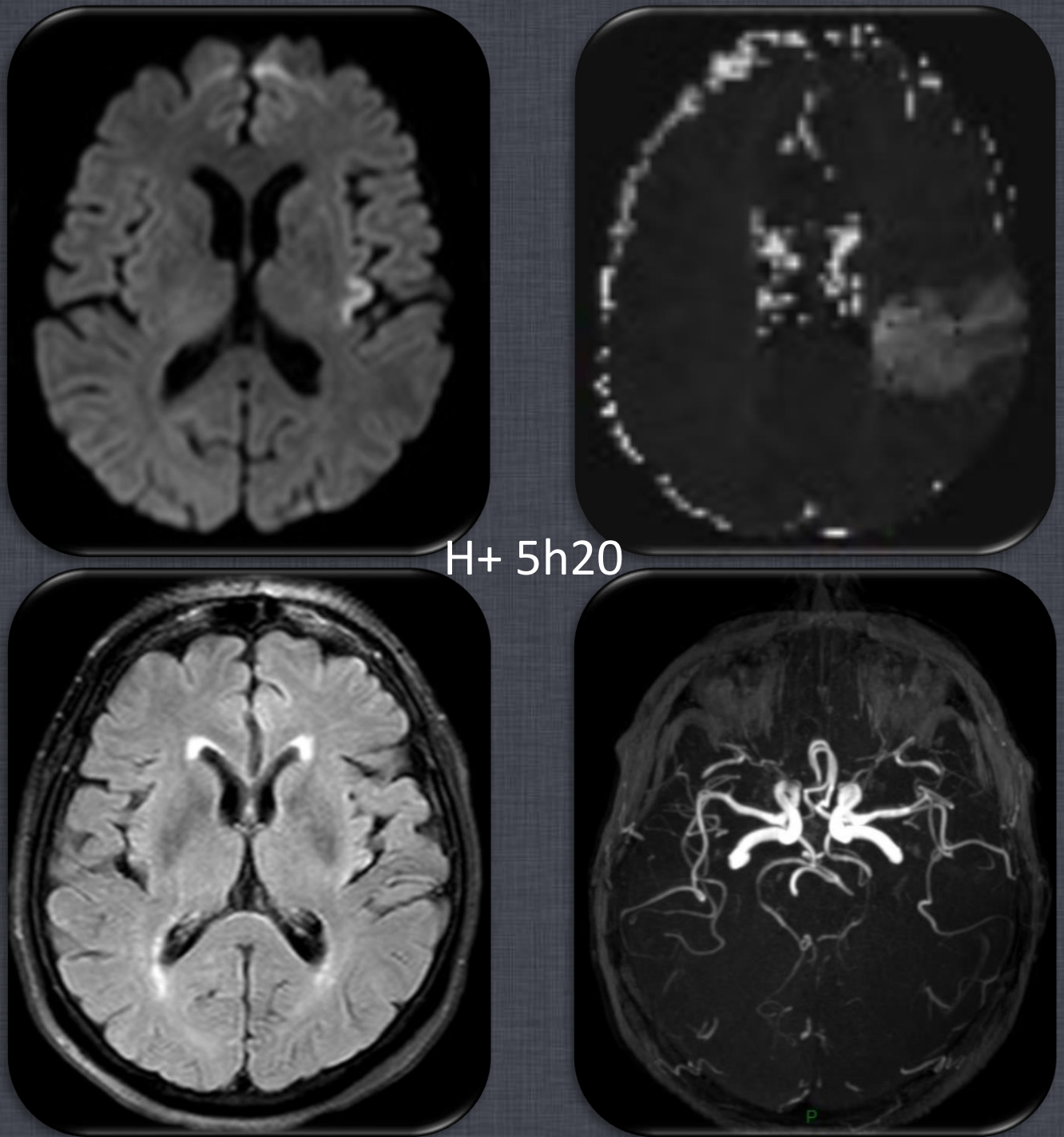
Femme, 78 ans

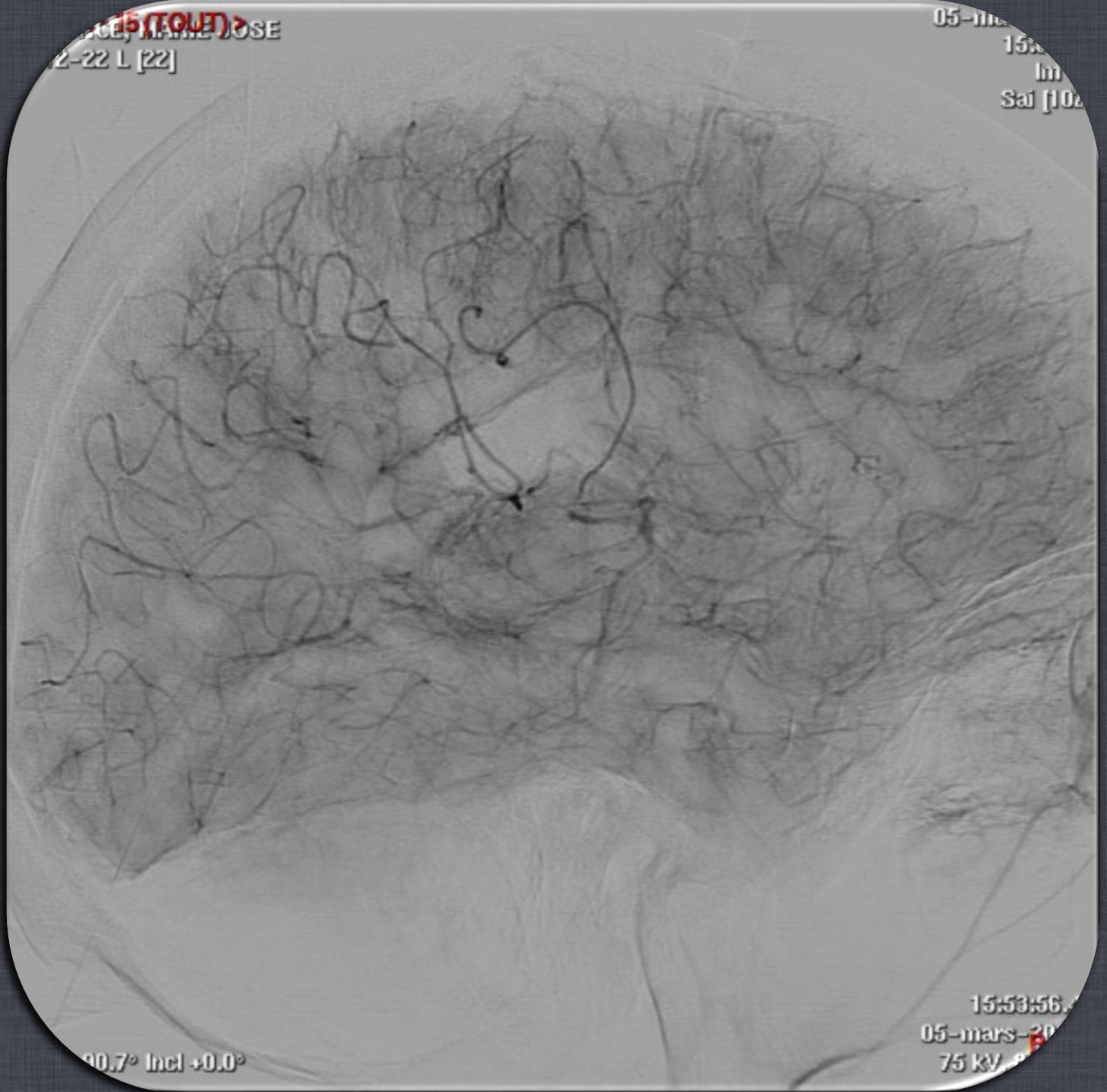
Aphasie

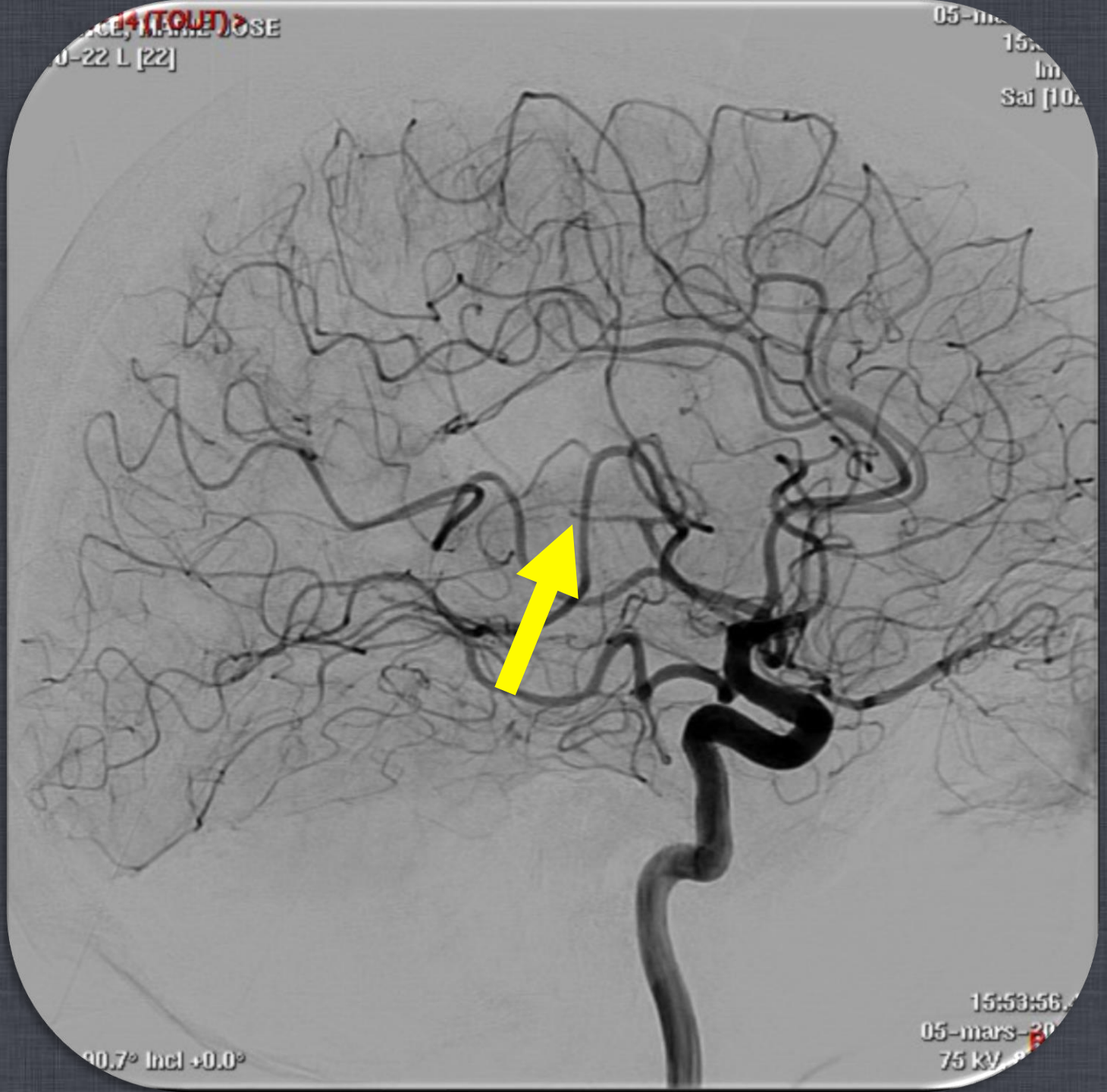
Hémiplégie + Hémianesthésie droites

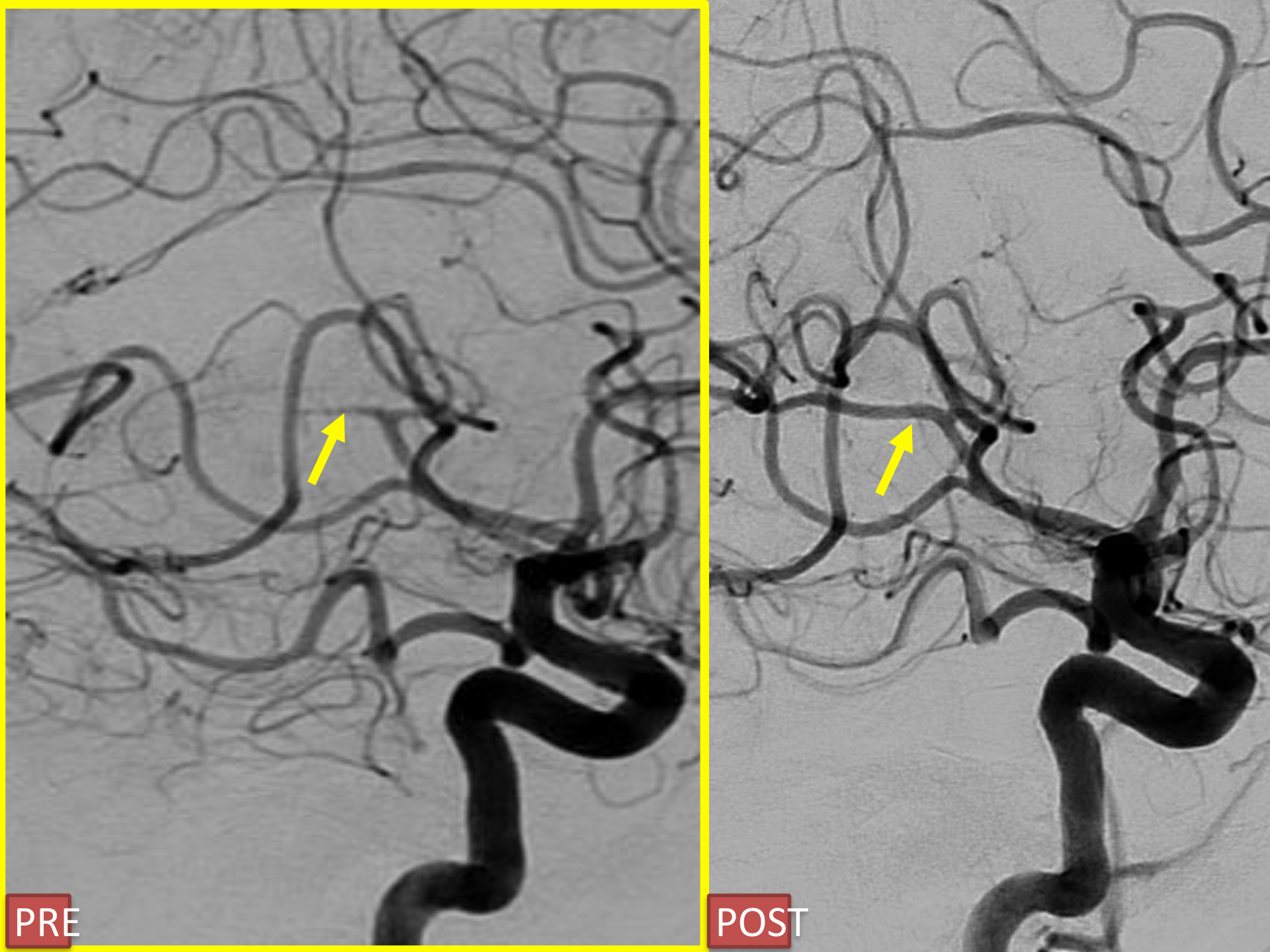
Ataxie

NIHSS = 10


H+ 5h20


05-mars-
75 kV

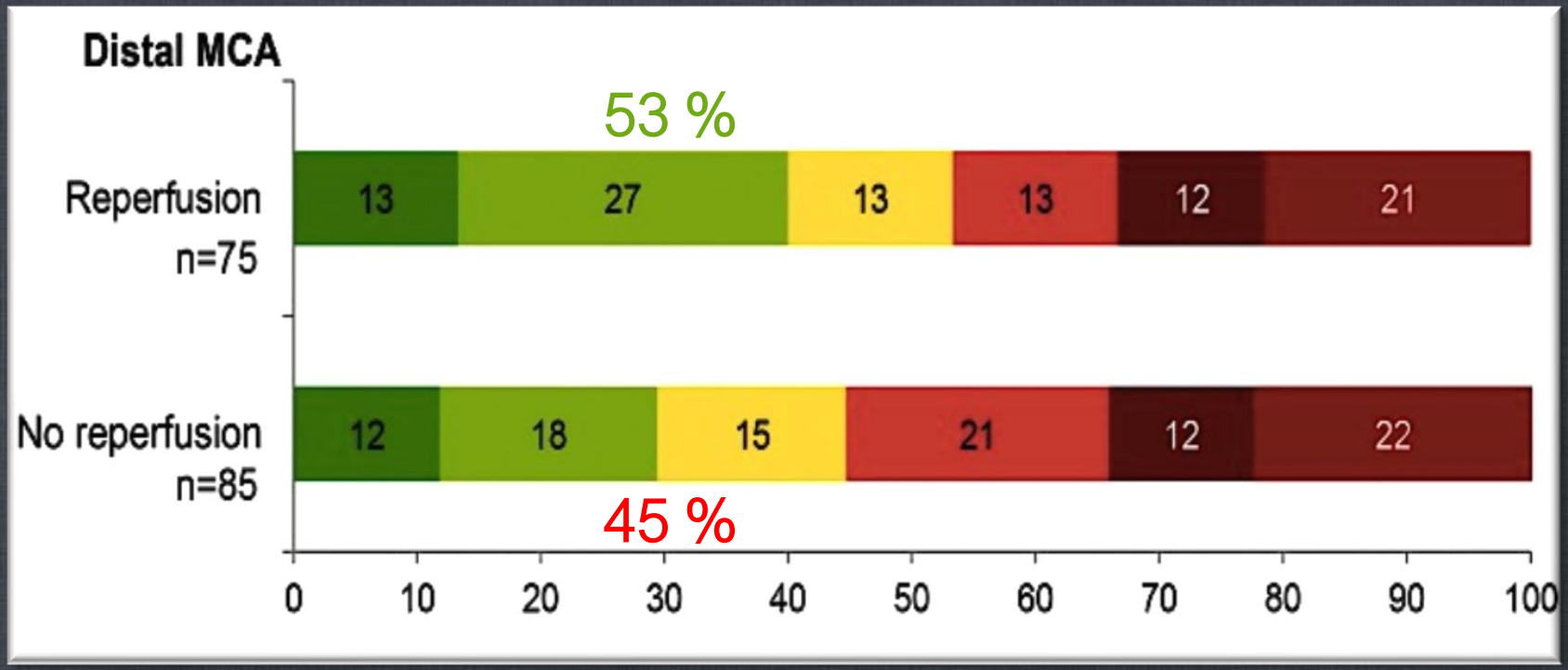

0-22 L [22]
15:53:56
05-mars-
75 kV
90.7° Incl +0.0°


PRE
POST

Evolution

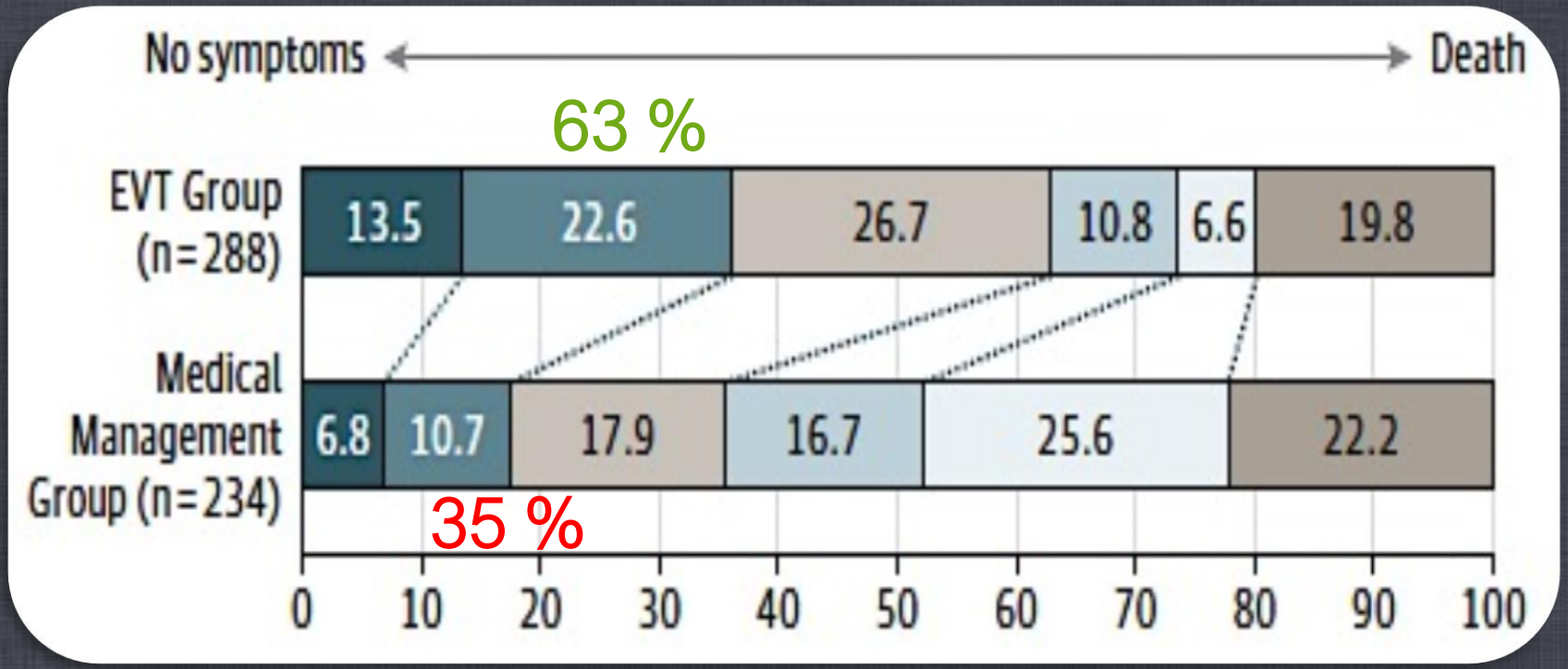
- *7H40*: Recanalisation TICI 3
- Récupération quasi-complète en salle
- Minime manque du mot (NIHSS=1)
- Sortie à la maison à J6

Occlusions distales



Neurology. 2016 Feb 23; 86(8): 762–770.

Occlusions distales



JAMA Neurol. 2016;73(11):1291–1296

> World Neurosurg. 2021 Jul;151:e793-e802. doi: 10.1016/j.wneu.2021.04.127. Epub 2021 May 6.

Mechanical Thrombectomy in Distal Residual Occlusions of the Middle Cerebral Artery after Large Vessel Recanalization in Acute Stroke: 2b or not 2b? A Pragmatic Approach in Real-Life Scenarios

Riccardo Russo [1], Bruno Del Sette [2], Katsuhiro Mizutani [3], Oguzhan Coskun [3], Federico Di Maria [3], Bertrand Lapergue [4], Adrien Wang [4], Mauro Bergui [5], Georges Rodesch [3], Arturo Consoli [3]

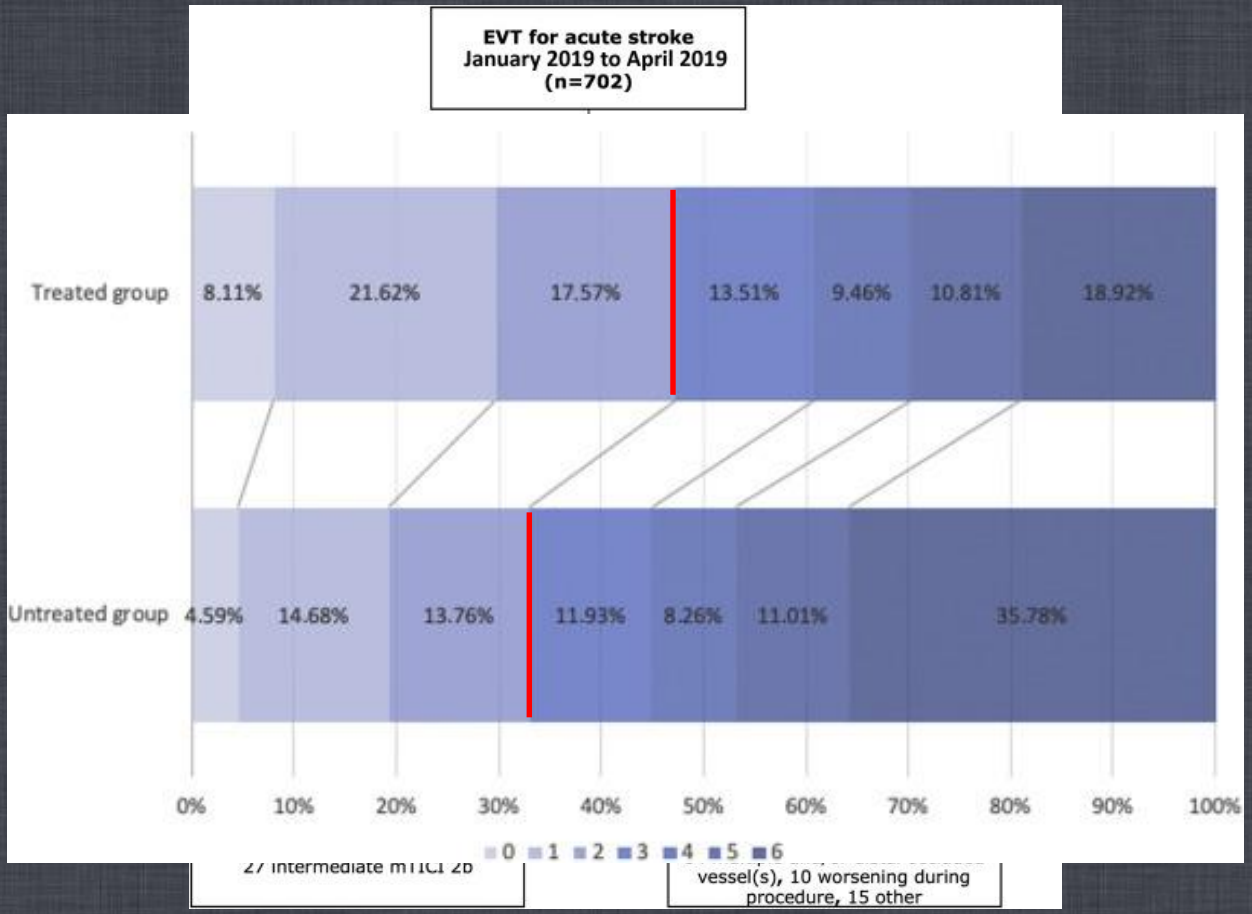
Affiliations + expand

PMID: 33964497 DOI: 10.1016/j.wneu.2021.04.127

Occlusion résiduelle distale
183/488 patients
(37.5%)

3 months mRS score
0-2 (47.3% vs. 33.1%)

74/183 (40.4%) ont eu TM distale



JNIS

ORIGINAL RESEARCH

Anterior cerebral artery embolism during thrombectomy increases disability and mortality

Vanessa Chalumeau,[1] Raphaël Blanc,[1] Hocine Redjem,[1] Gabriele Ciccio,[1] Stanislas Smajda,[1] Jean-Philippe Desilles,[1] Daniele Botta,[1] Simon Escalard,[1] William Boisseau,[1] Benjamin Maïer,[1] Julien Labreuche,[2] Mickaël Obadia,[3] Michel Piotin,[1] Mikael Mazighi[1,4,5,6]

700 patients AVC circ. antérieure

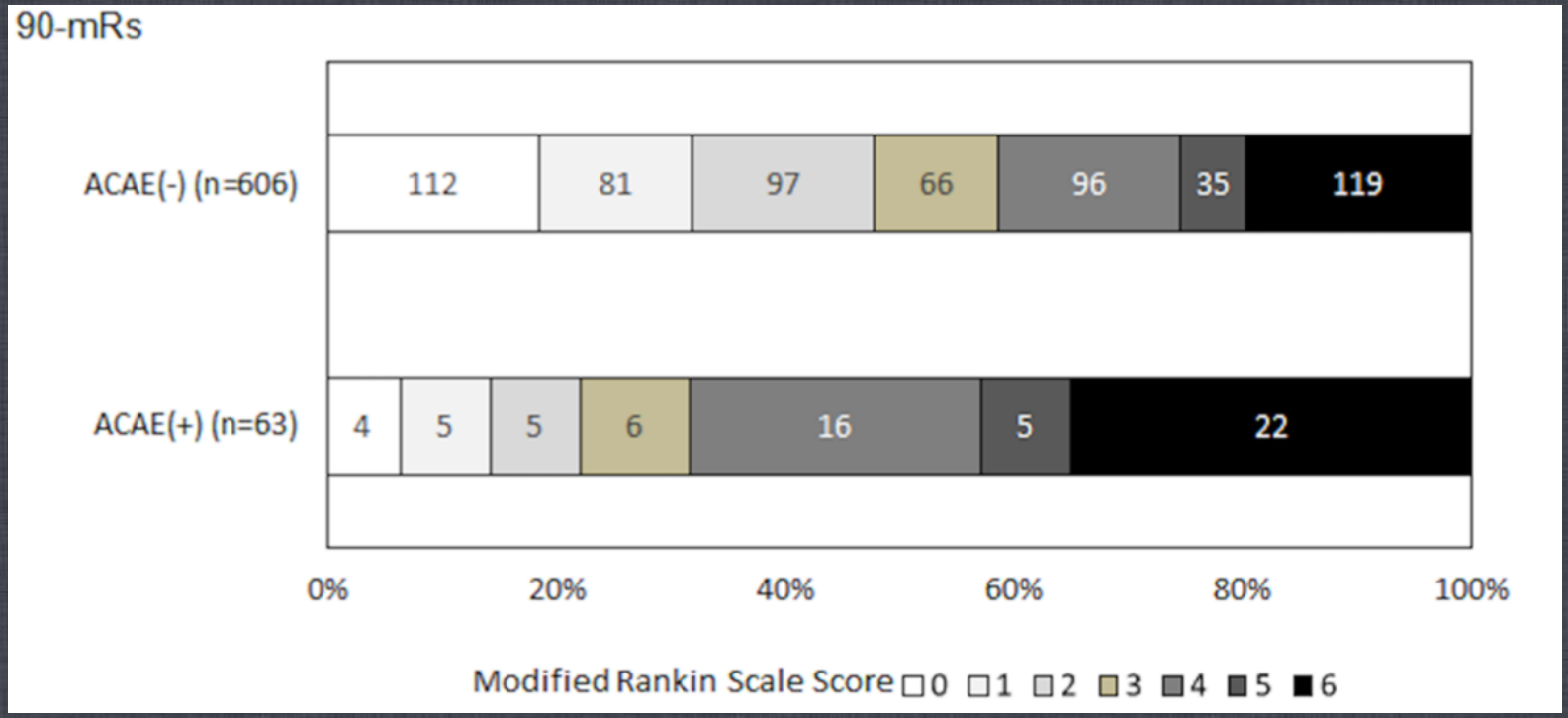
Incidence globale de 9,4%

Tandem (19%), T carot (15%), M1 (5%)

Aspiration seule (6%), stent seul (14%)

Pas de difference si catheter à ballon

J Neurointerv Surg. 2018 Nov;10(11):1057-1062



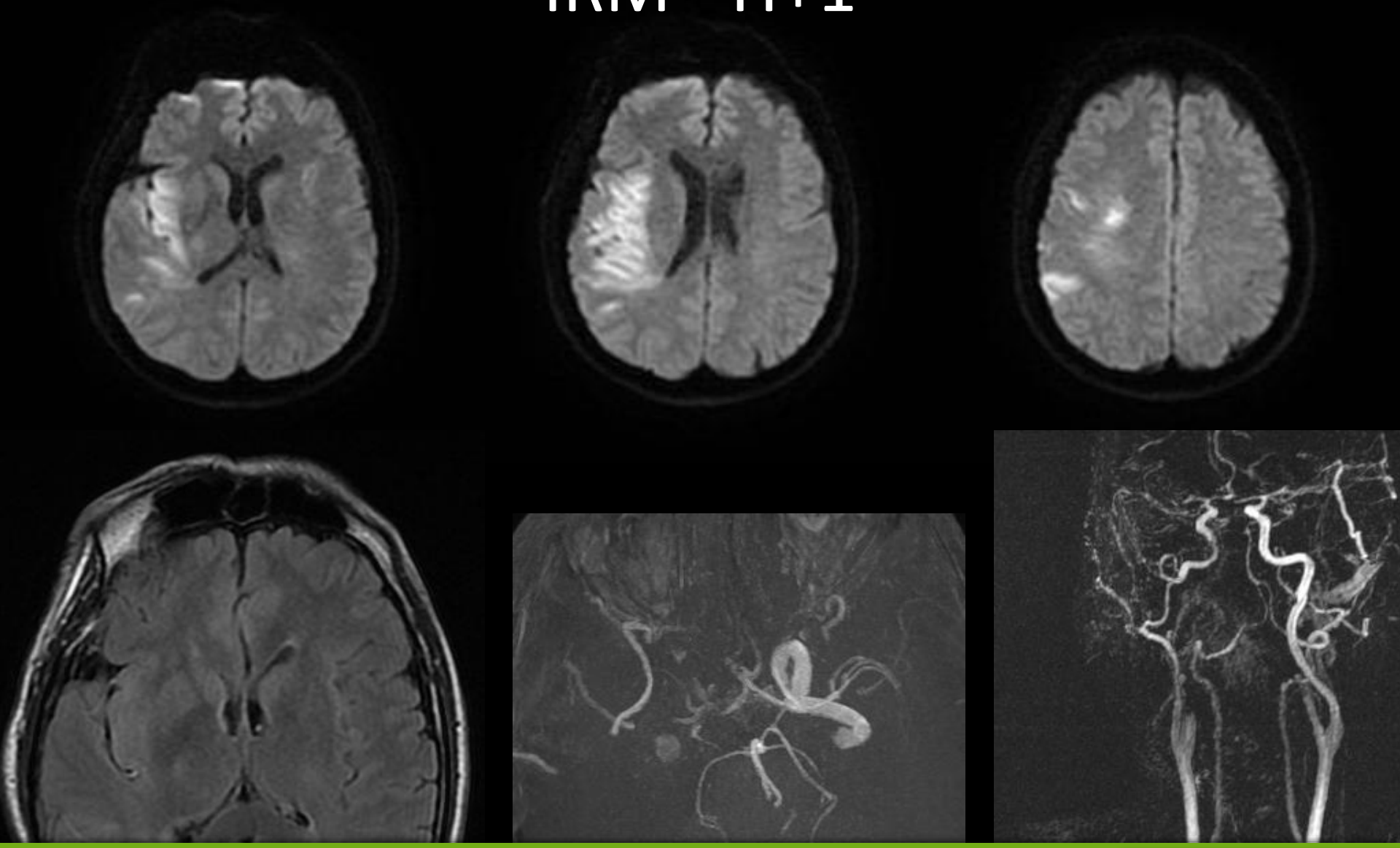
- Réduction de moitié des résultats favorables
- Double de complications hémorragiques et taux de mortalité
- Même si recanalisation, moins bons résultats cliniques à 90 jours

J Neurointerv Surg. 2018 Nov;10(11):1057-1062

Homme, 58 ans

- Pas d'antécédent ; médecin ; sportif
- Vu normal à 15h30
- 16h30: trouvé par sa femme avec troubles de la parole + déficit membre supérieur gauche
- Transfert USINV de proximité
- NIHSS: 10

IRM - H+1

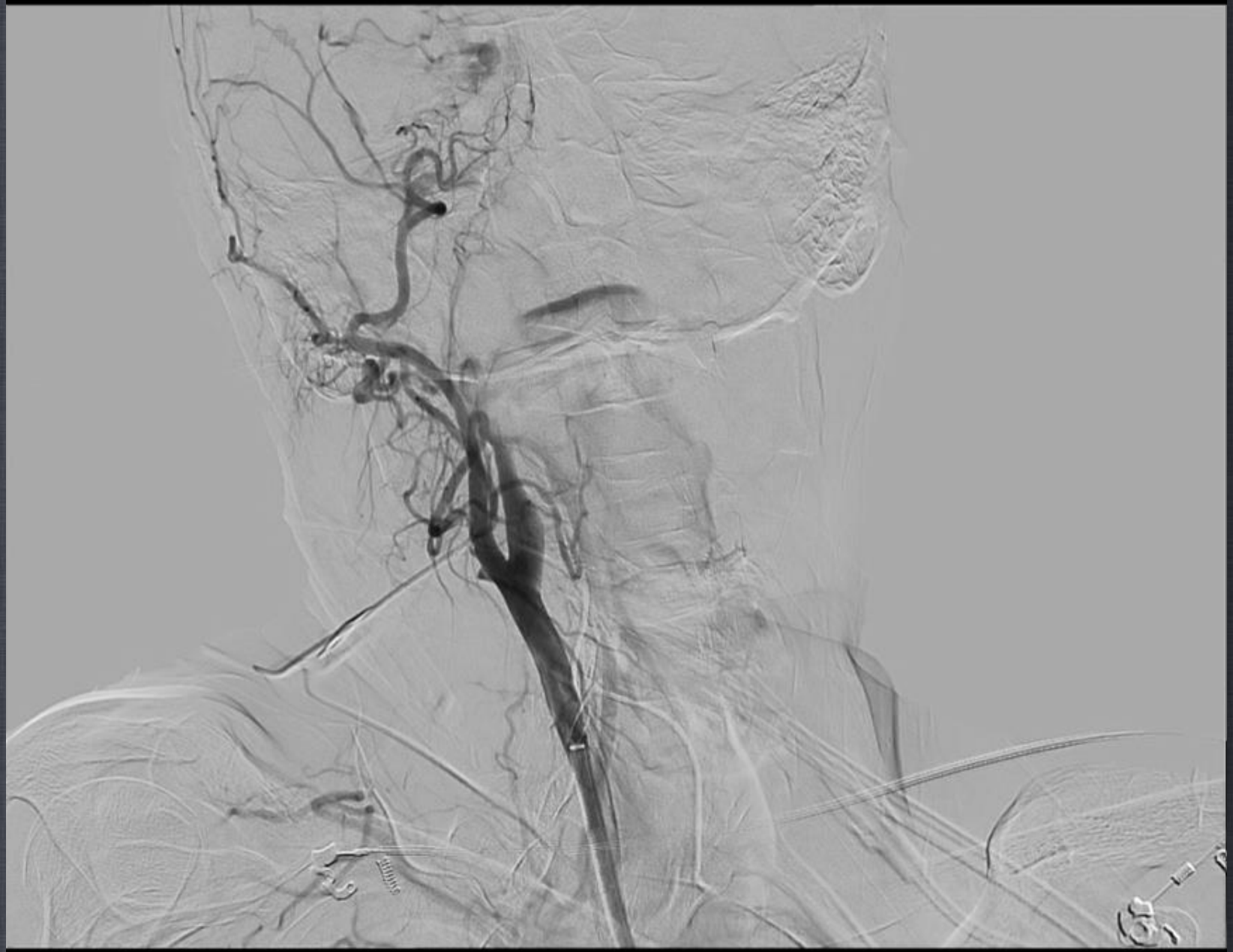


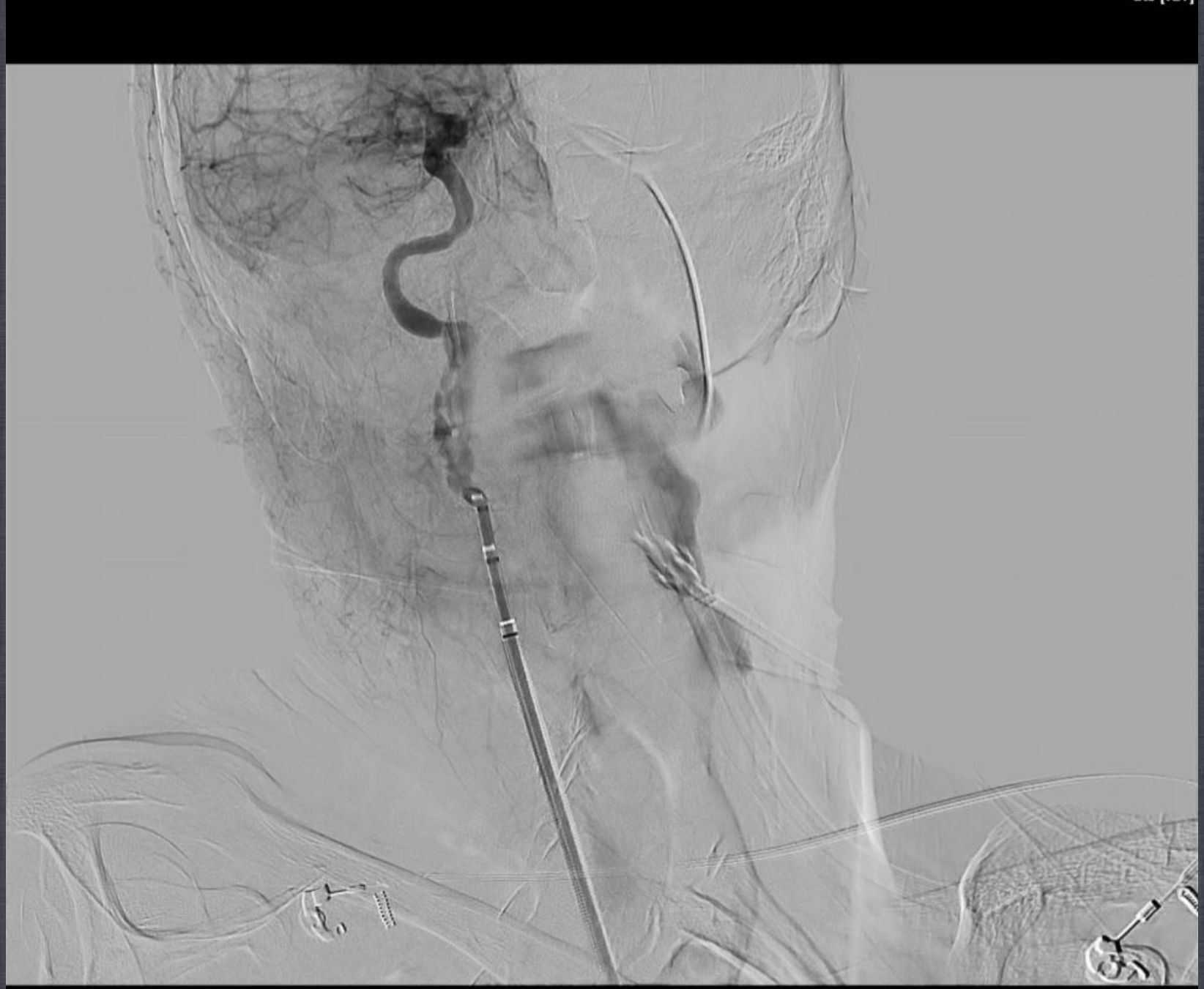
Thrombolyse IV

19:05

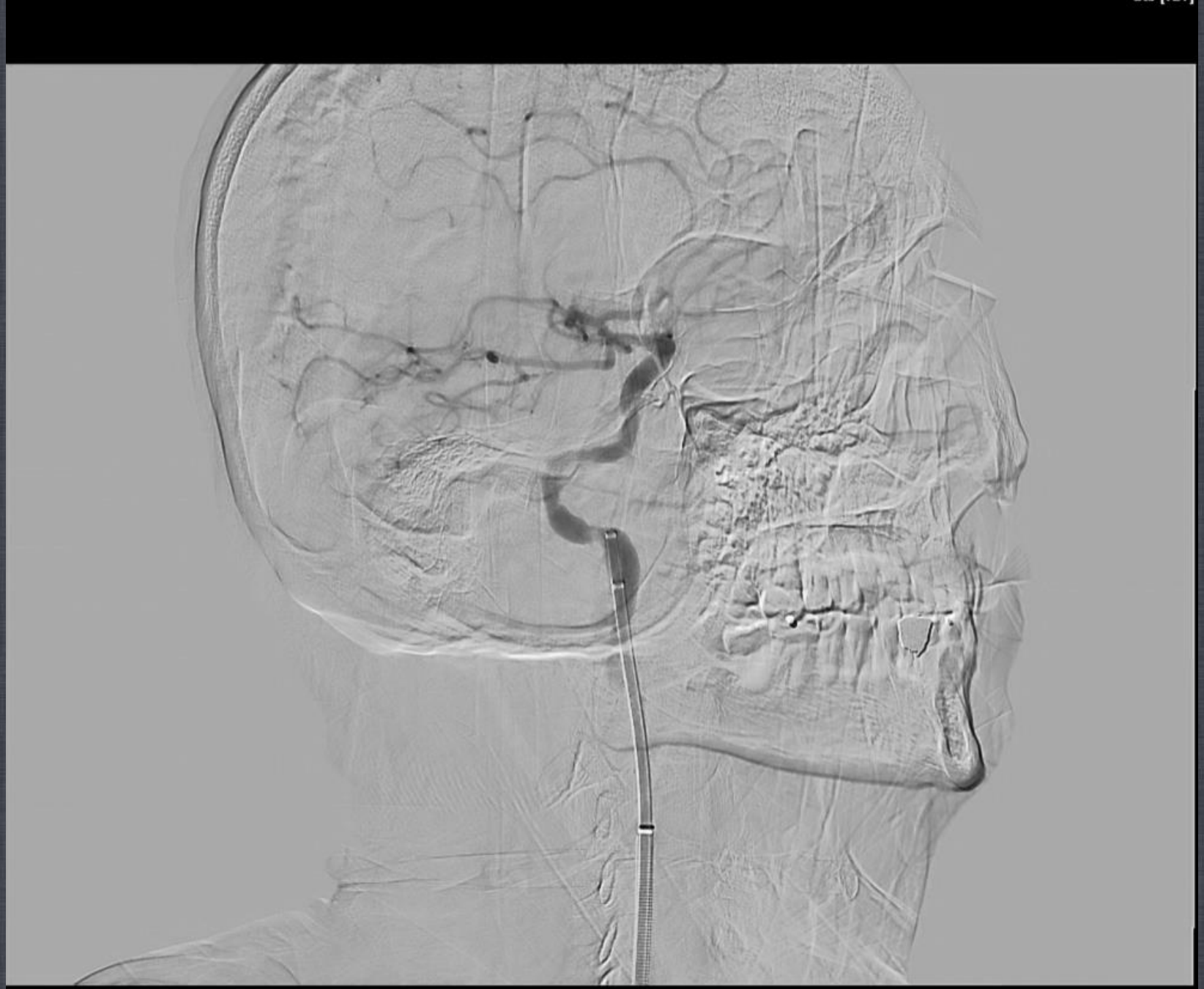
Homme, 58 ans

- Normal à 15h30
- Trouvé à 16h30
- USINV de proximité ; NIHSS = 10
- Thrombolyse IV 19h05 (H+ 3h35)
- Transfert CHU
- Arrivée 20h30 ; NIHSS = 16
- Ponction 20h45 (H+ 5h15)

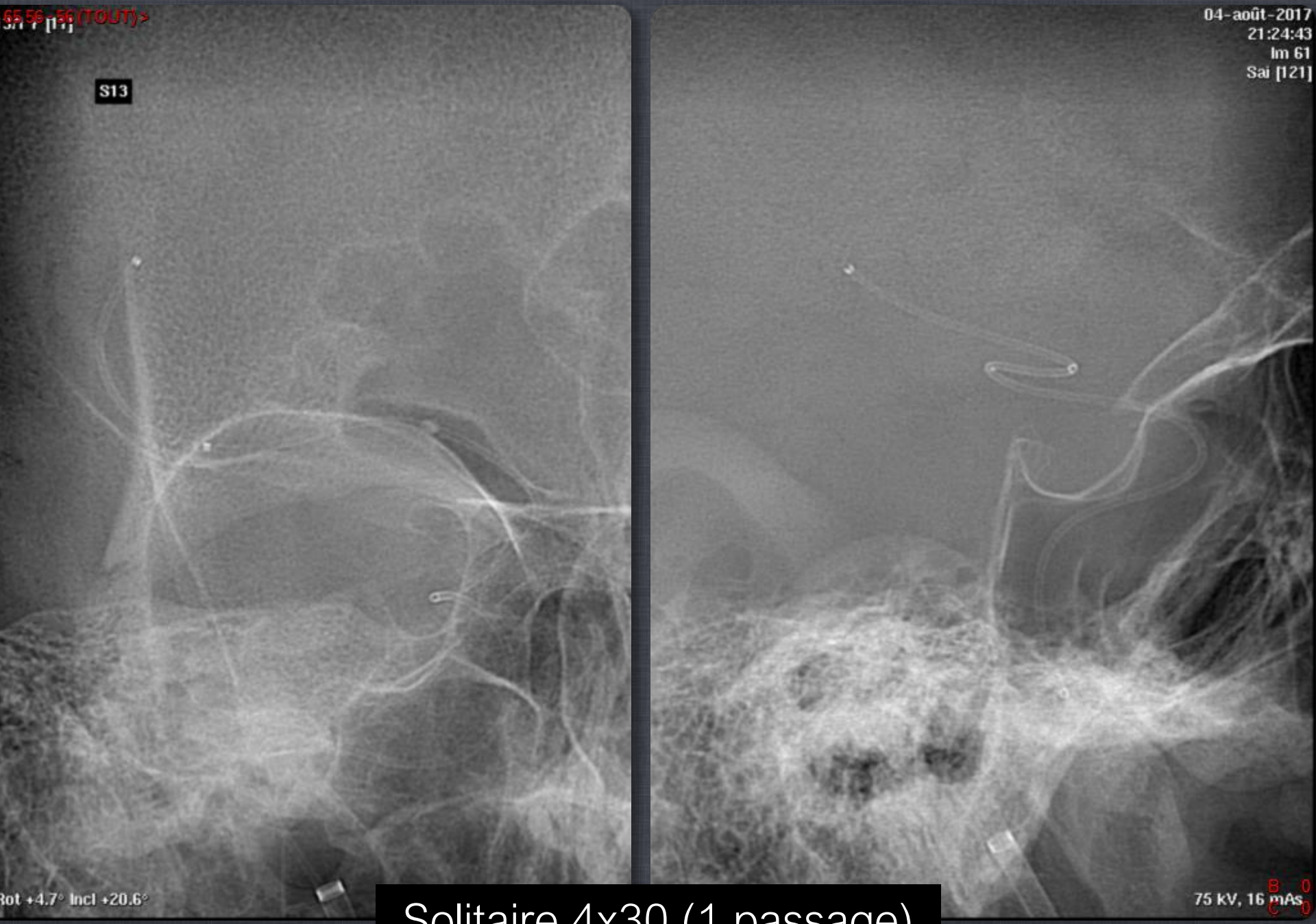




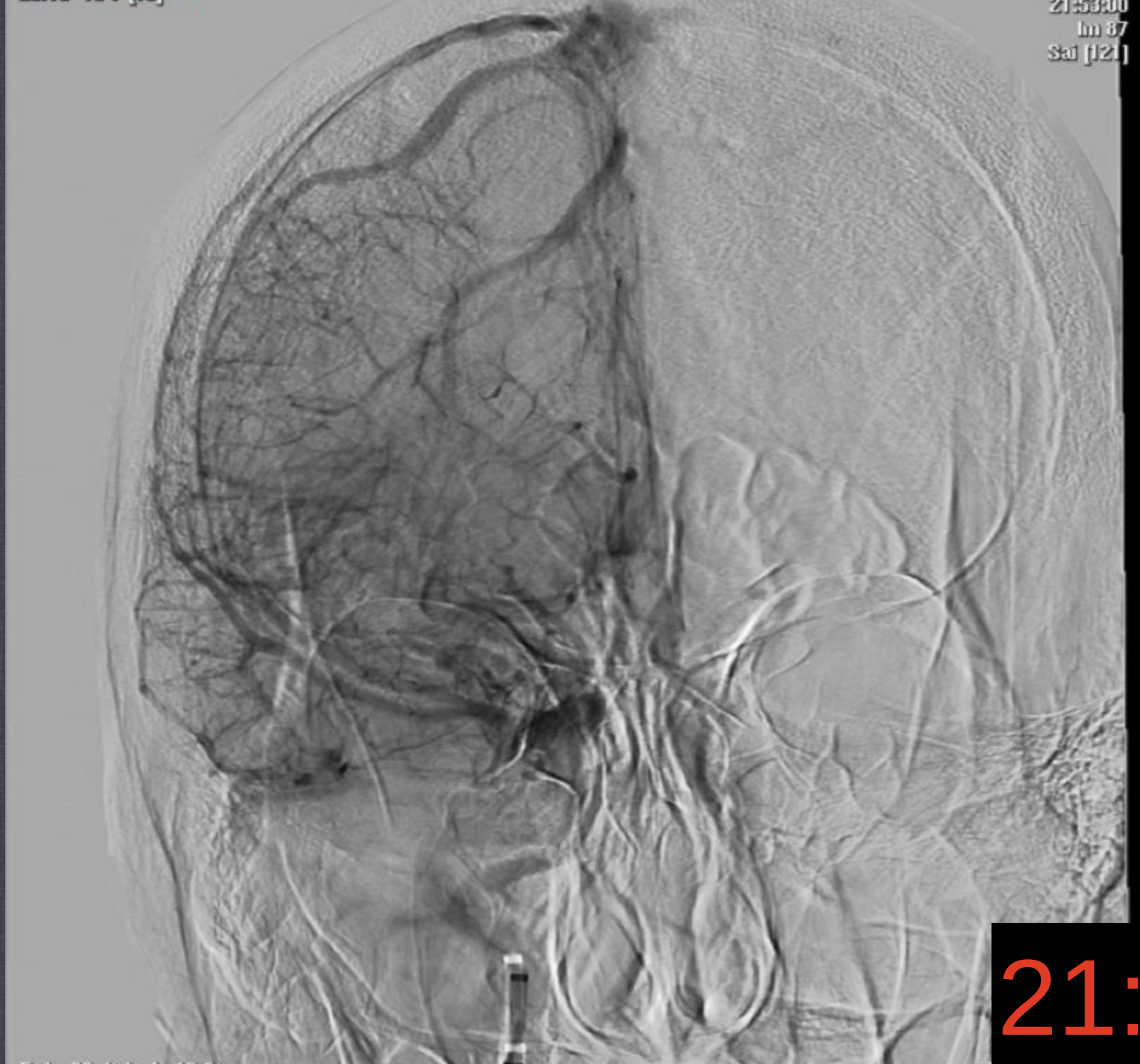
Aspiration (3 passages)

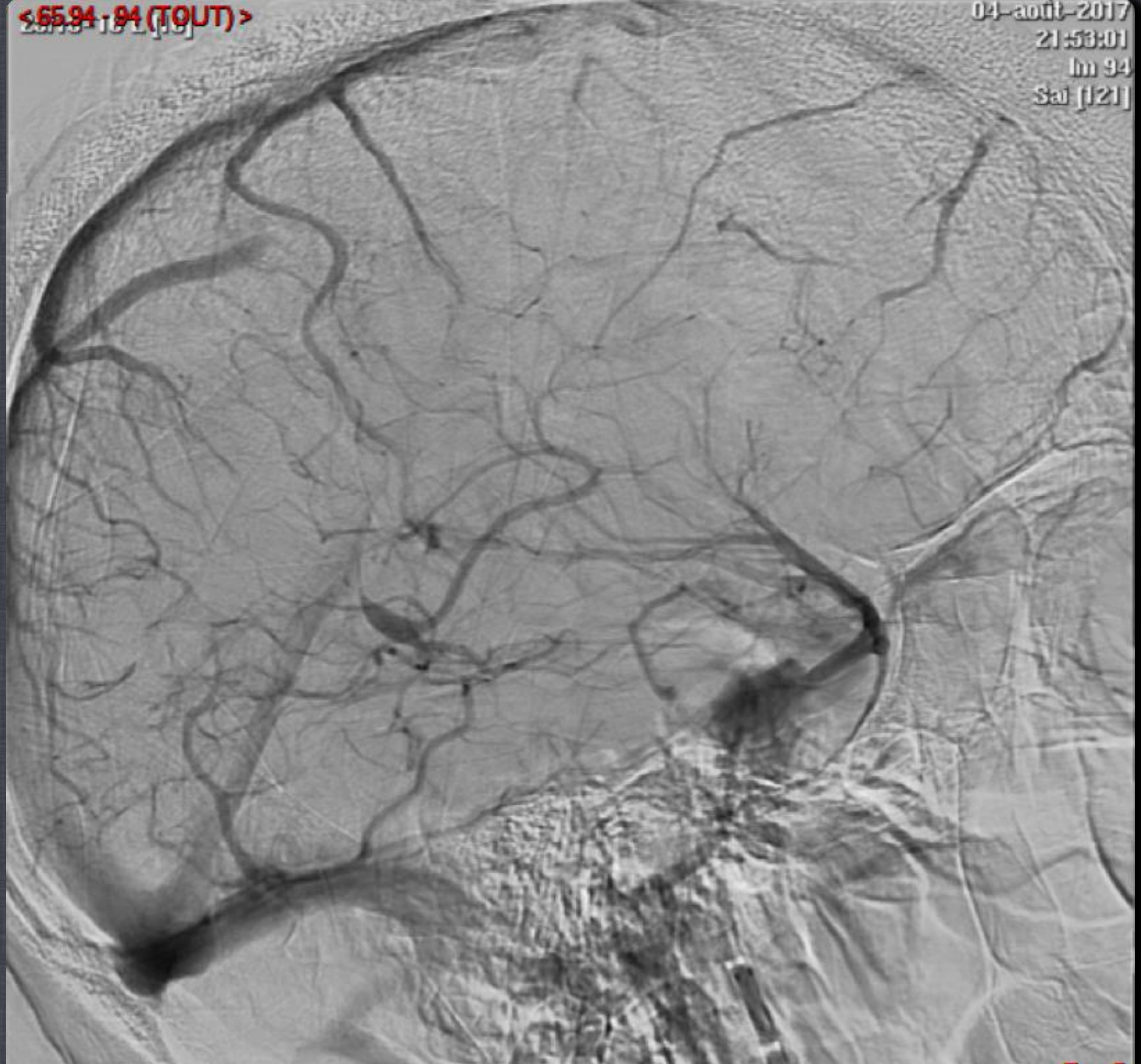


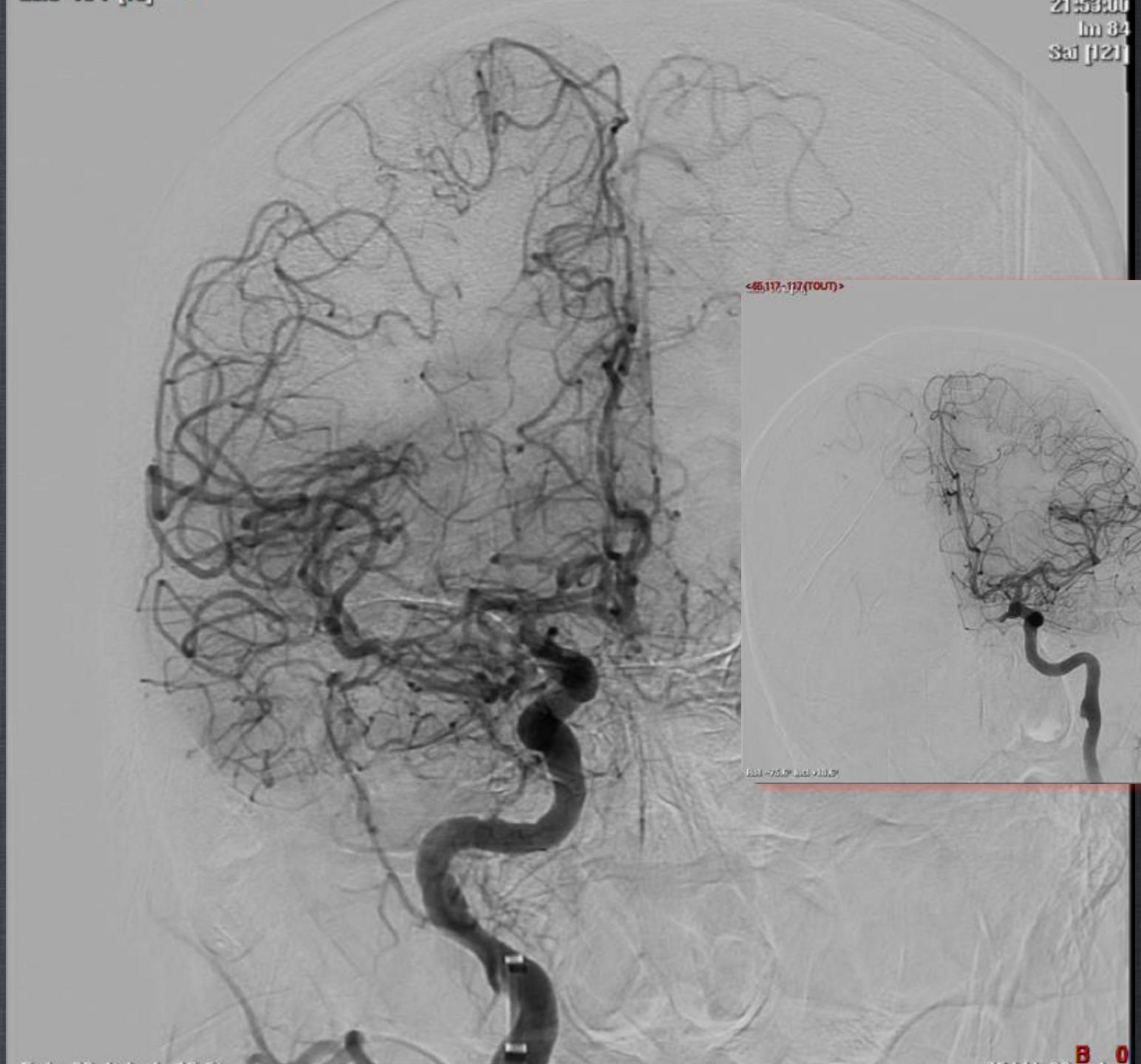
Aspiration (3 passages)



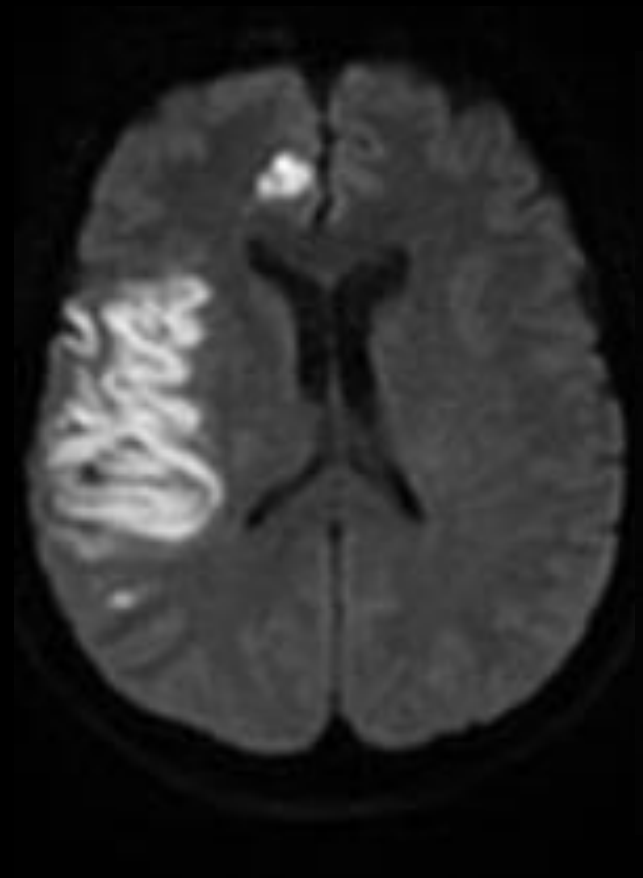
Solitaire 4x30 (1 passage)

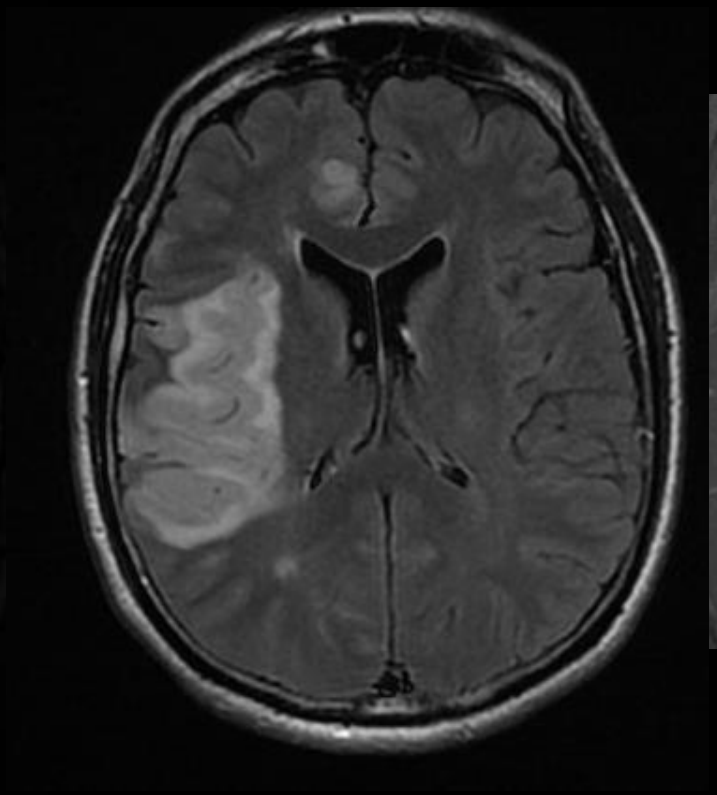

Im 87
Sai [121]
21:24

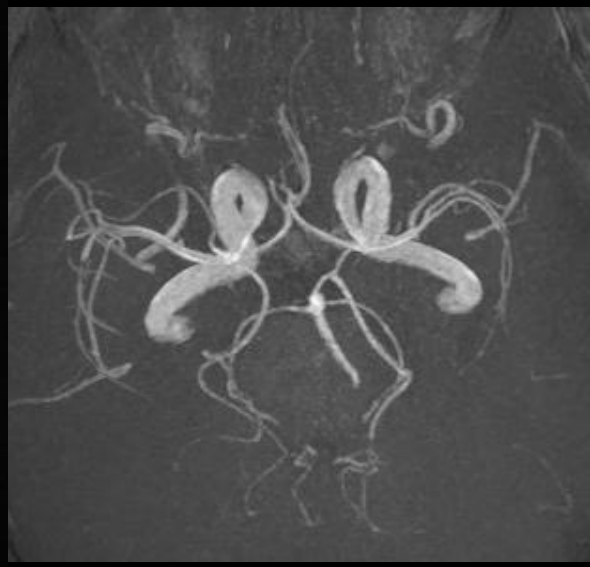

< 65.94 - 94 (TOUT) >
04-aout-2017
21:53:01
Im 94
Sai [121]


Im 84
Sai [121]
B 0

IRM – J 3







AJNR
AMERICAN JOURNAL OF NEURORADIOLOGY

Mechanical Thrombectomy of Distal Occlusions in the Anterior Cerebral Artery: Recanalization Rates, Periprocedural Complications, and Clinical Outcome

J. Pfaff, C. Herweh, M. Pham, S. Schieber, P.A. Ringleb, M. Bendszus, and M. Möhlenbruch

Table 2: Occlusion site and vessel diameter of the anterior cerebral artery

Occlusion Site	Total (*N* = 30)	Vessel Diameter (mm), mean (SD)	No. of Device Passes[a], mean (SD)
Proximal pericallosal artery = A2 segment (between AcomA and genu of corpus callosum)	7 (23.3%)	1.9 (0.4)	1.28 (0.69)
Middle pericallosal artery = A3 segment (curving around genu of corpus callosum)			
Inferior segment	6 (20%)	1.8 (0.2)	2 (1.26)
Anterior segment	2 (6.6%)	2.1 (0.3)	1.5 (0.5)
Superior segment	8 (26.6%)	1.7 (0.4)	1.57 (0.72)
Distal pericallosal artery			
A4 and A5 segments and distal branches other than CMA	5 (16.6%)	1.7 (0.4)	1 (0)
CMA	2 (6.6%)	1.5 (0.1)	1 (0)

Note:—AcomA indicates anterior communicating artery; CMA, callosomarginal artery.
[a] In patients in whom placement of a stent retriever was possible.

Table 3: List of types, manufacturers, and number of passes of devices used for mechanical thrombectomy

Device	Manufacturer	Size (mm)	No. of Patients Treated	Total No. of Passes
Aperio[a]	Acandis	4.5 × 30	1	3
Capture[a]	MindFrame[b]	4.0 × 20	1	2
Catch Mini[a]	Balt[c]	3 × 15	3	4
ERIC[a]	MicroVention	4 × 24	1	1
Revive[d]	Codman	4.5 × 22	6	9
Solitaire FR[d]	Covidien	4 × 20	12	17
Trevo ProVue[d]	Stryker[e]	4 × 20	1	2

[a] Devices fitting through .017-inch microcatheters (eg, Headway 17; MicroVention).

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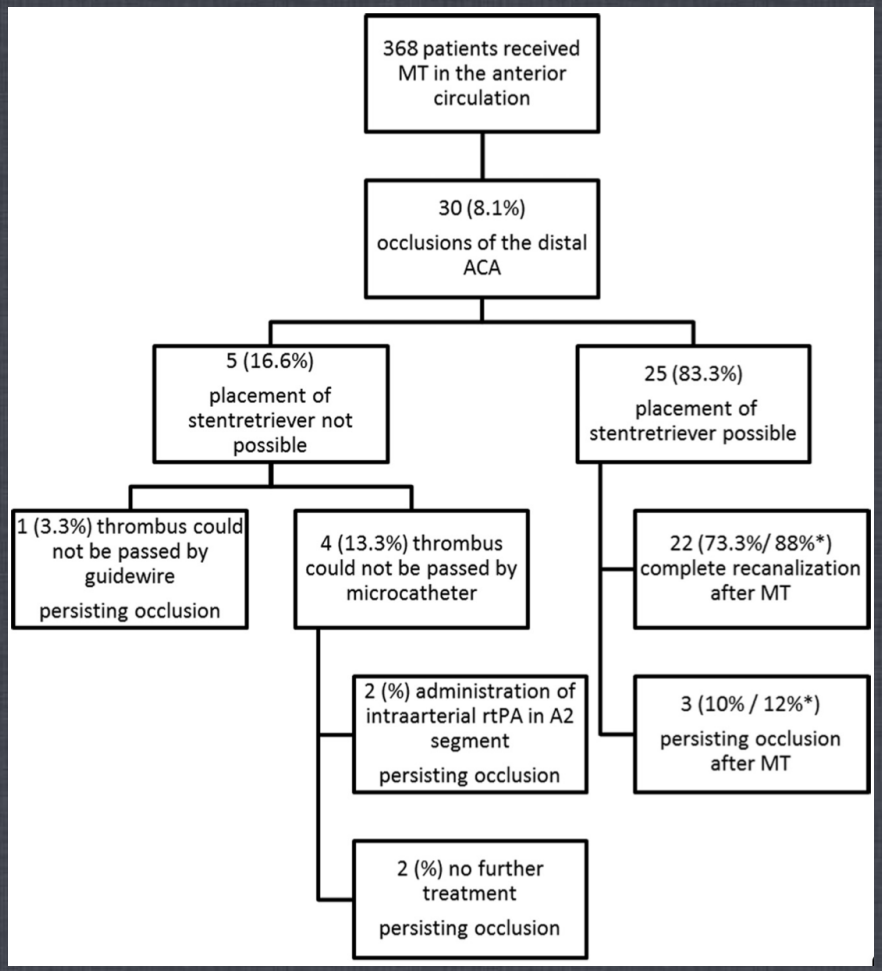


- 8% des patients traités par MT
- Recanalisation 88 %
- Sur IRM de contrôle, 53.5 % avaient des lésions ACA

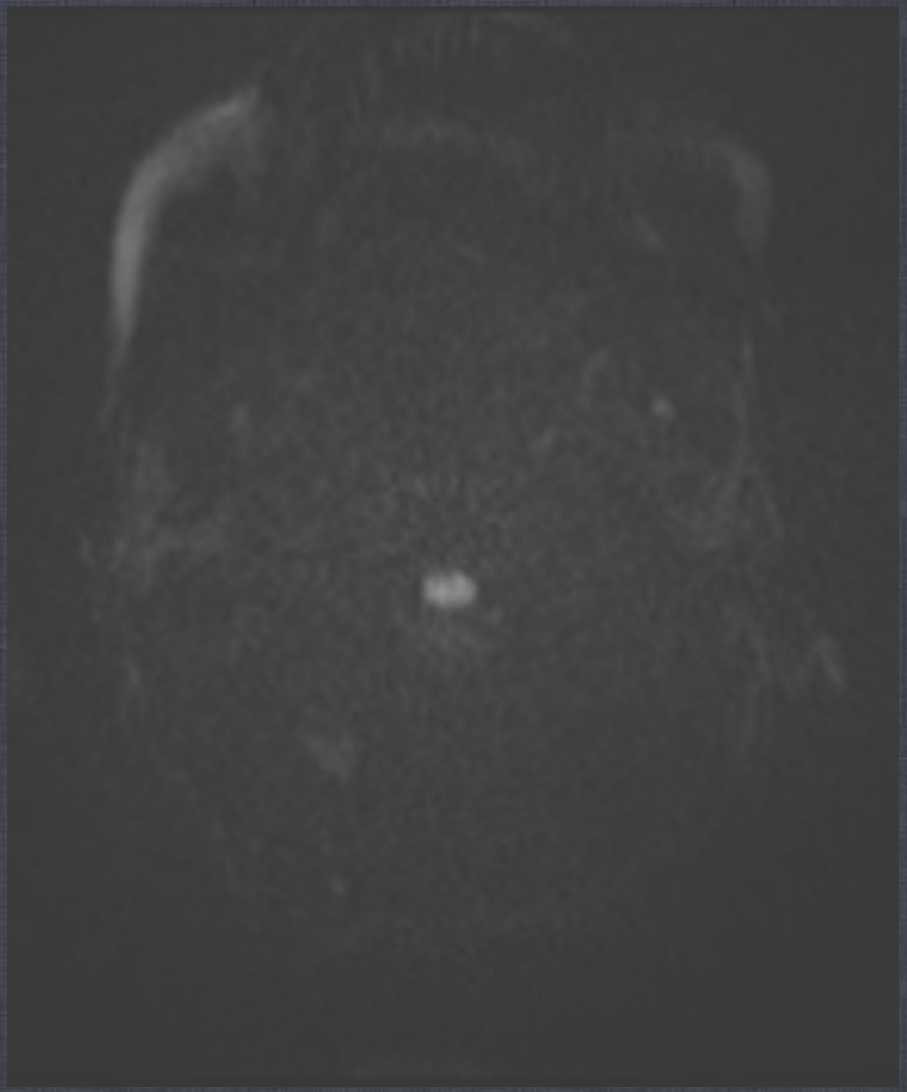
Pfaff et al. AJNR Am J Neuroradiol. 2016 Apr;37(4):673-8.

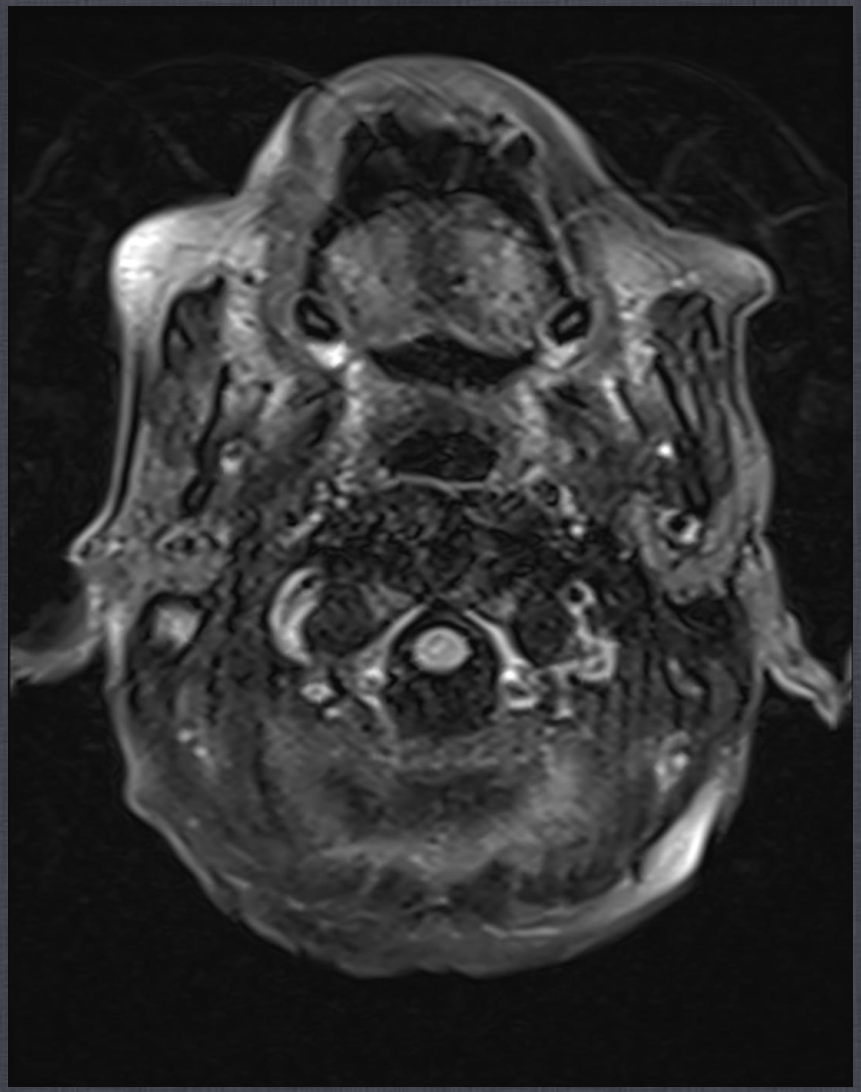
- Patient de 81 ans (bidextre, mRS 0, vit seul à domicile) :
  - Tabagisme sevré
  - FA traitée par ELIQUIS

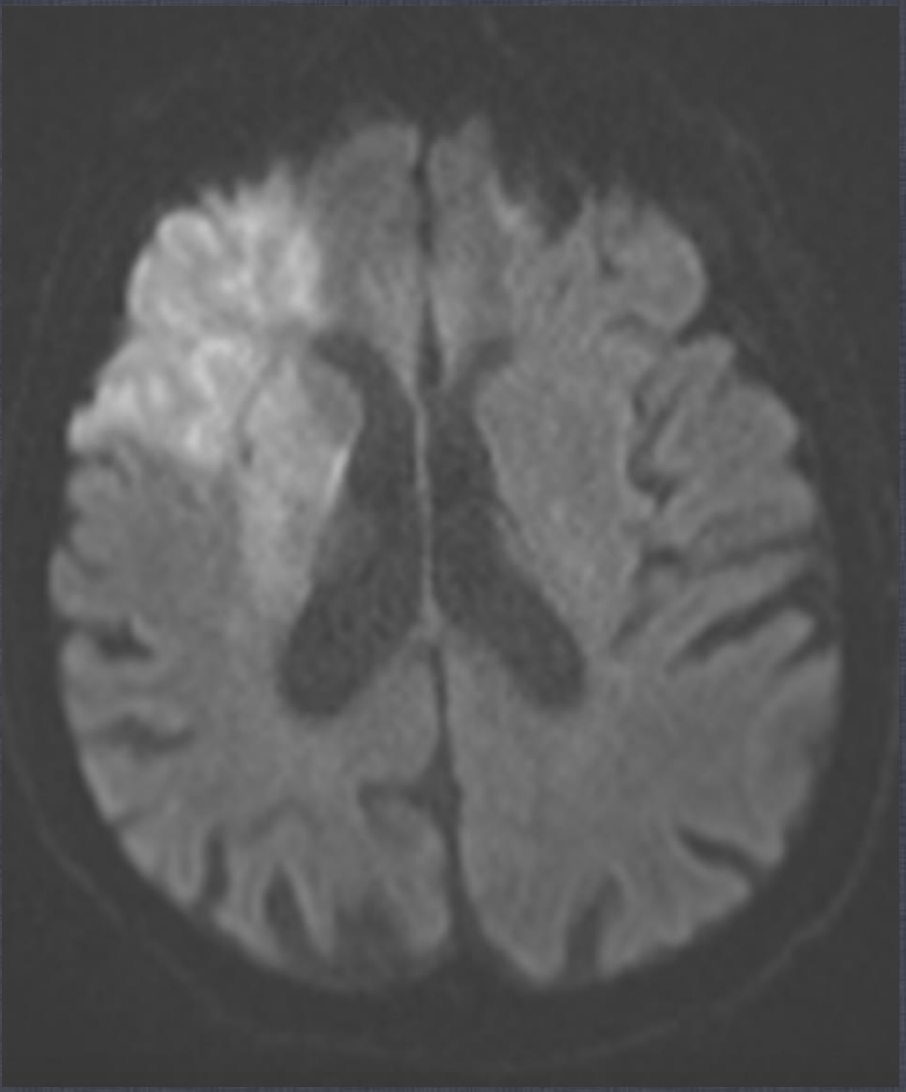
- Retrouvé à 16H dans son jardin (*département Creuse*):
  - Hémiplégie et hémianesthésie gauche,
  - HLH gauche, et dysathrie

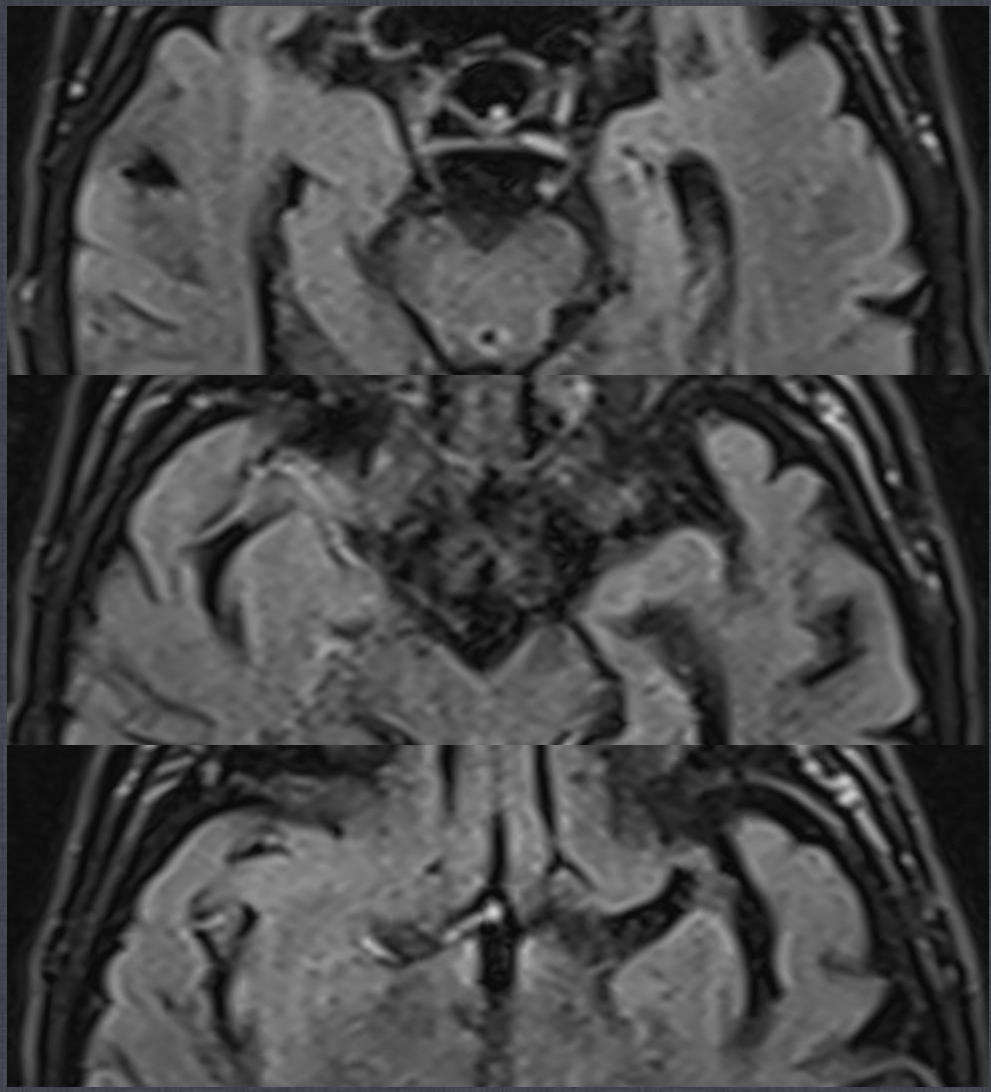
→ **NIHSS 16**

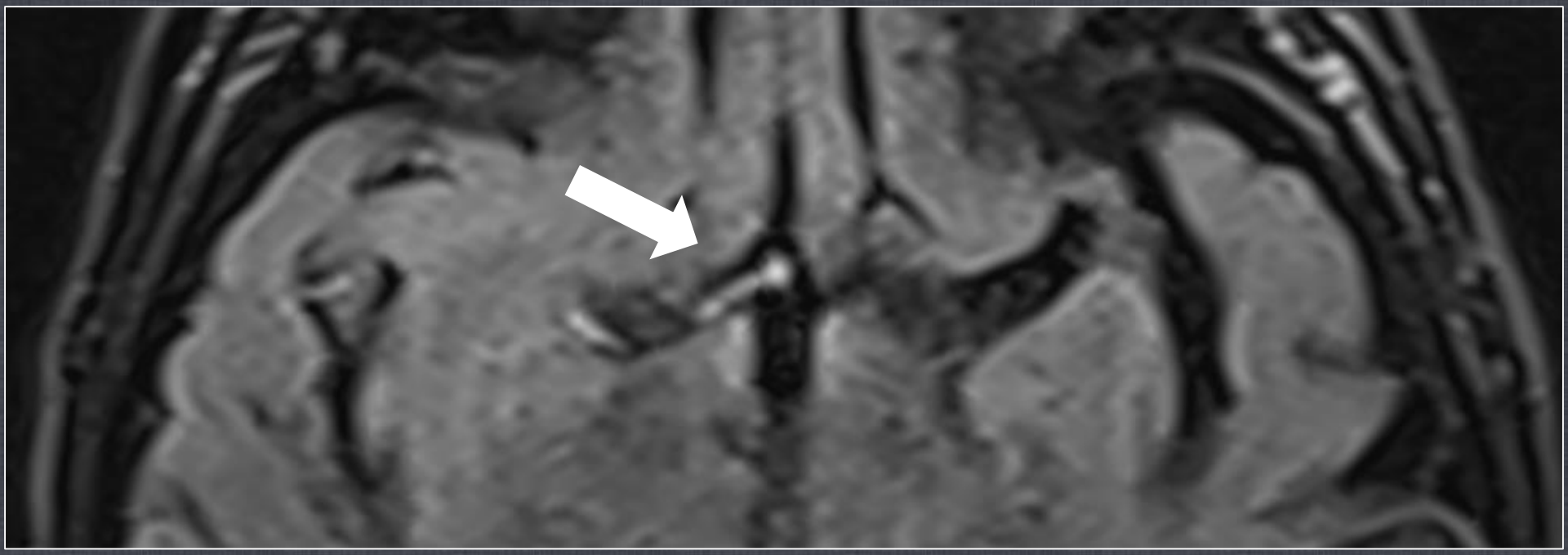
- Transfert CHU → IRM à 19H10 (H3 début des symptômes)

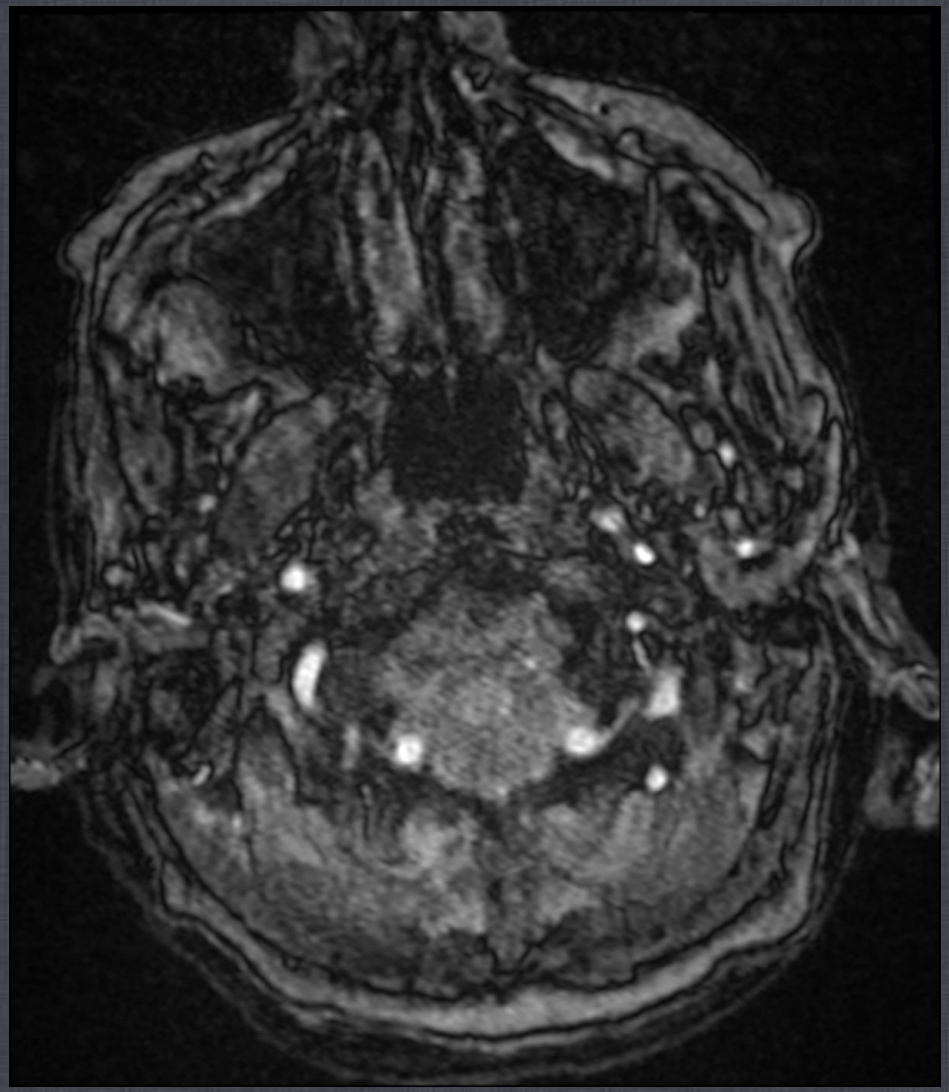


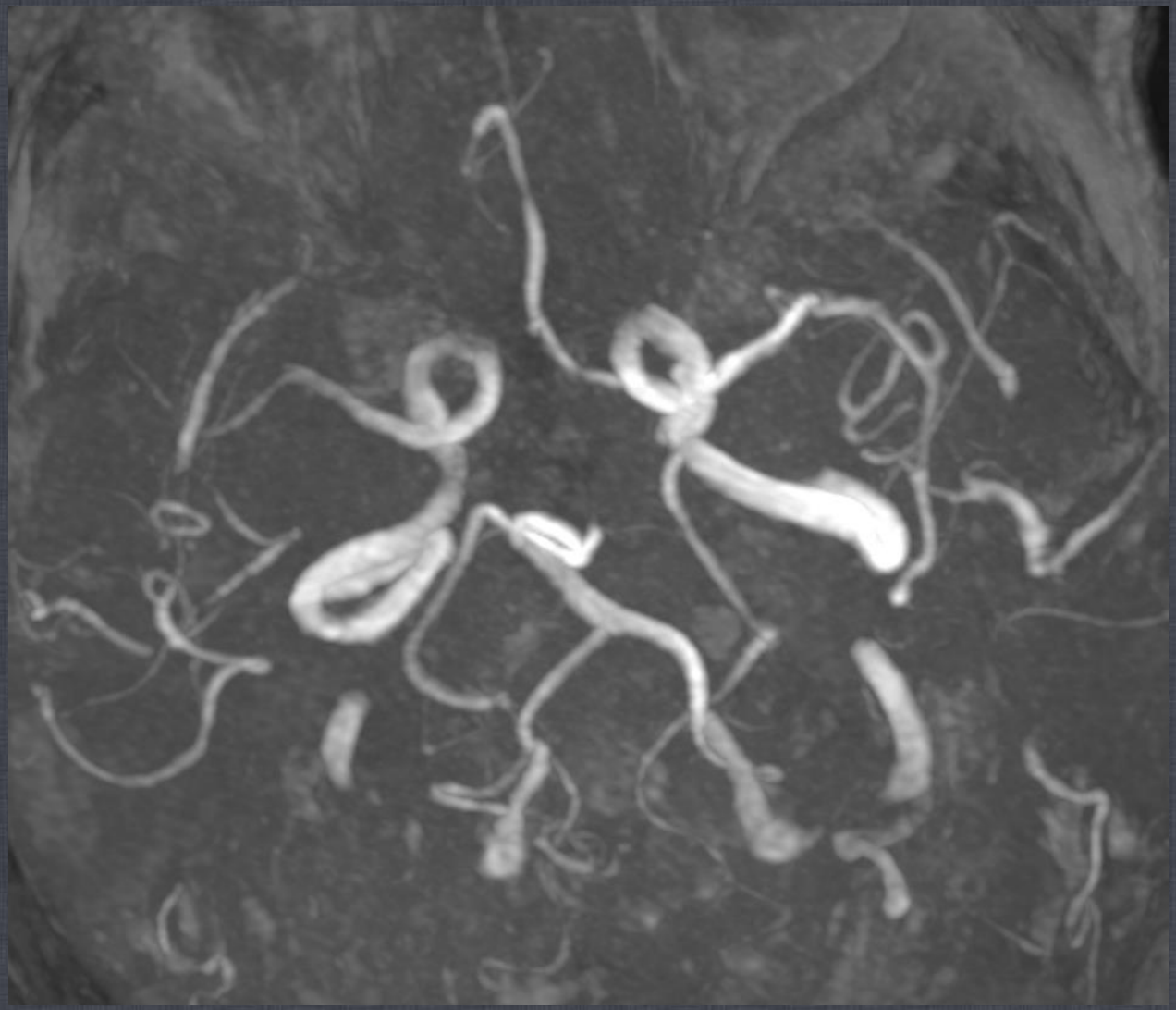


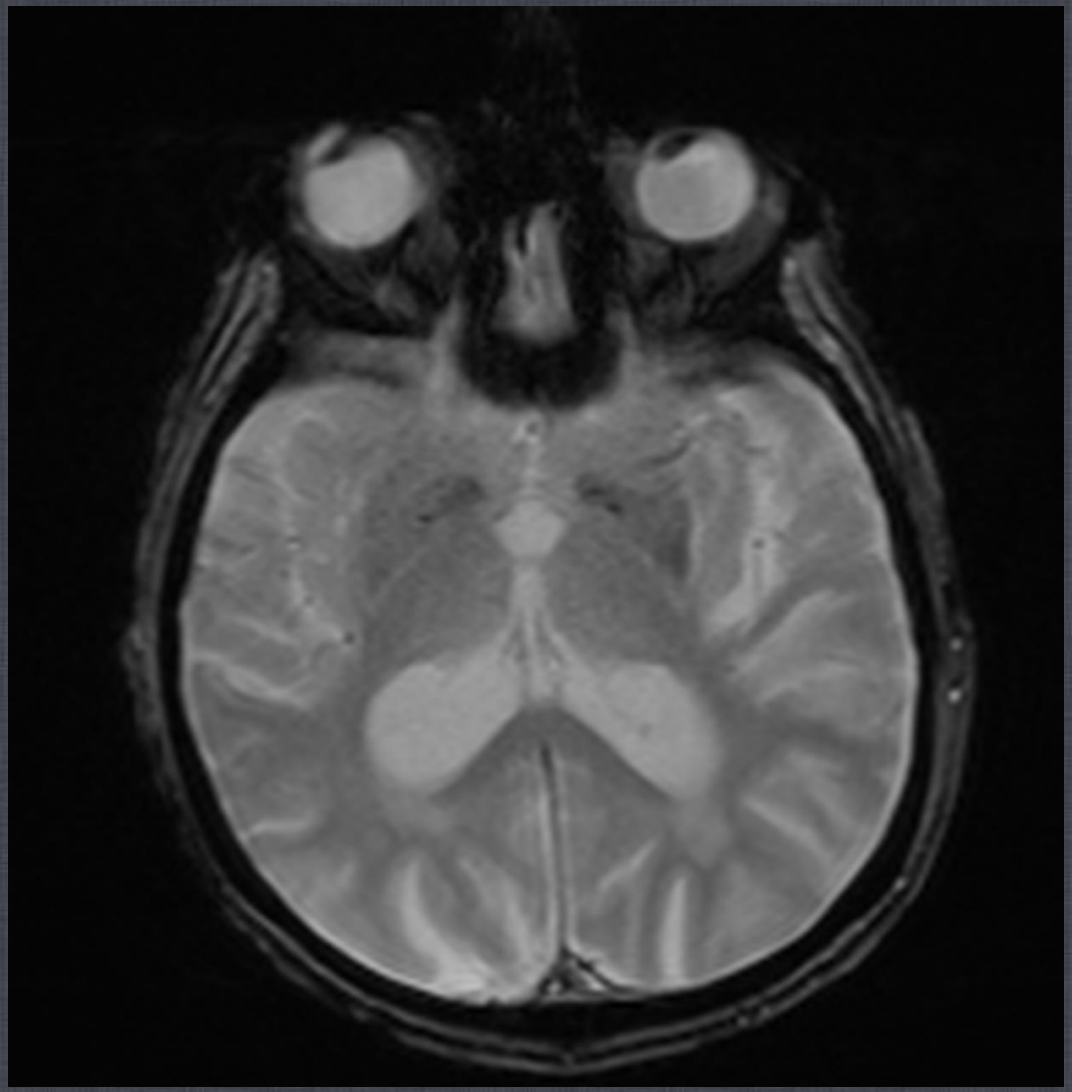


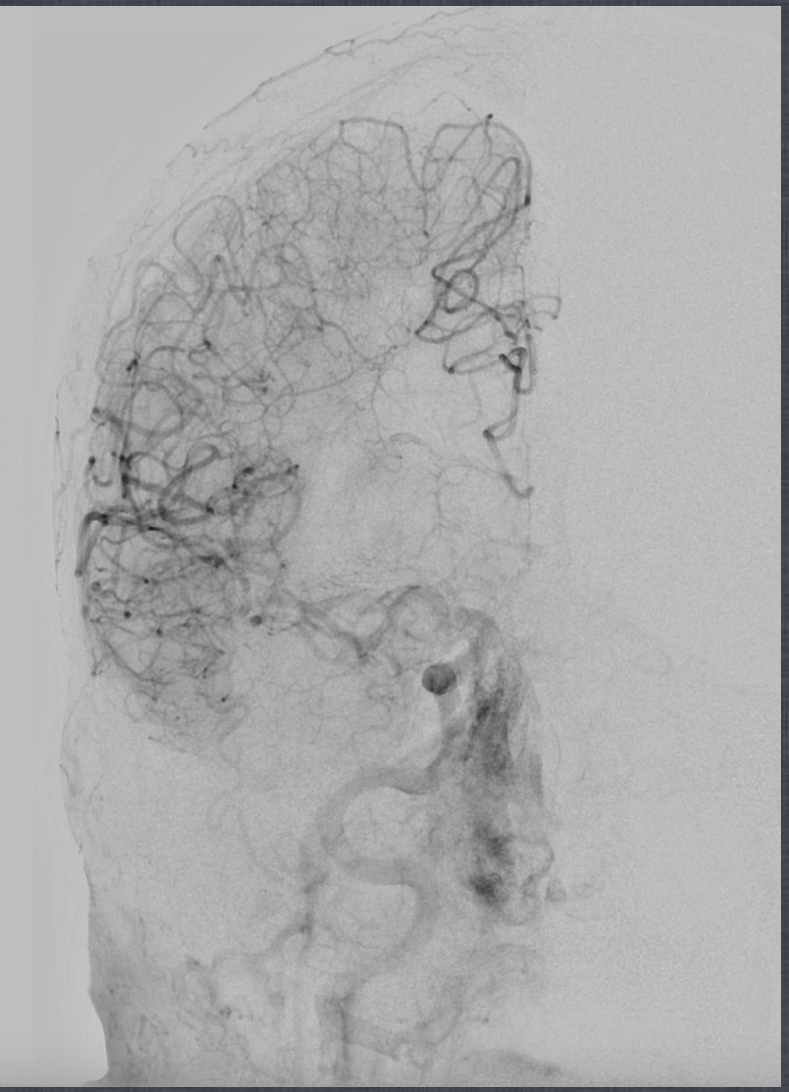


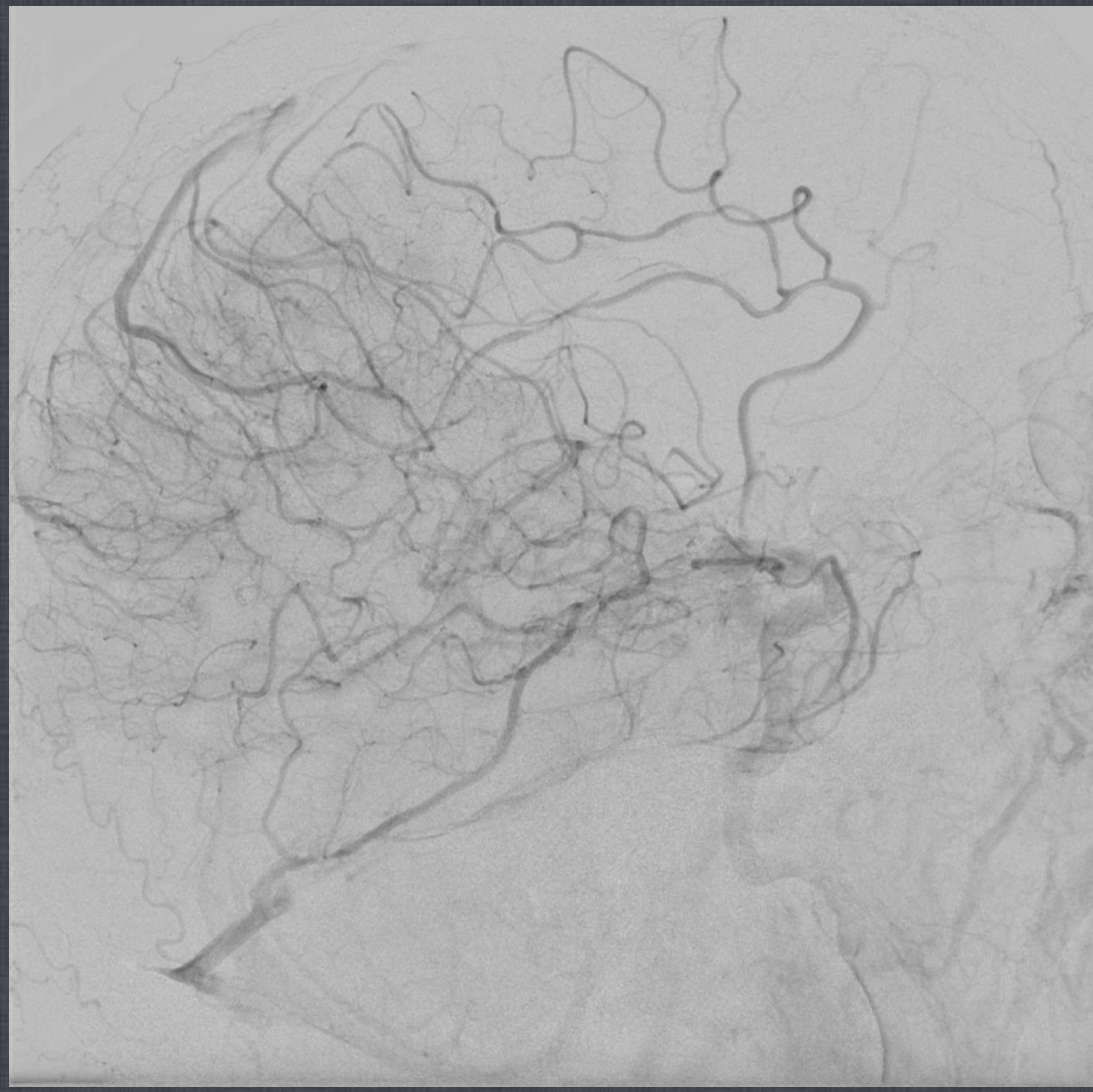


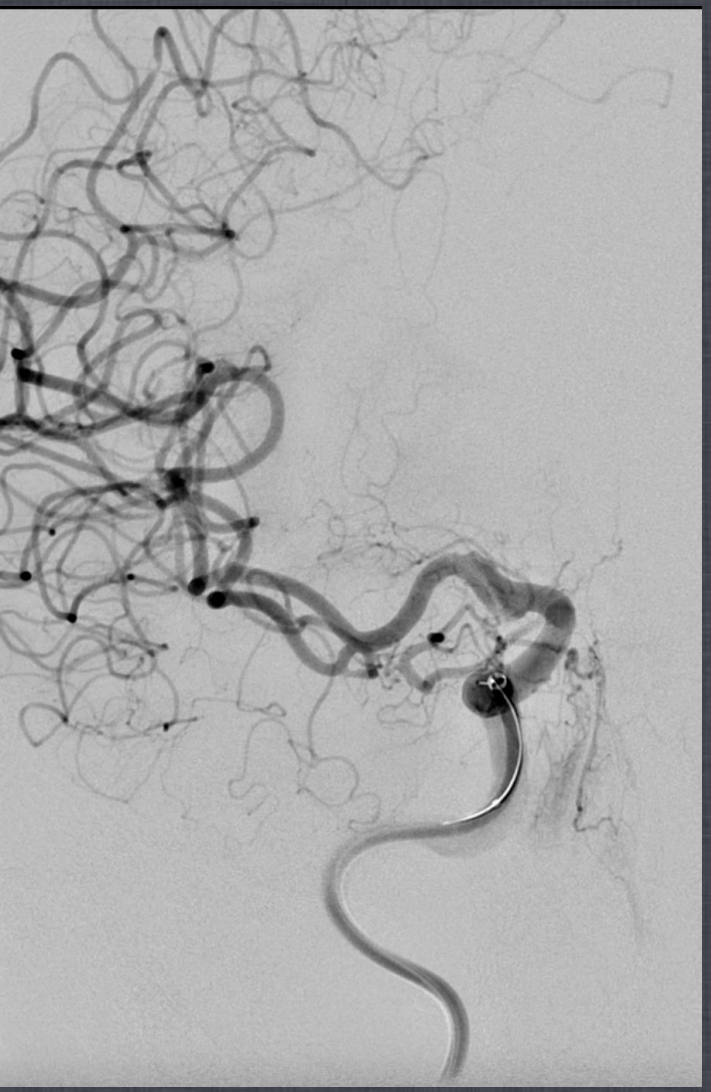




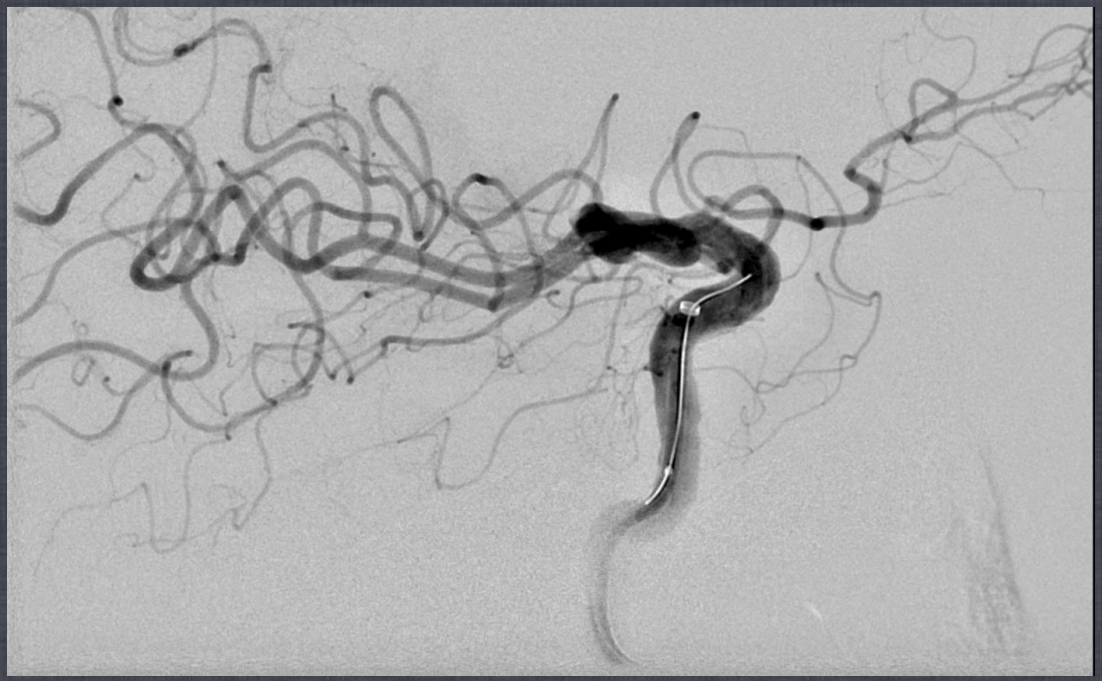


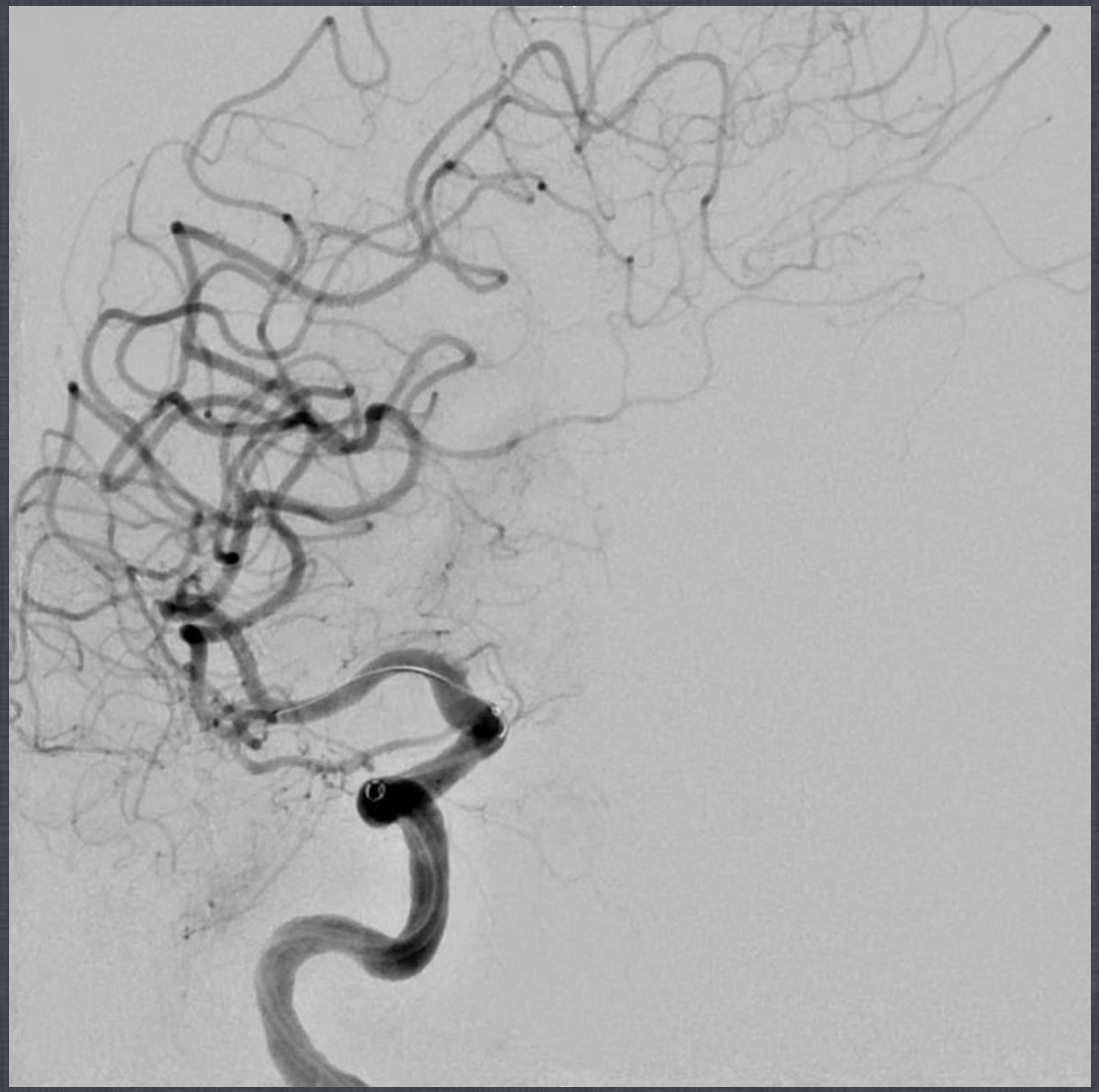






Arrow + Merci 9F
SOFIA 6+
Phenom 21, et hybrid 14
Trevo NXT





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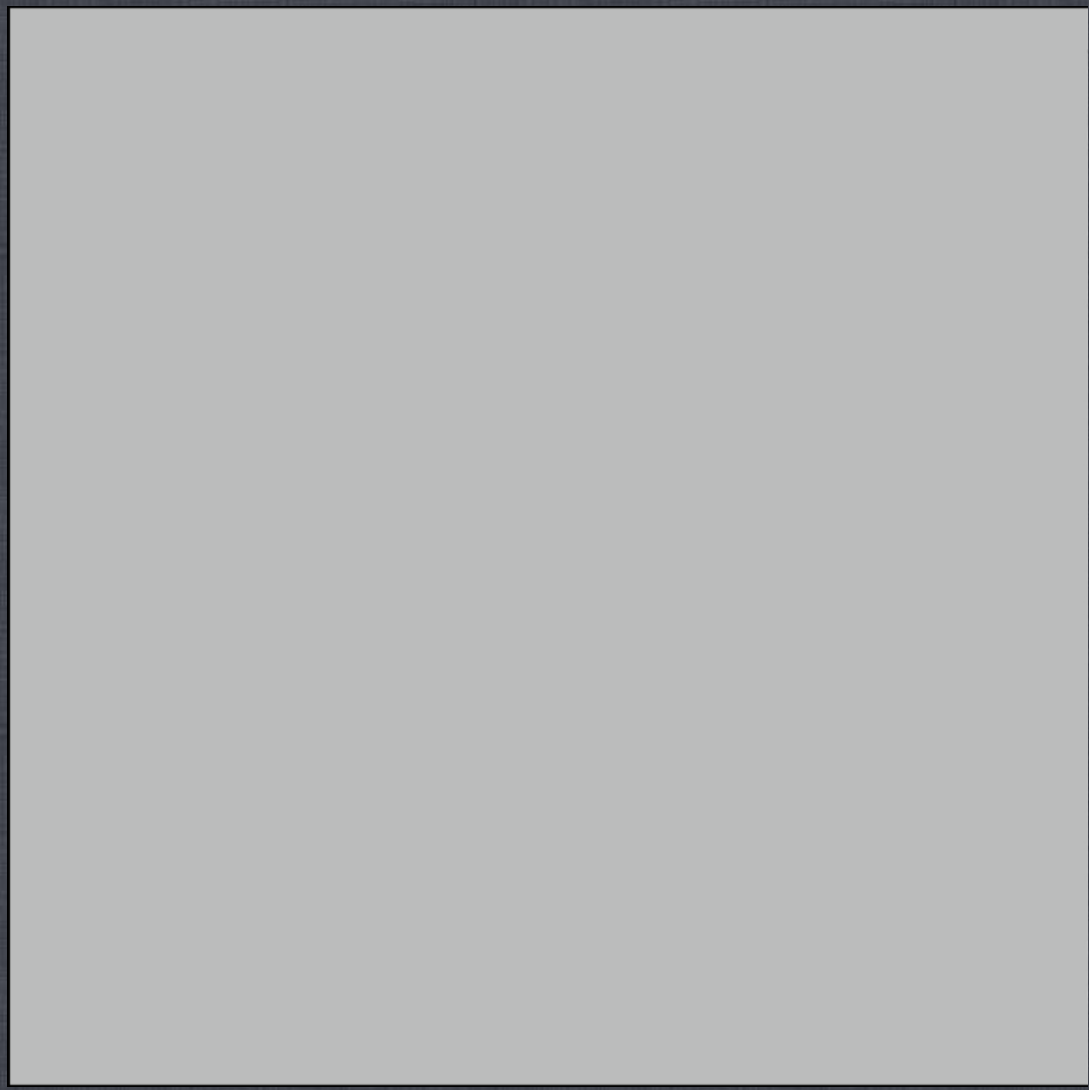
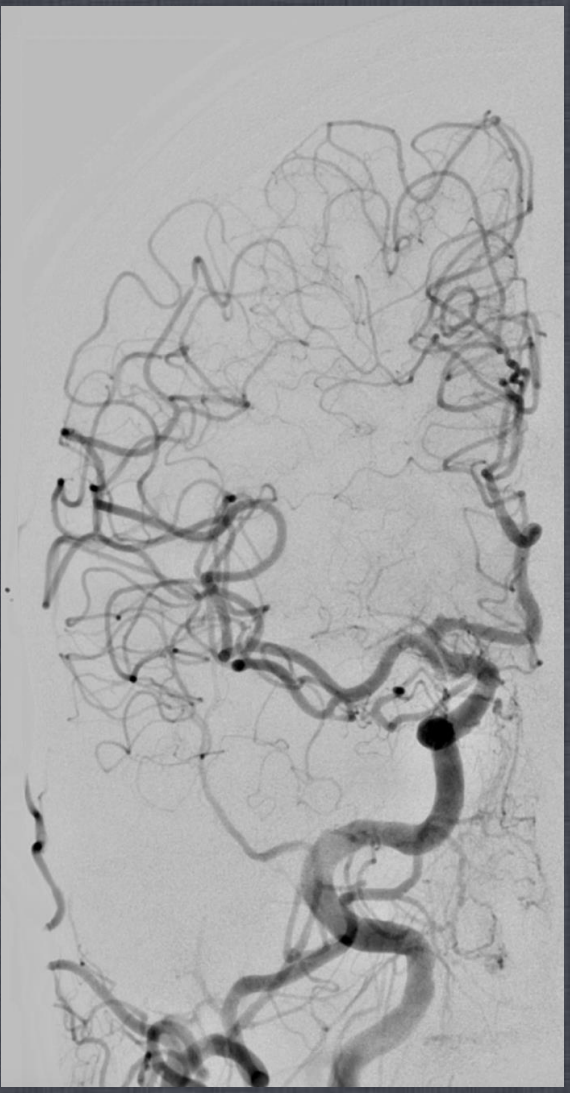
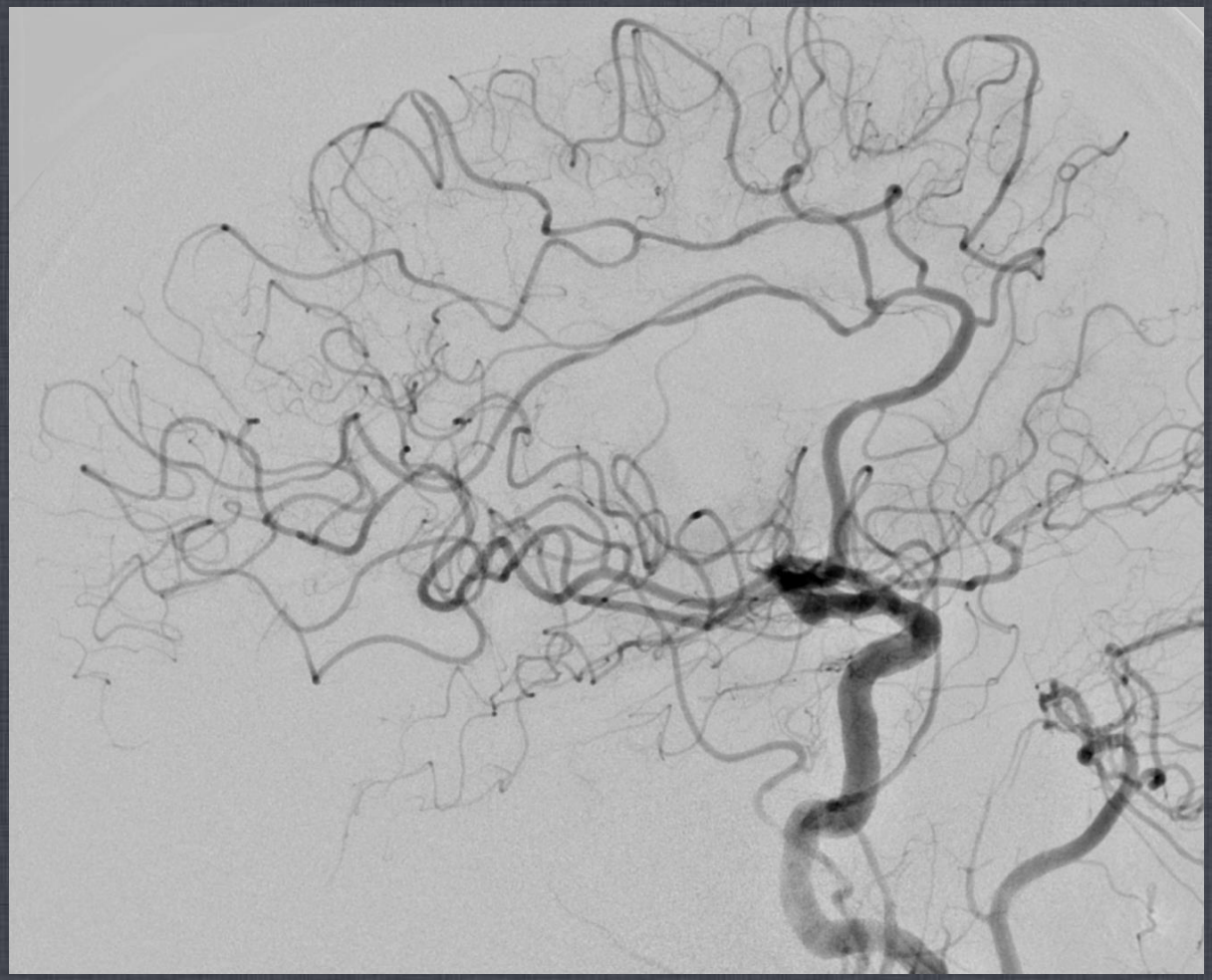
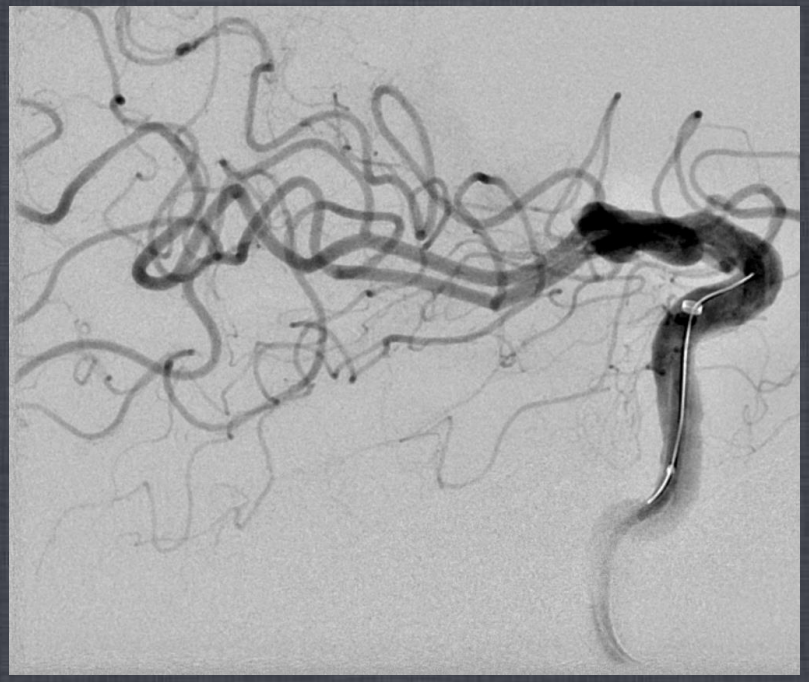
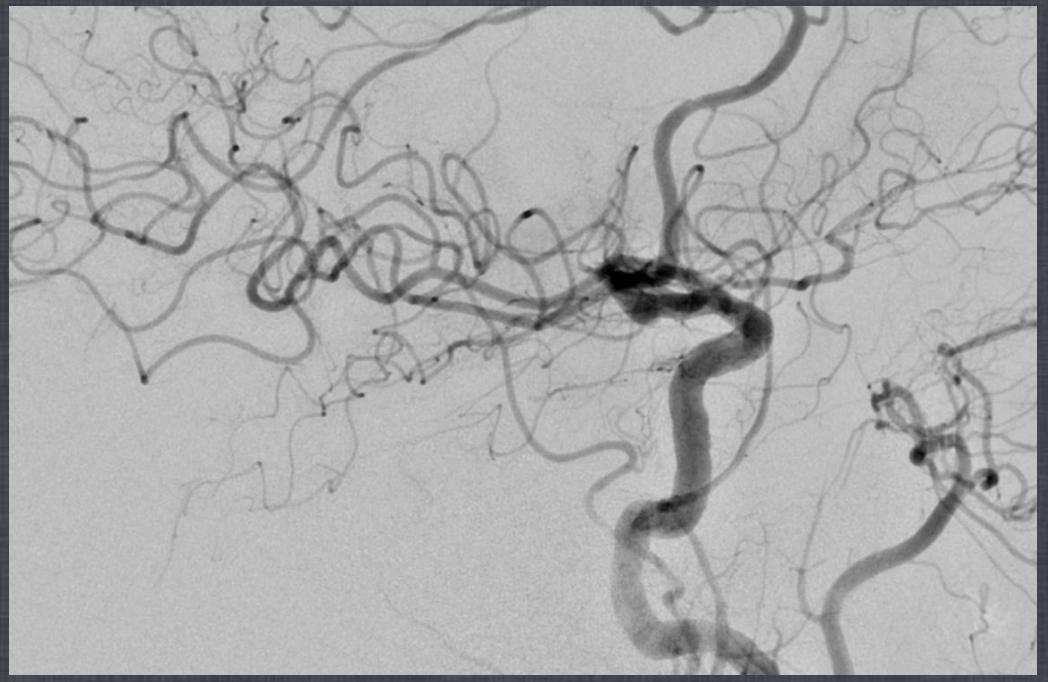


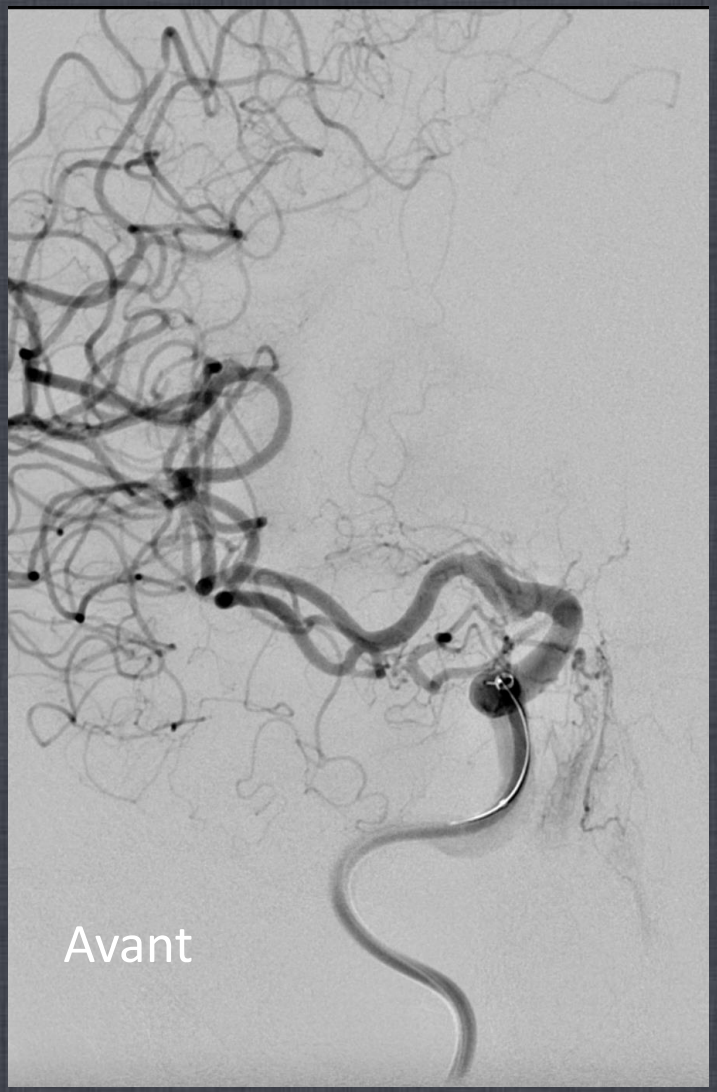
Après 2 passages technique combinée







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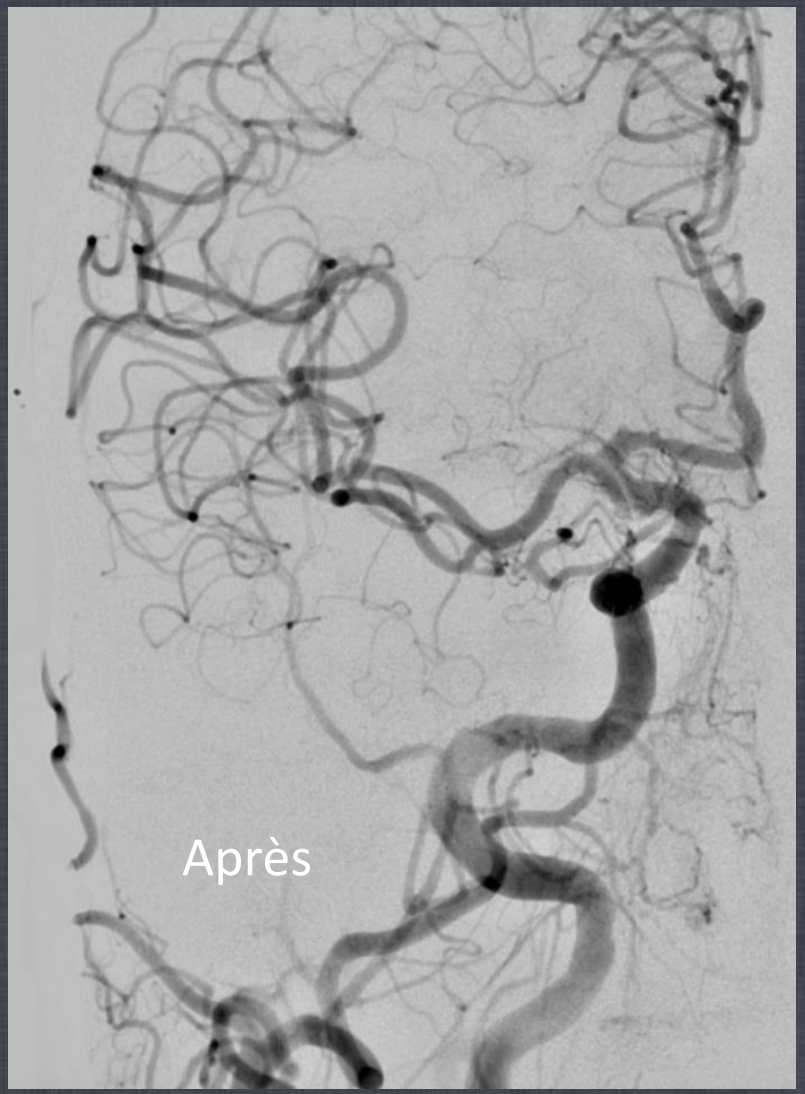
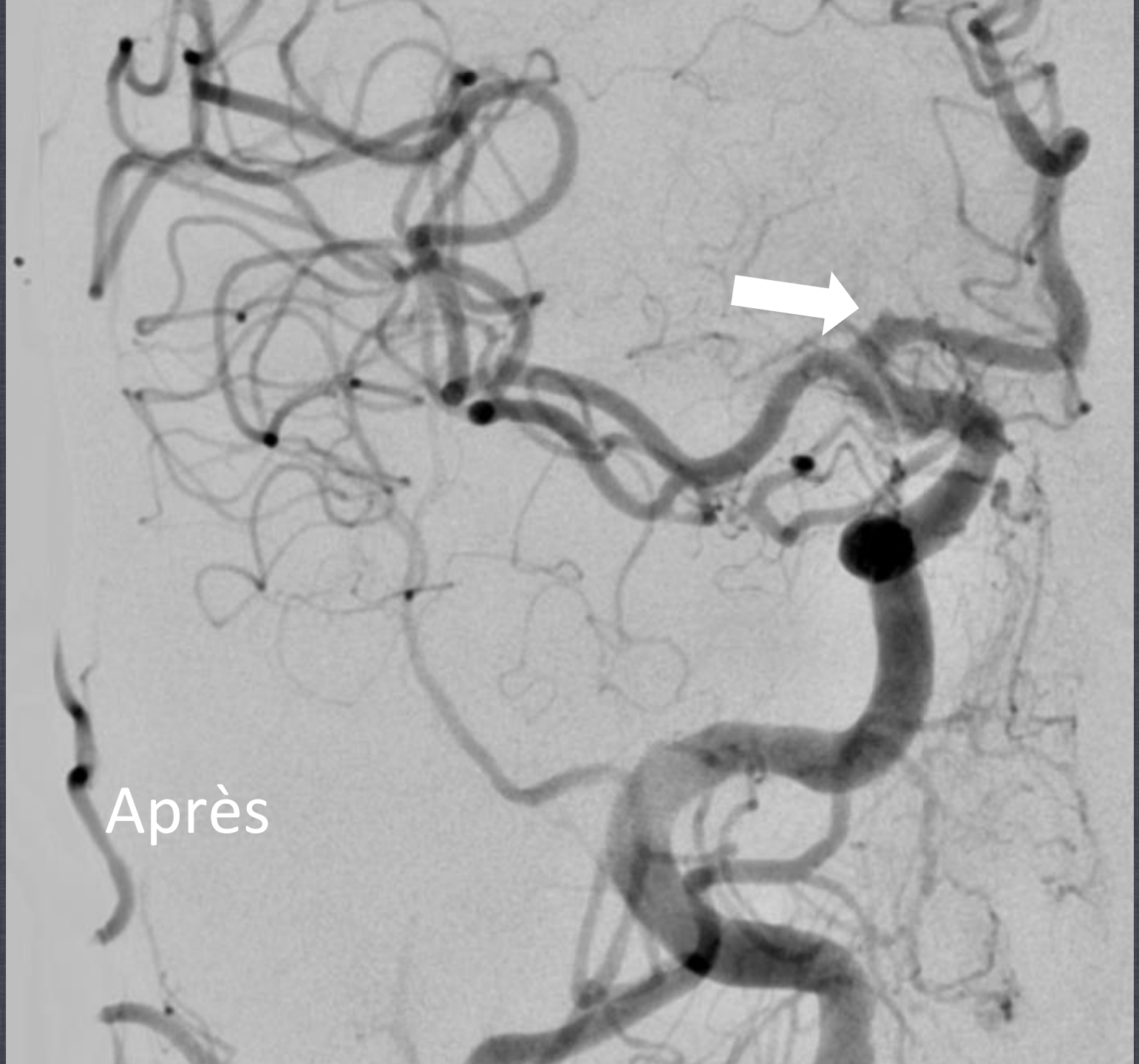

Après


Après

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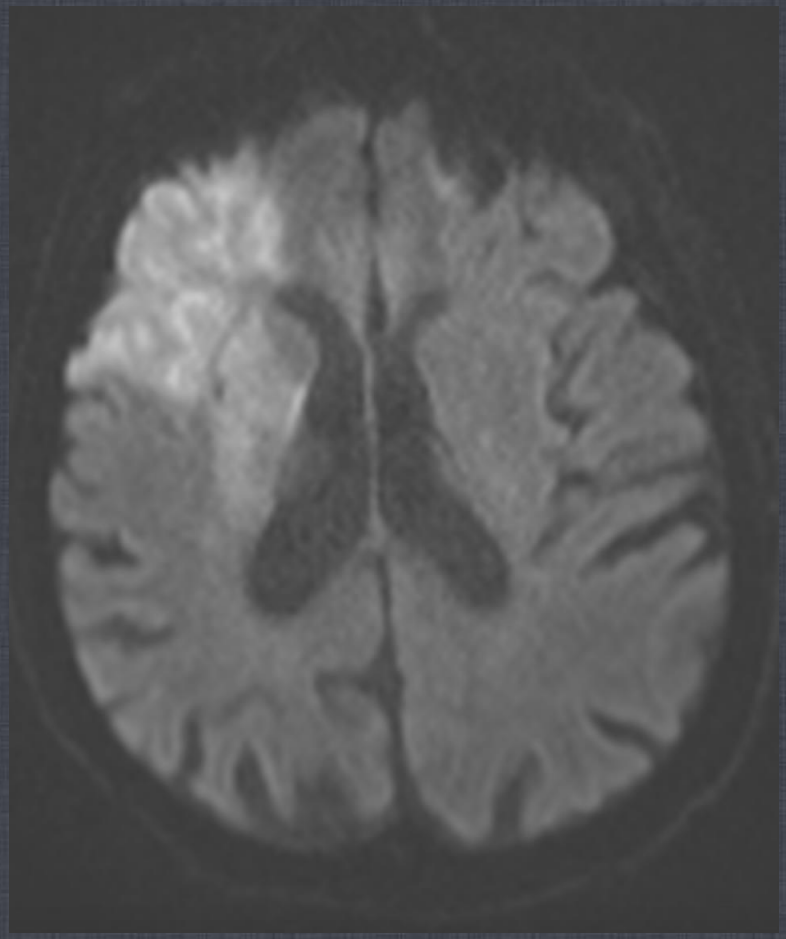
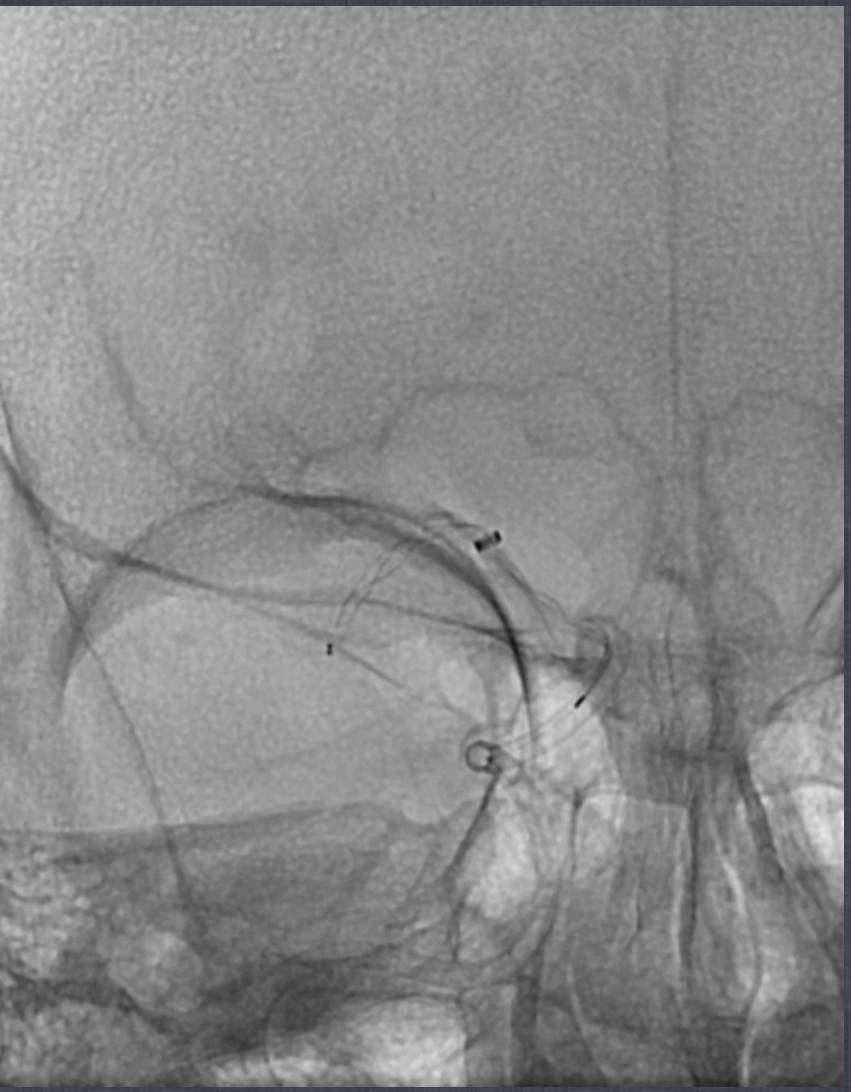
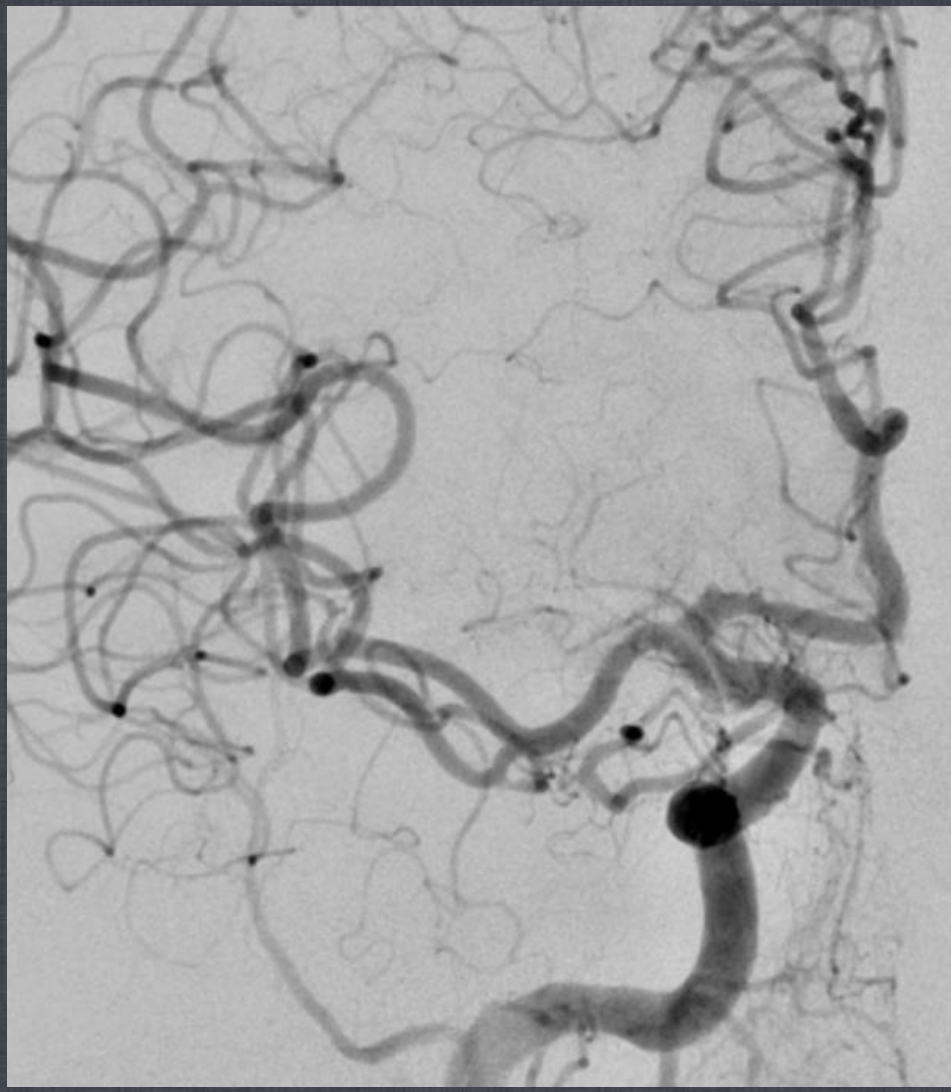
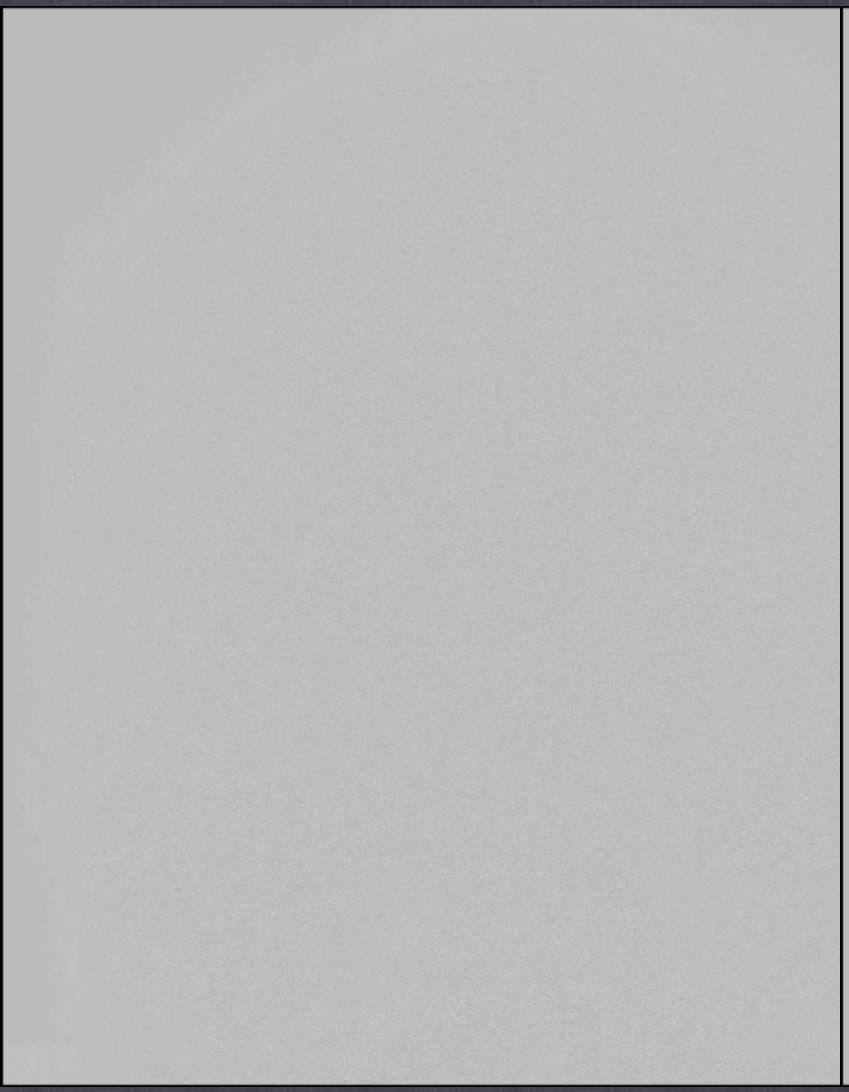
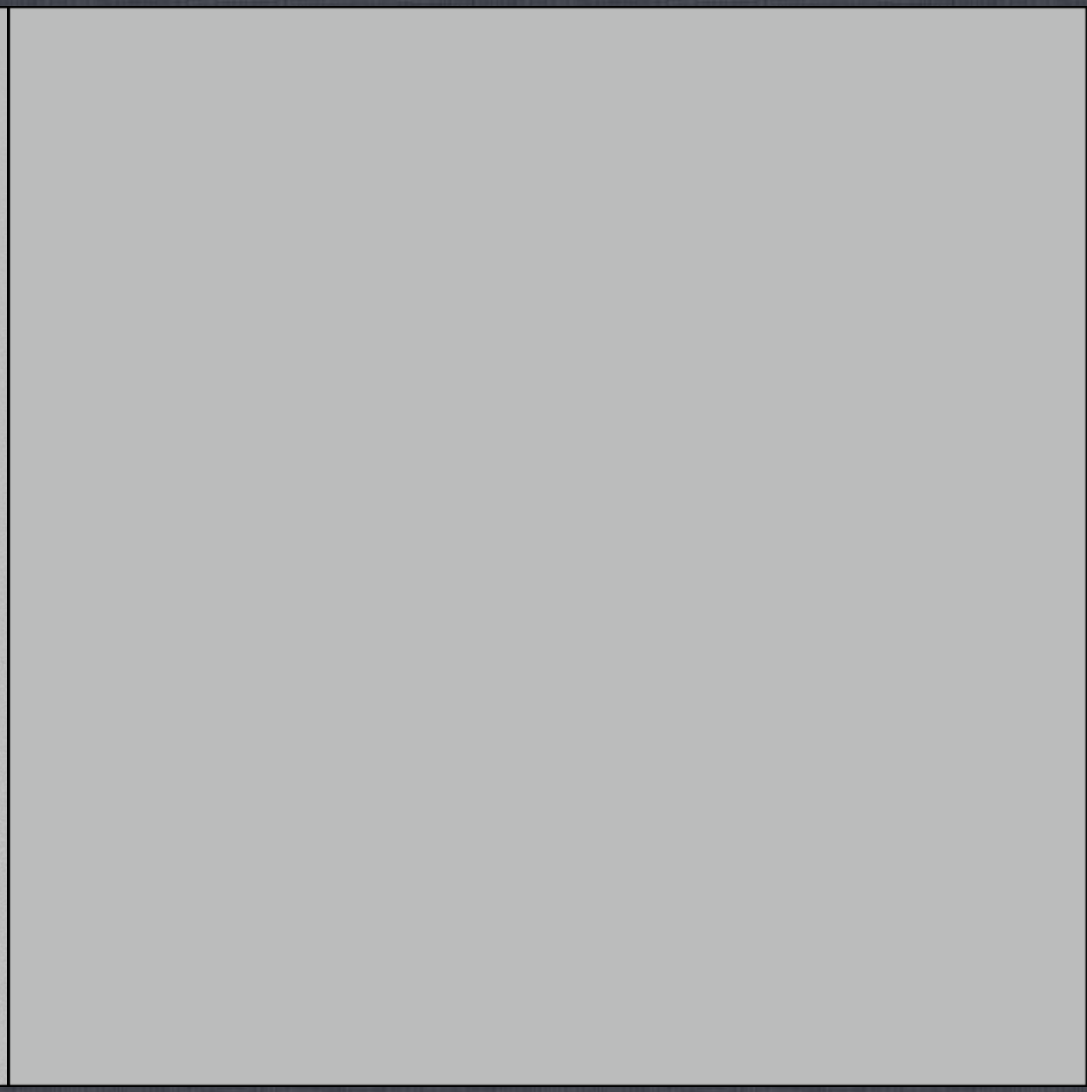


Après





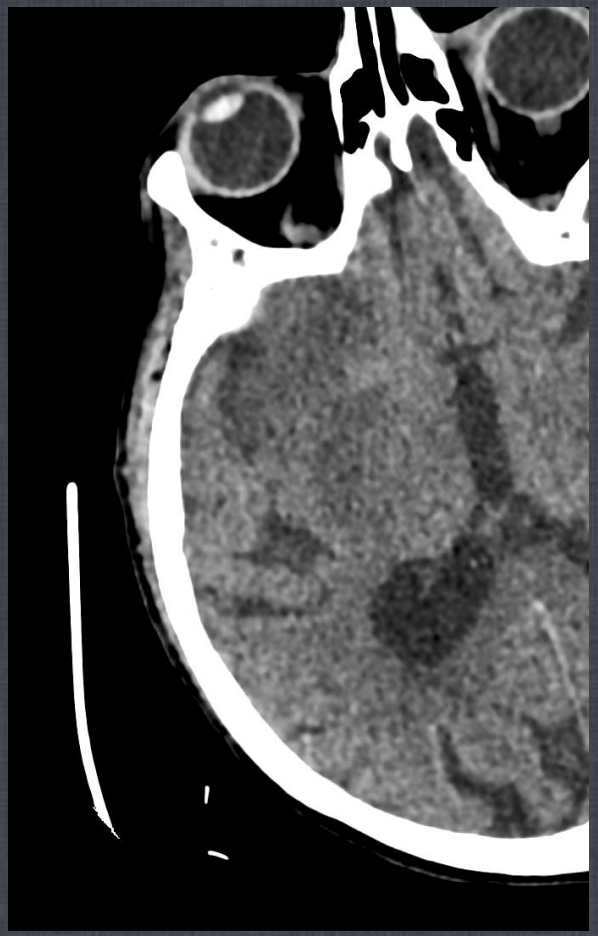


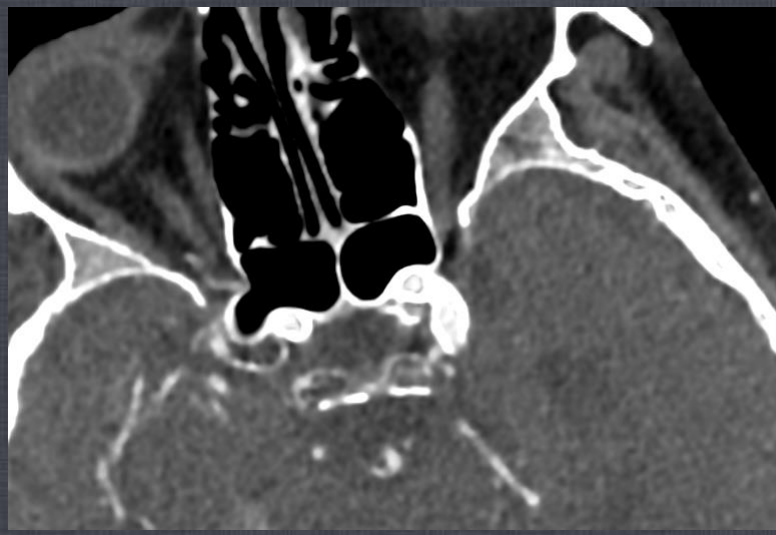


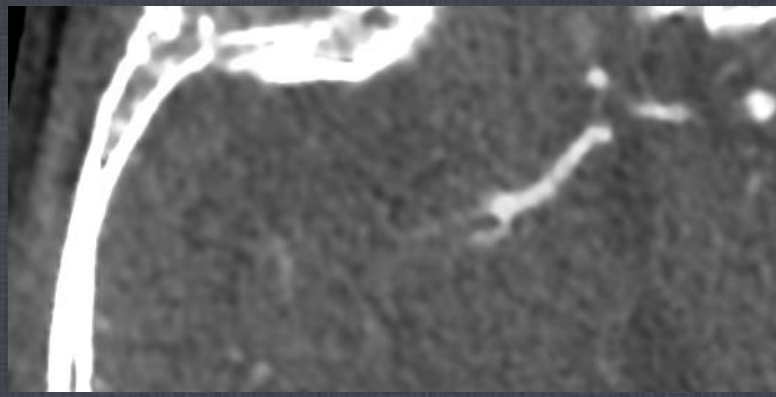
TICI 2B = STOP

NIHSS 11 (-5 pts)

PNP inhalation





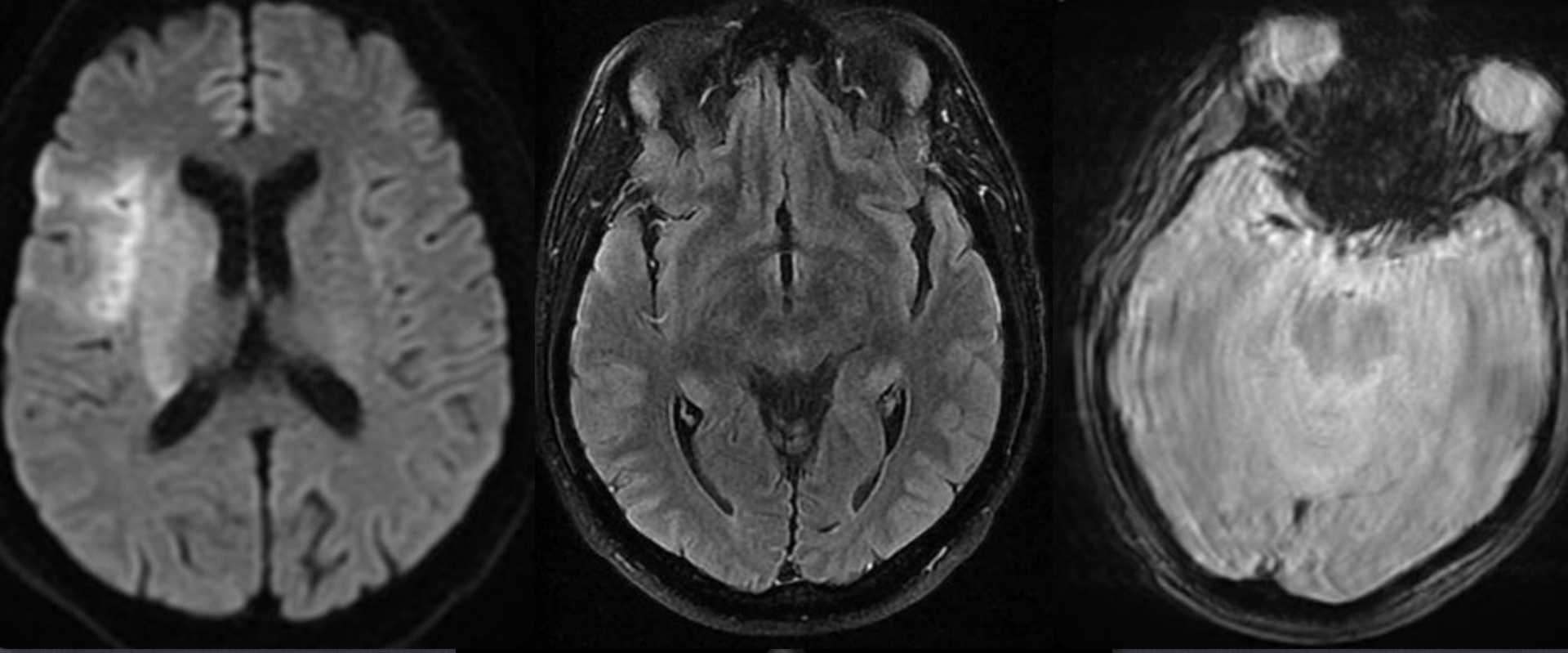


Homme, 50 ans

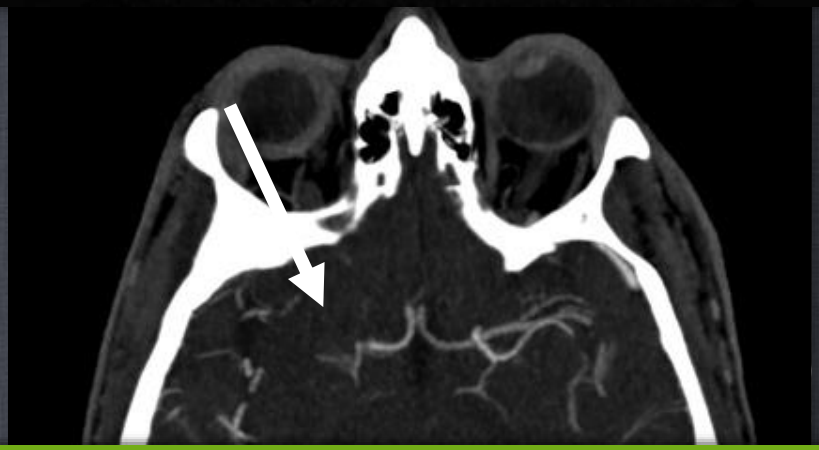
- Gaucher
- Pas d’antécédent particulier
- Fumeur: Tabac et cannabis +++

Homme, 50 ans

- Vu normal au coucher à minuit
- A 4h00, agitation
- Hémiplégie gauche + mutisme complet
- Transféré dans USINV de proximité
- Hémiplégie + hémi-anesthésie + HLH + mutisme
- NIHSS = 22



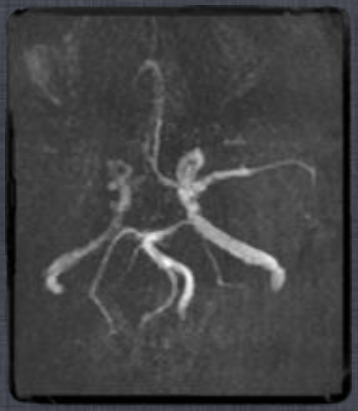
6 h 24



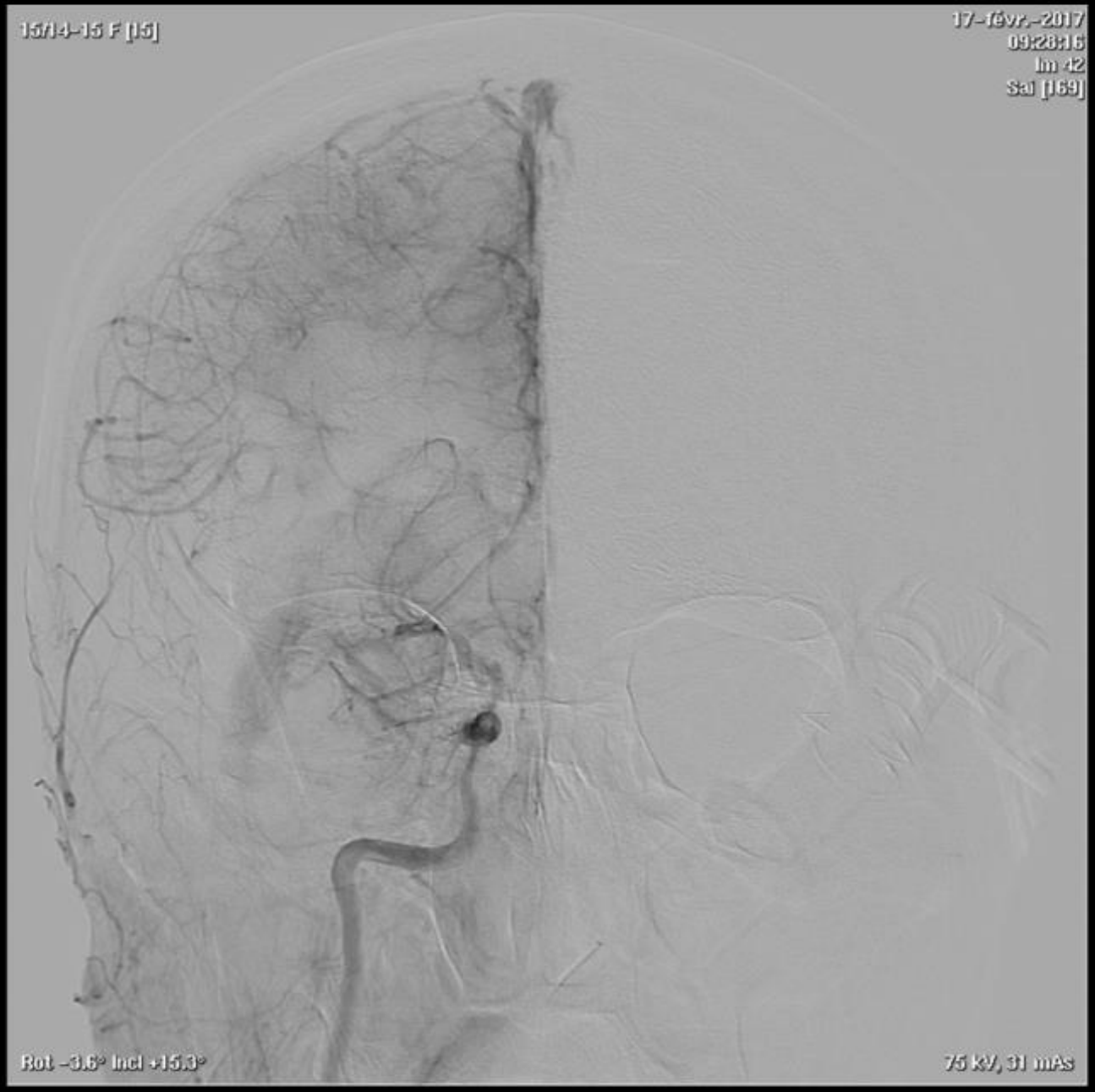
Thrombolyse IV

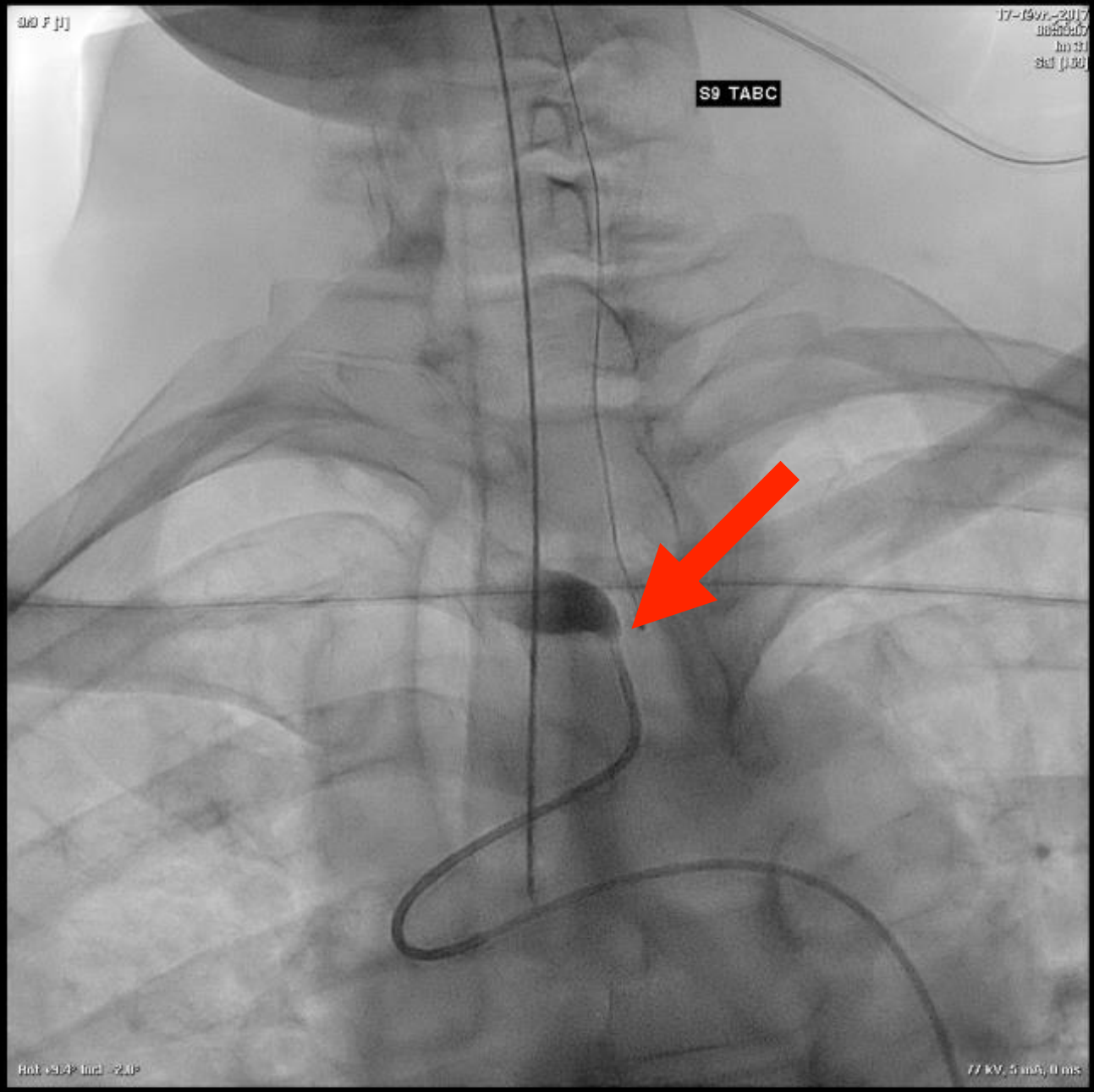
07:00

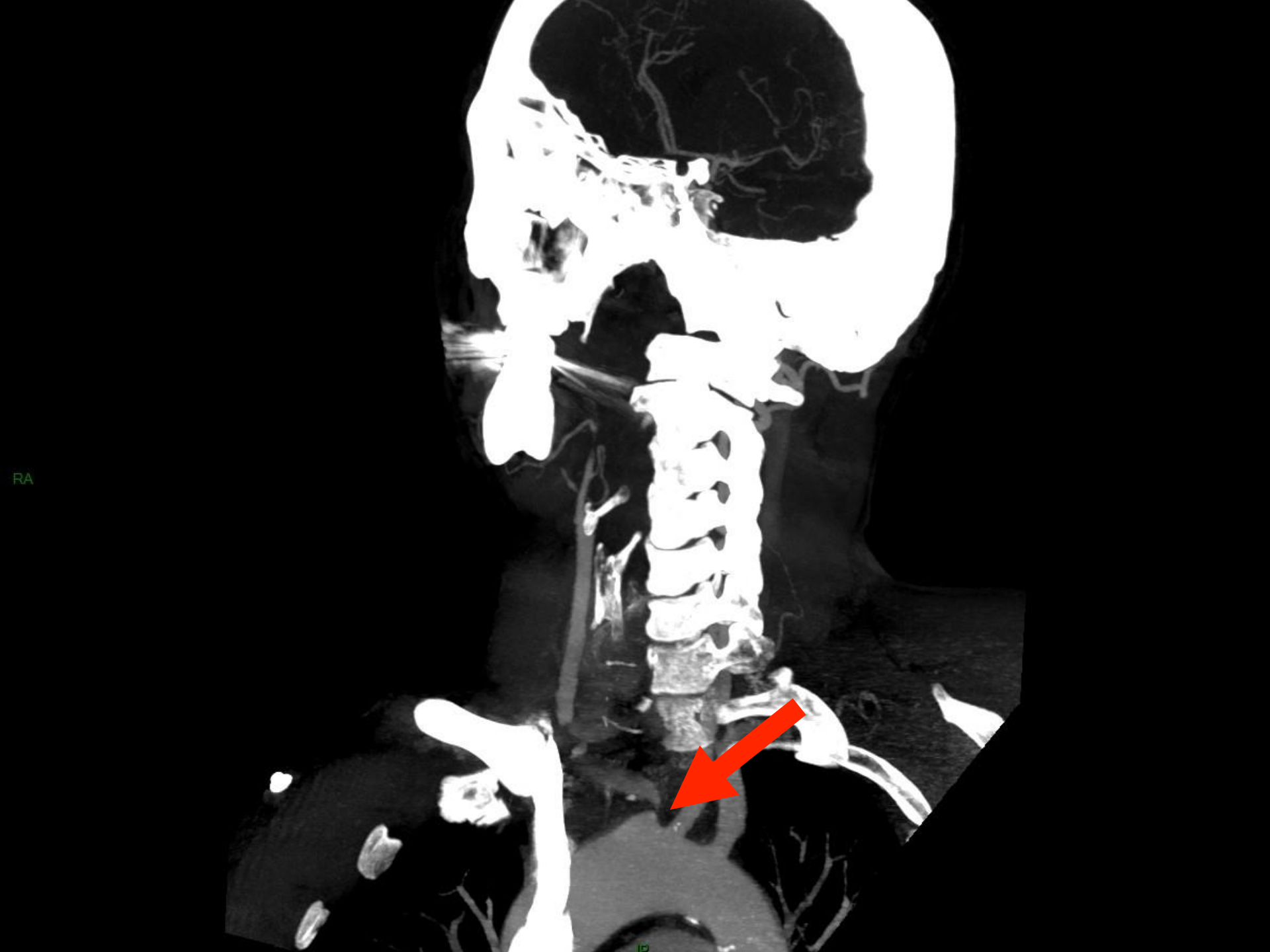
Homme, 50 ans

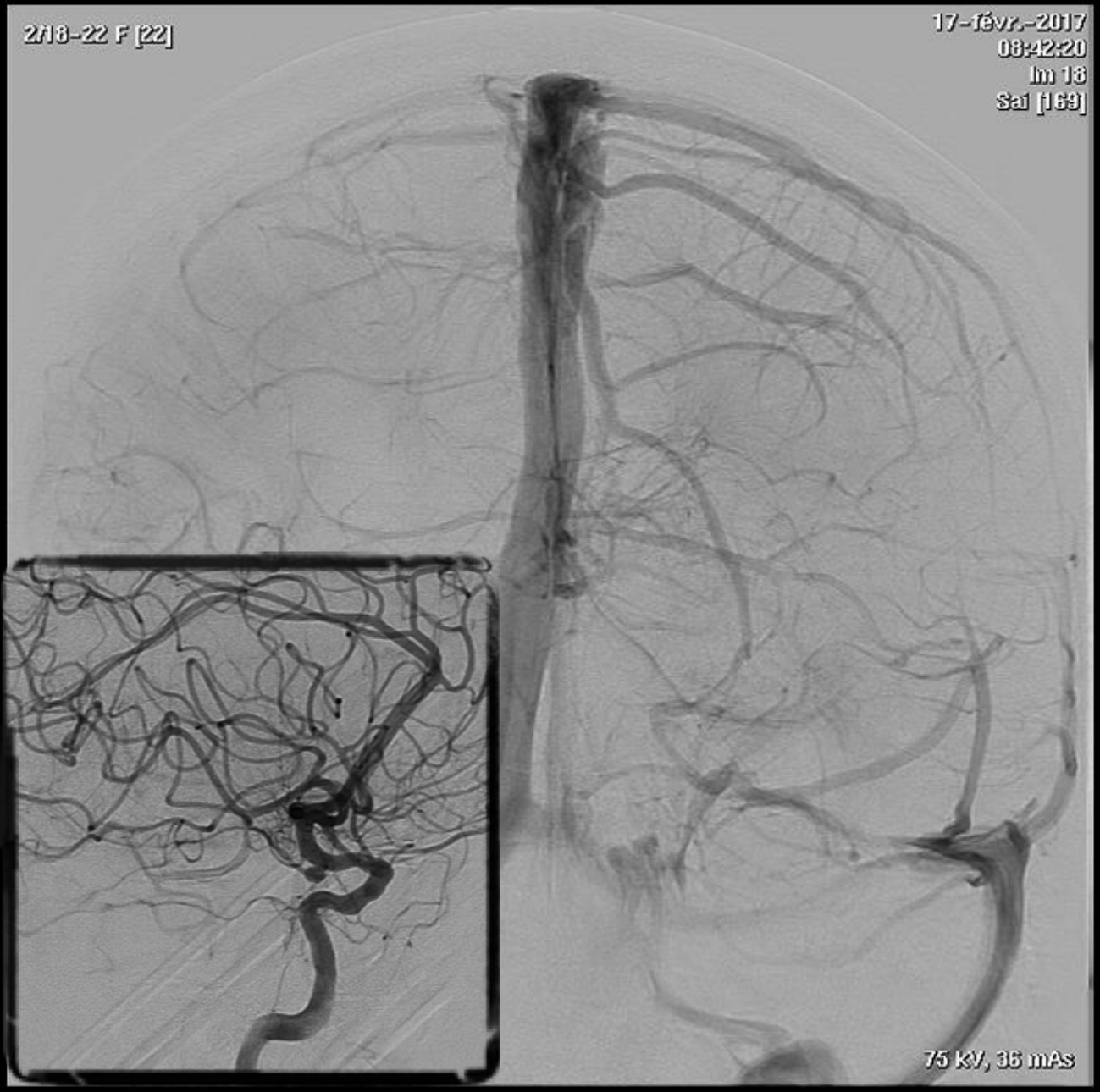


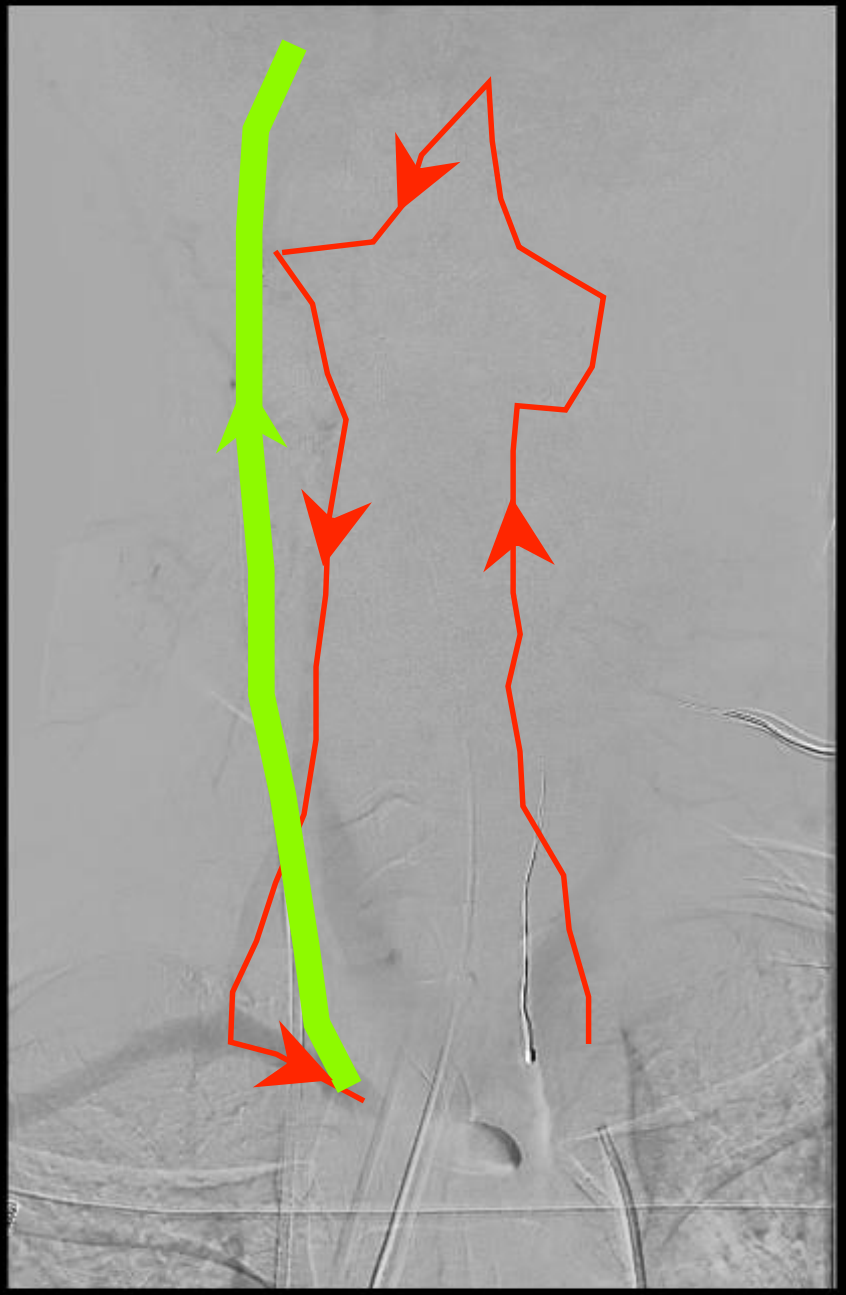
- NIHSS = 22
- Transféré à Bicêtre pour thrombectomie
- Arrivée à 8h10 (4h10 du constat)
- Ponction fémorale à 8h30

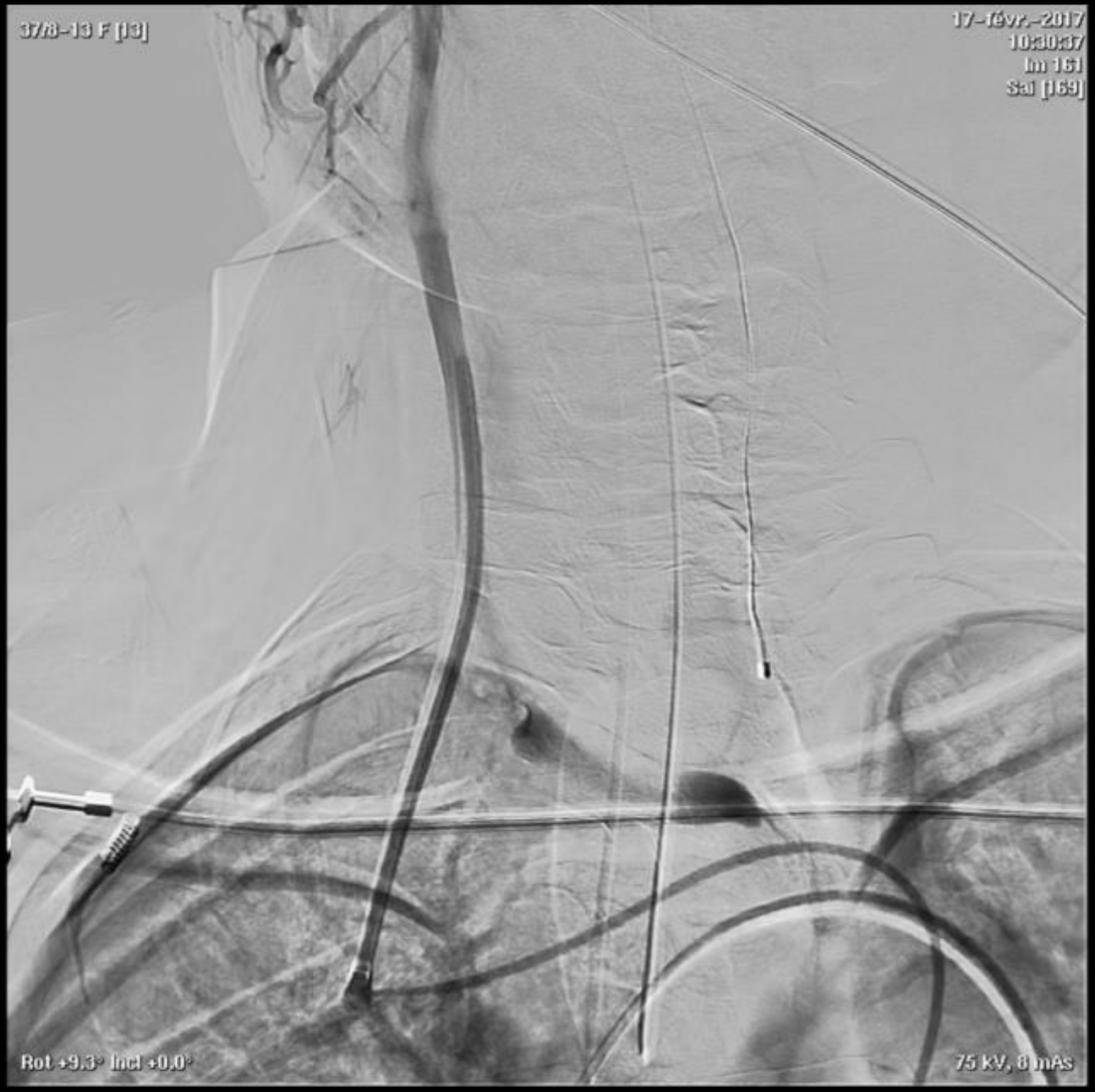

15/14-15 F [15]
17-févr.-2017
09:28:16
Im 42
Sai [169]
Rot -3.6° Incl +15.3°
75 kV, 31 mAs

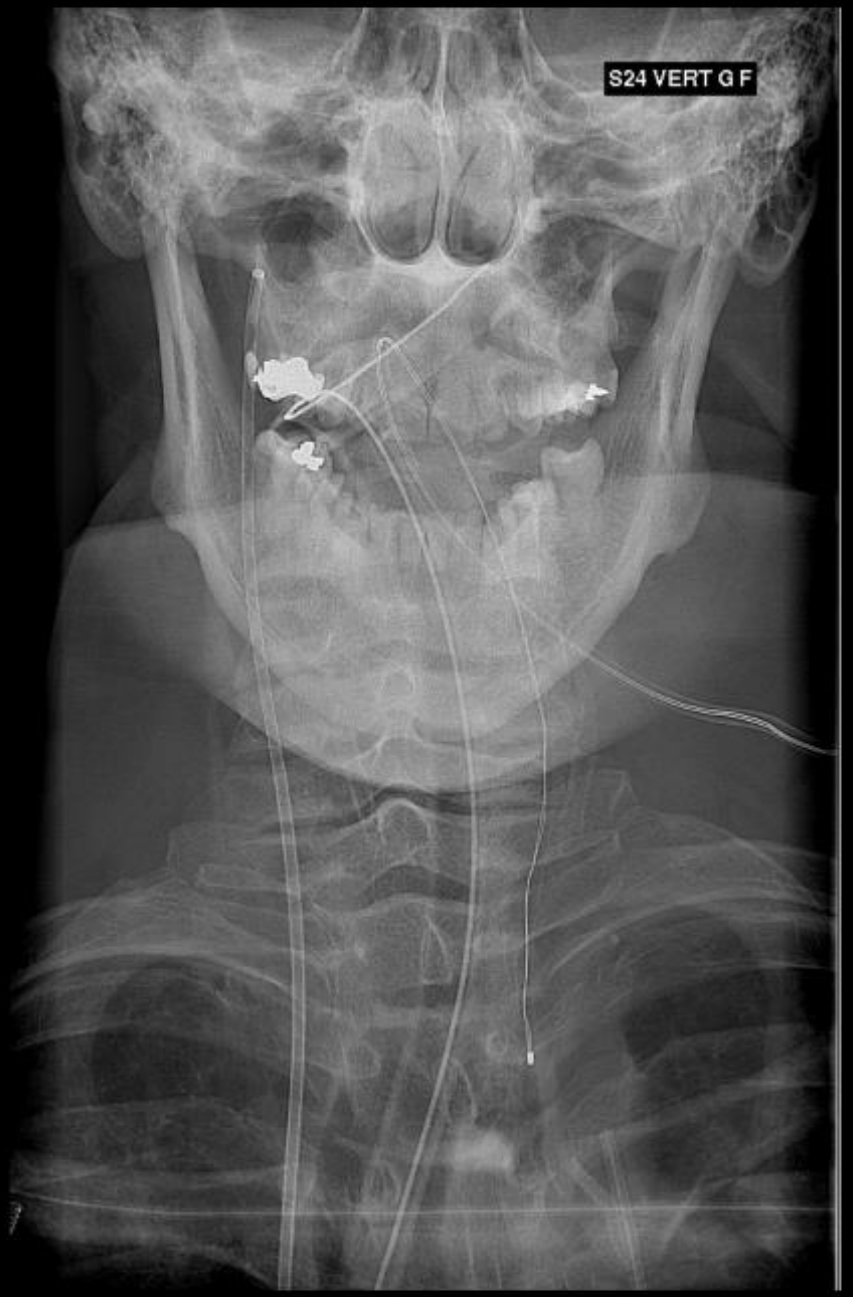

S9 TABC

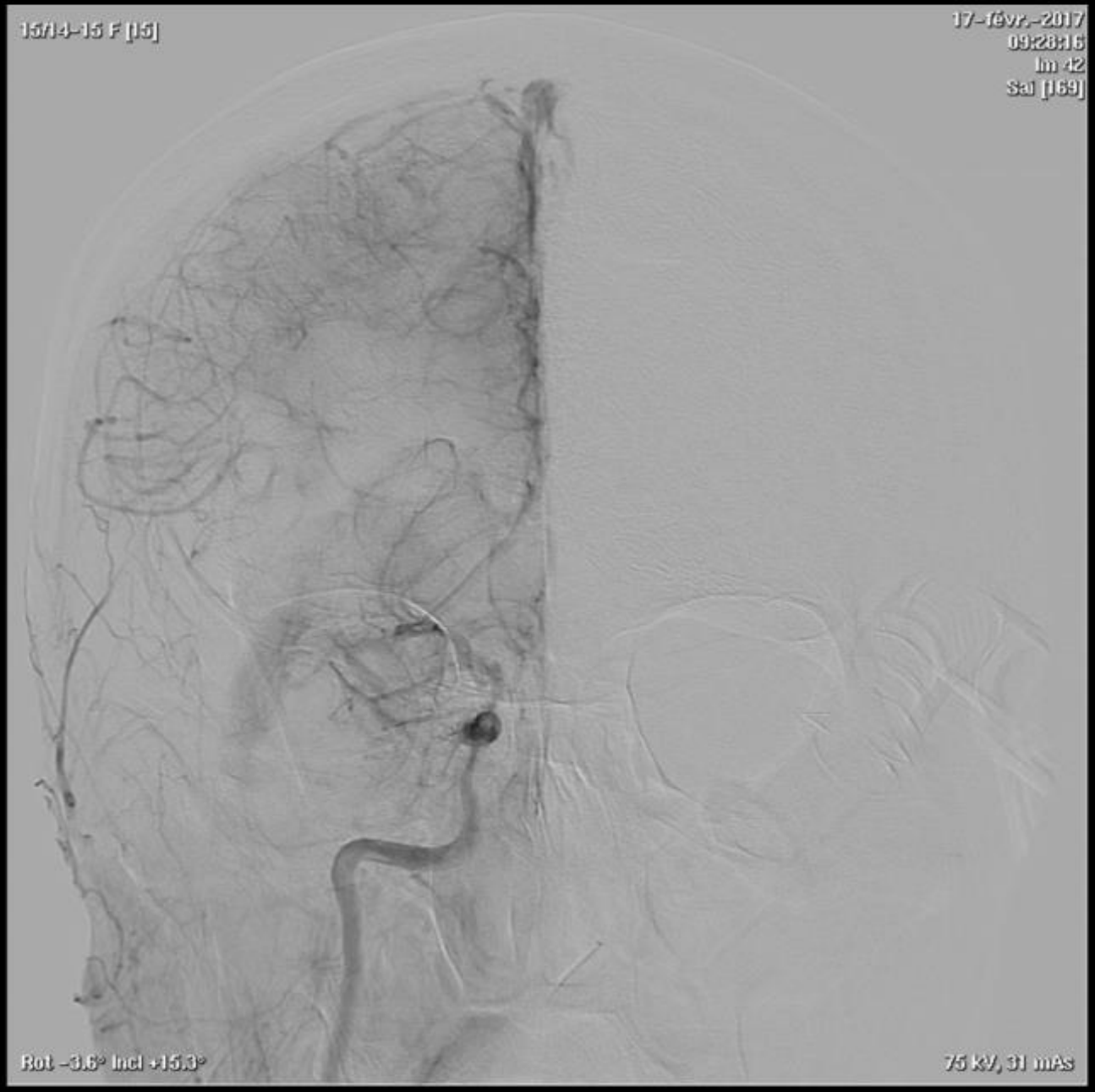

RA

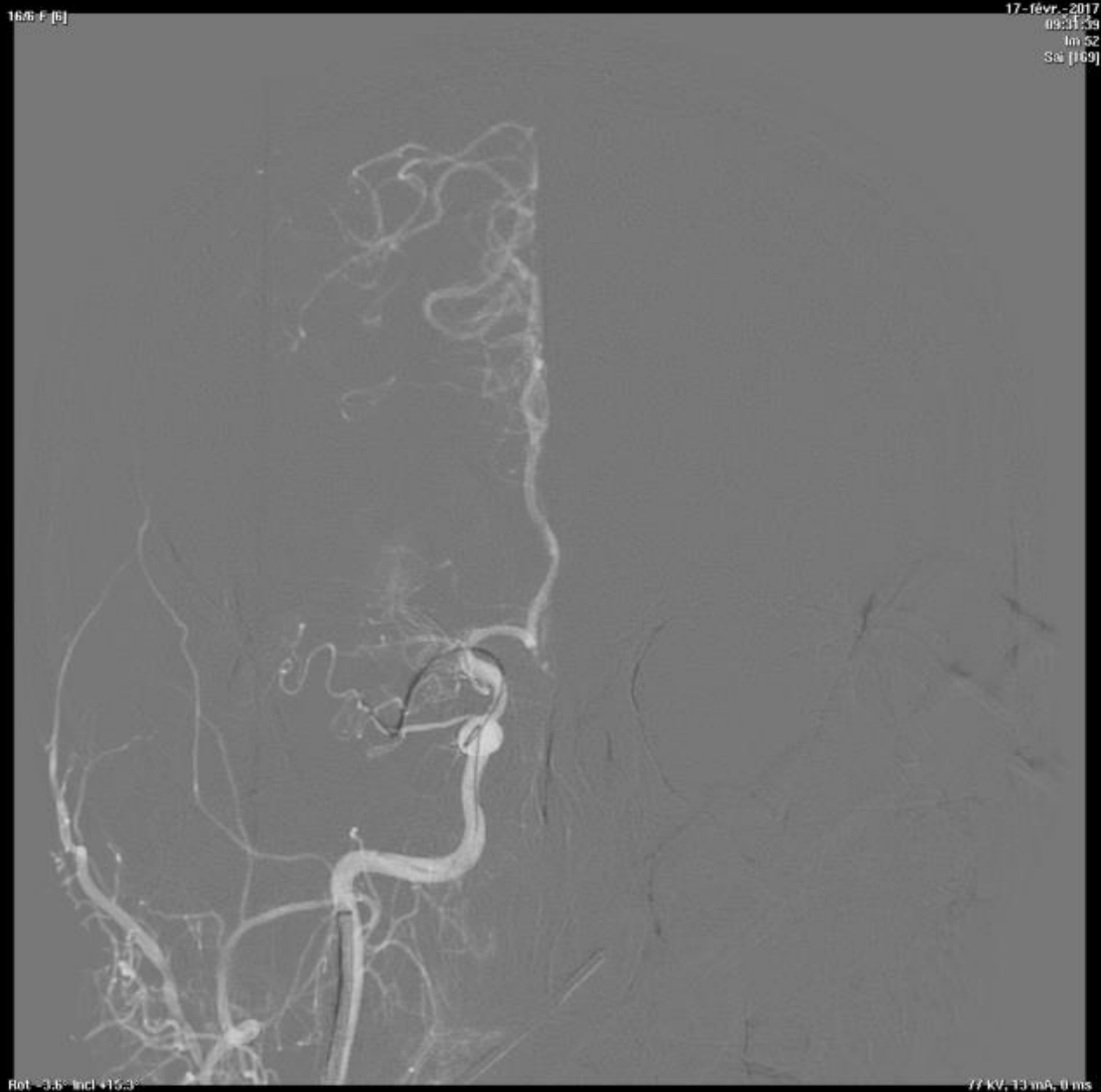

2/18-22 F [22]
17-févr.-2017
08:42:20
Im 18
Sai [169]
75 kV, 36 mAs

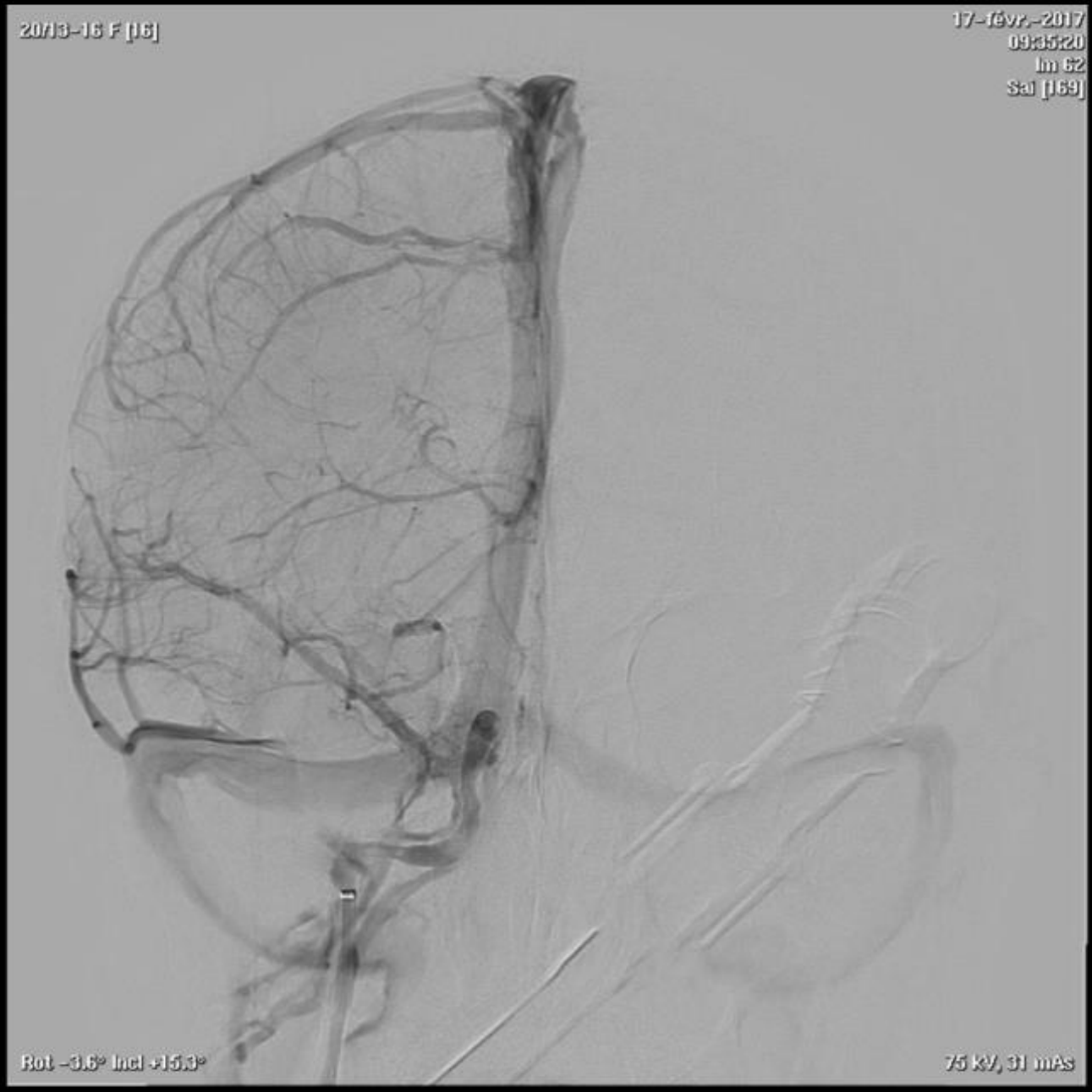

24/11-16 F [16]
17-févr.-2017
09:49:35
Im 77
Sai [169]
Rot -3.6° Incl +15.3°
75 kV, 19 mAs


37/8-13 F [13]
17-févr.-2017
10:30:37
Im 161
Sai [169]
Rot +9.3° Incl +0.0°
75 kV, 8 mAs

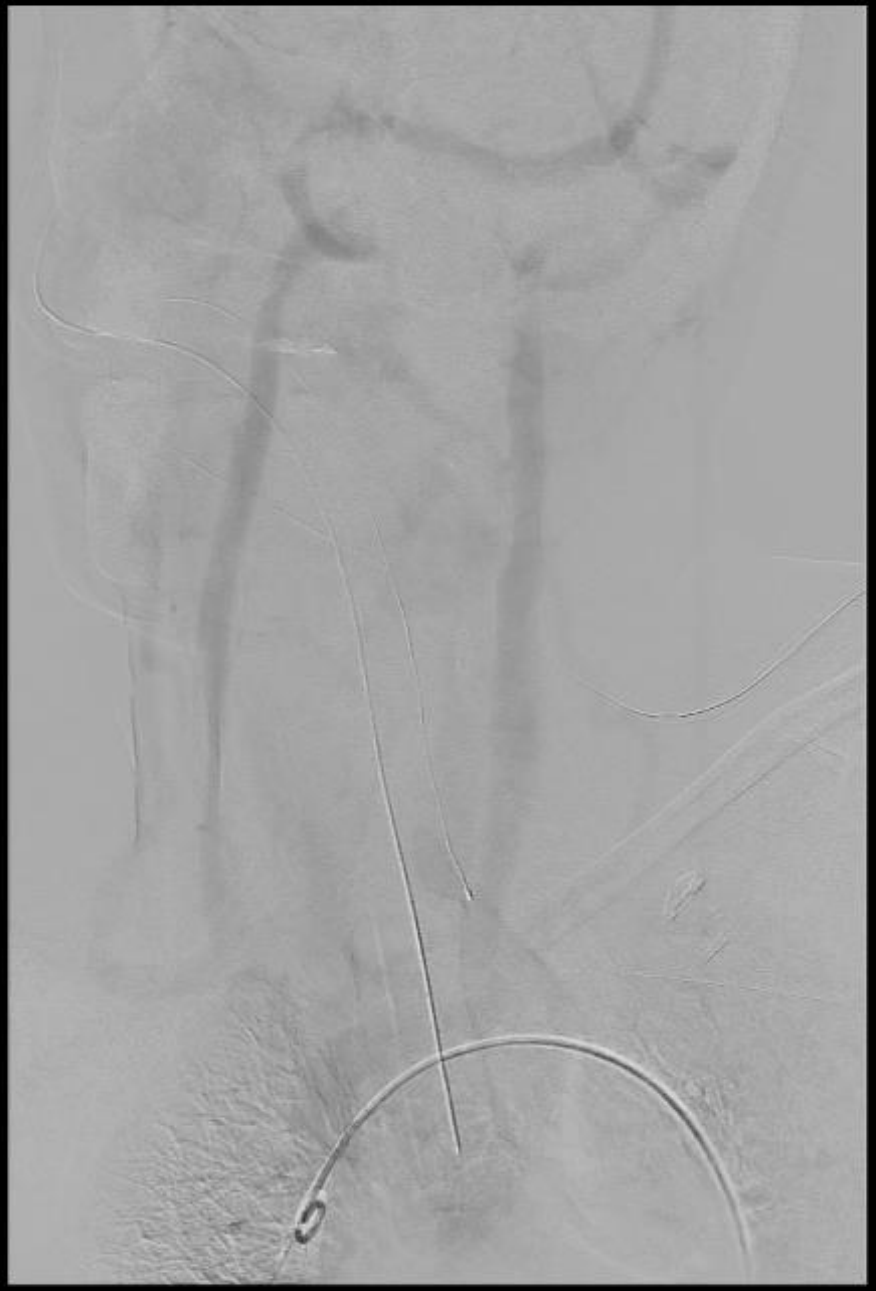

24/1 F [16]
S24 VERT G F
17-févr.-2017
09:49:35
Im 71
Sai [169]
Rot -3.6° Incl +15.3°
75 kV, 19 mAs

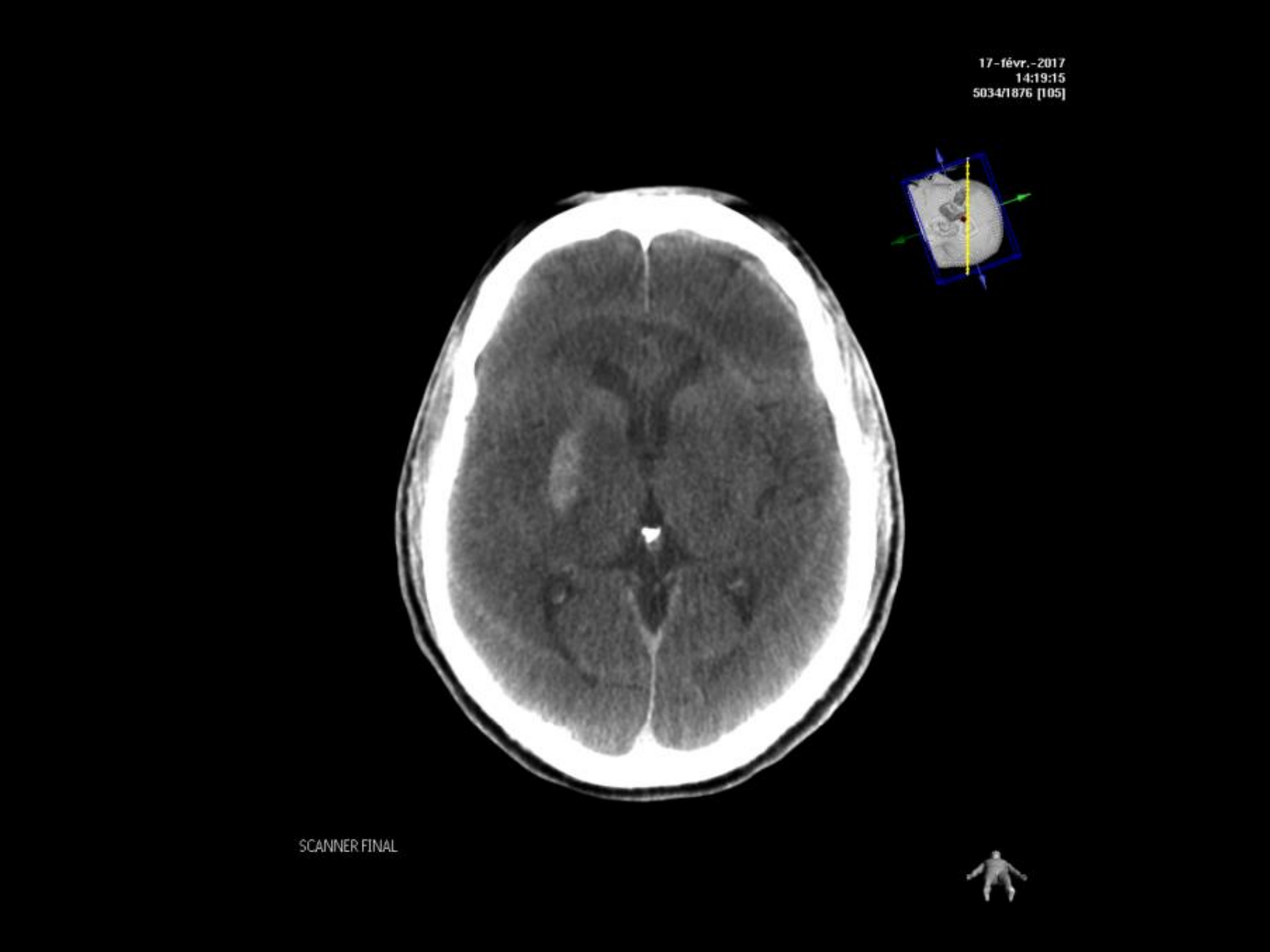

15/14-15 F [15]
17-févr.-2017
09:28:16
Im 42
Sai [169]
Rot -3.6° Incl +15.3°
75 kV, 31 mAs


1646 F [6]
17-févr.-2017
09:31:39
Im 52
Sa [169]
Rot -3.6° Incl +15.3°
77 kV, 13 mA, 0 ms


20/13-16 F [16]
17-févr.-2017
09:35:20
Im 62
Sai [169]
Rot -3.6° Incl +15.3°
75 kV, 31 mAs

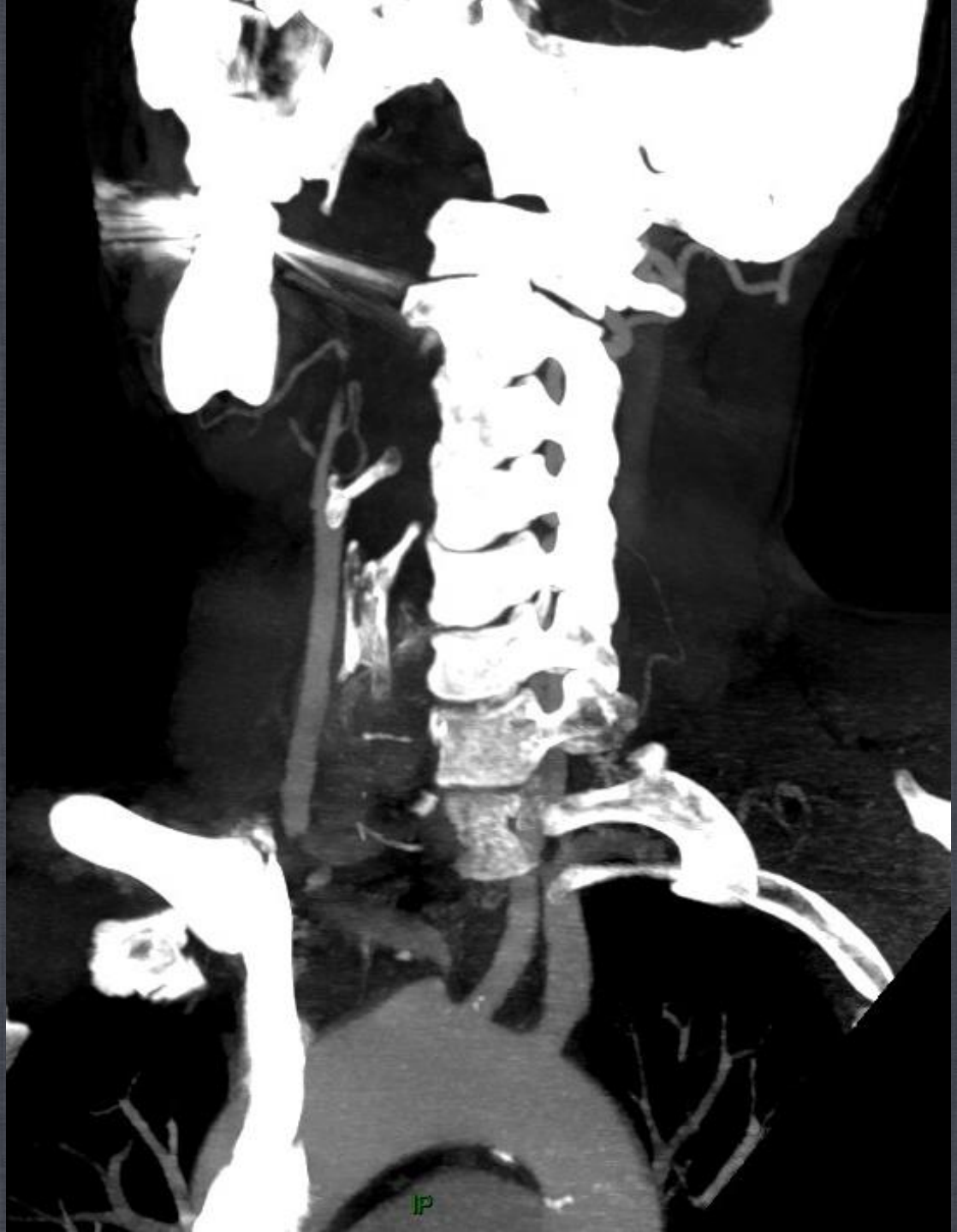
9 h 30

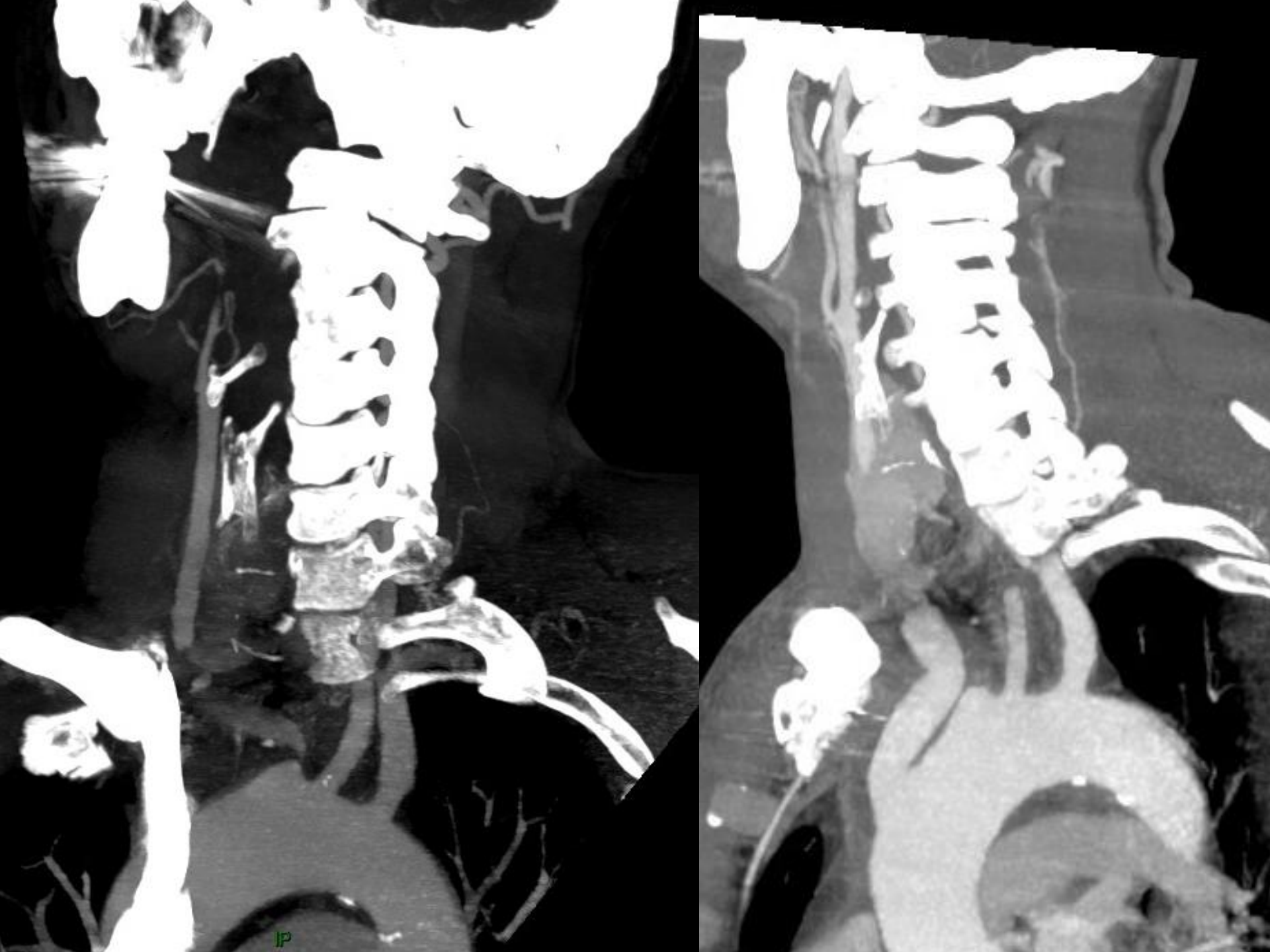

36/19-20 F [20]
17-févr.-2017
10:27:54
Im 150
Sai [169]
Rot +36.7° Incl +0.0°
75 kV, 4 mAs


17-févr.-2017
14:19:15
5034/1876 [105]
SCANNER FINAL

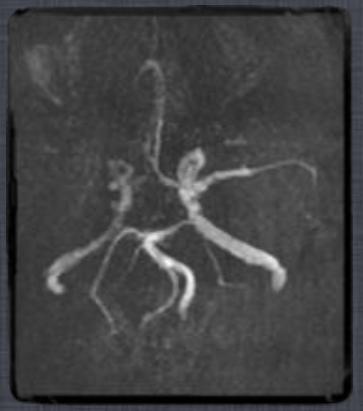
Homme, 50 ans

- Recanalisation à 5h30 de la constatation des symptômes
- Extubation sur table
- Récupération quasi-complète
- NIHSS 2 à 24h
- Transféré à Marie-Lannelongue pour traitement de la sténose du TABC

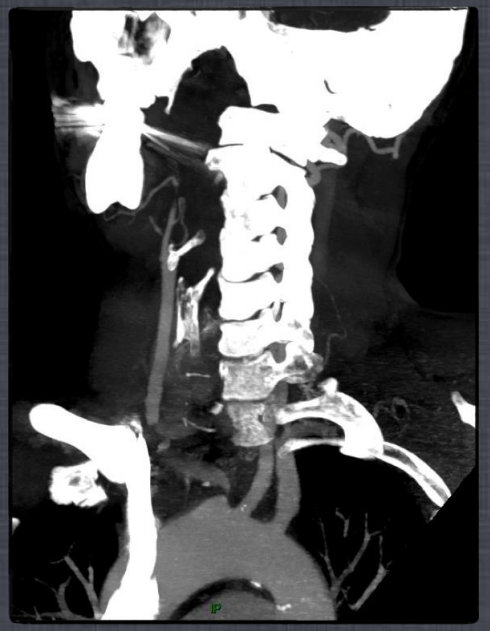




Homme, 50 ans



- NIHSS 22
- Recanalisation à 5h30 du constat des symptômes
- NIHSS 2 à 24h
- Pontage TABC
- mRS 0 à 3 mois



Ecole de la Thrombectomie

« T » CAROTIDIEN, OCCLUSIONS DISTALES, CÉRÉBRALE ANTÉRIEURE

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EMIS RESEARCH