

Trombolisi - embolectomia loco-regionale nello stroke ischemico iperacuto: analisi retrospettiva a doppio centro.

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**DIRETTORE U.O.C. RADIODIAGNOSTICA E RADIOLOGIA VASCOLARE ED
INTERVENTISTICA**

No disclosures

Stroke

- 1 stroke ogni 53 sec
- 1 morte per stroke ogni 3.3 min (436/giorno)
- 750,000 strokes nuovi e ricorrenti per anno
- Mortalità
 - 7.6% 30d
 - 16-23% 3 mesi

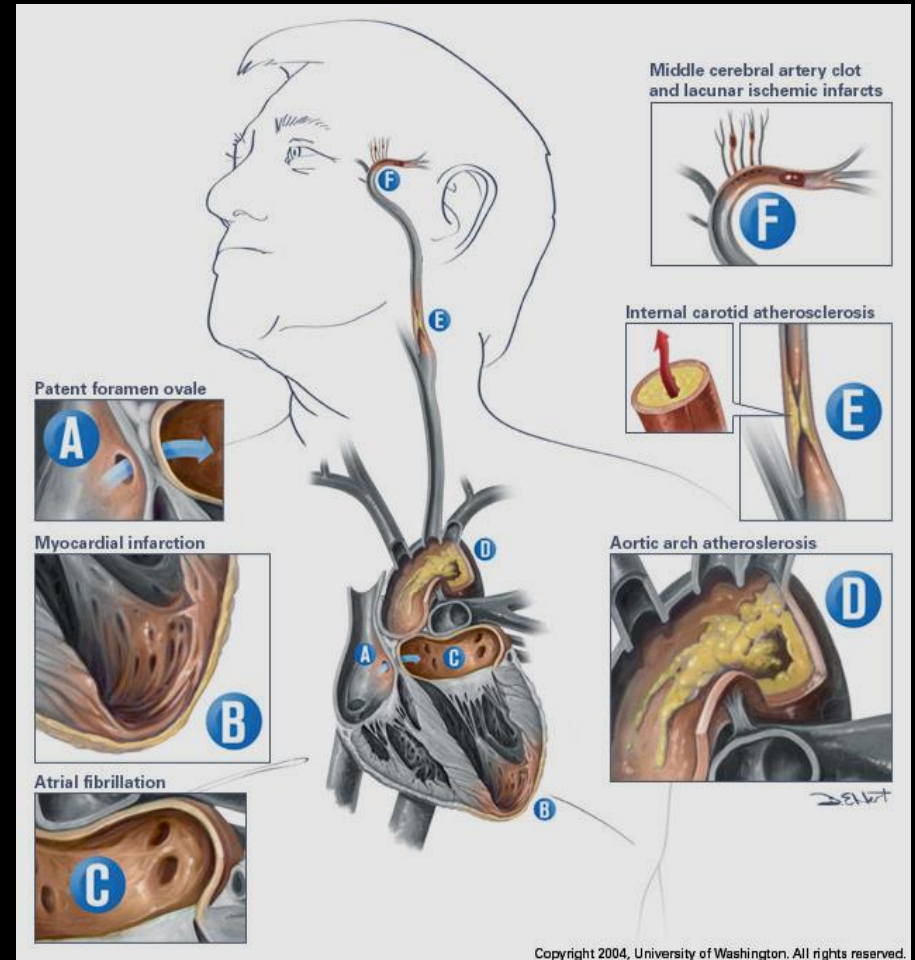


Stroke

- 500,000 Pz/anno
- Prima causa di disabilità.
- Permanenza ospedaliera media 42 giorni.
- Costi sociali: 20 billion dollars/years
(1 *bilione*: 1.000.000.000.000)

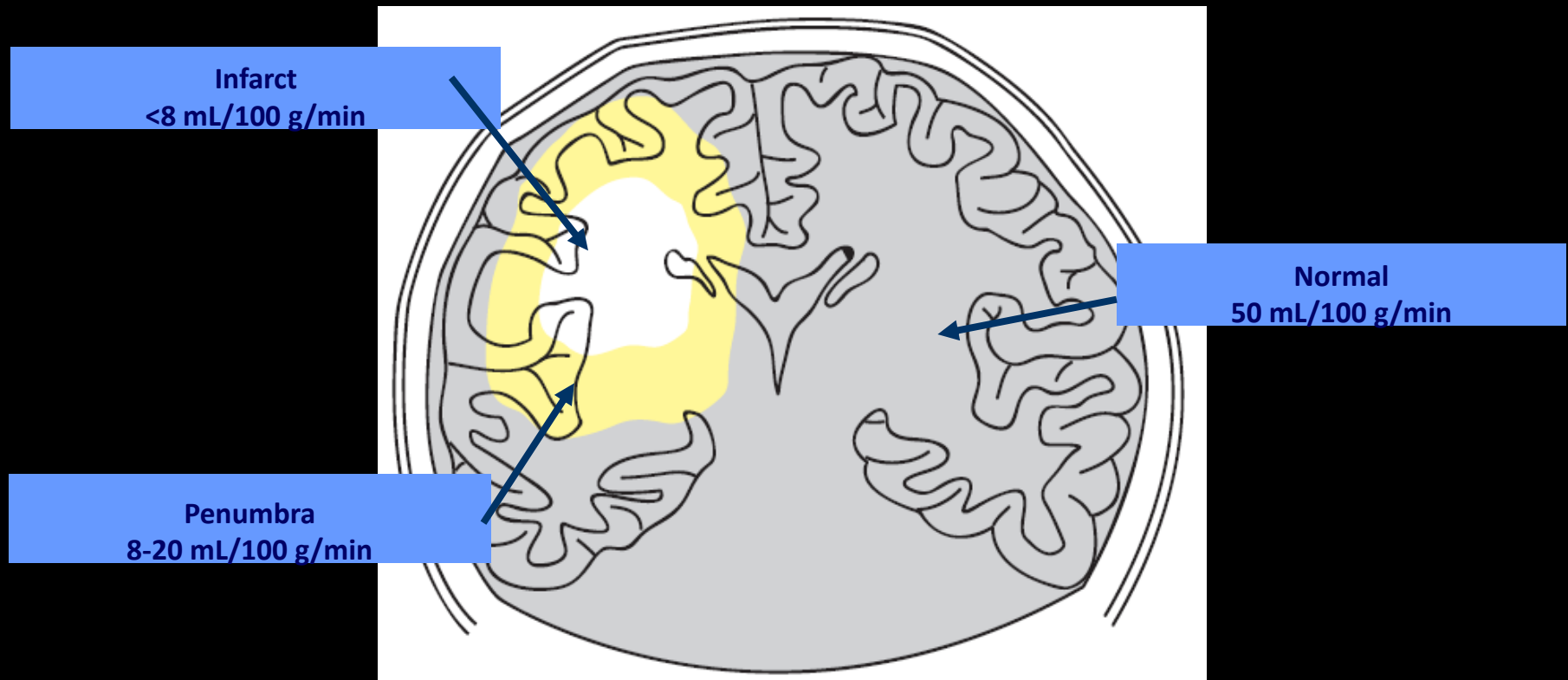


- Occlusione (50%)
 - Large vessel (ICA)
 - Branch (MCA)
 - Perforator (lacunar)
- Embolizzazione (25%)
 - Intra/Extracranial
 - Cardiac
- Criptogenetica (25%)



Ischemic Penumbra

Area of brain with compromised blood supply that can be salvaged by timely intervention



Increased MTT Area Statistics

(CBF reduced per number of slice)

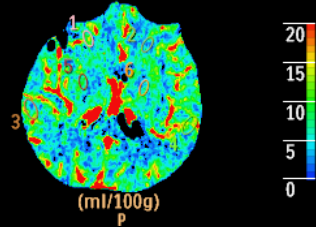
Normal CBV (CBV): normal CBV area into the CBF reduced region (Green in the Summary Maps).

Reduced CBV (rCBV): CBV reduced area into the the CBF reduced region (Red in the Summary Maps)

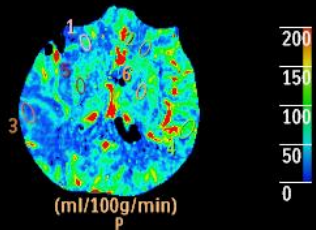
Index (In): ratio between reduced BF and normal BV area (green) and the reduced BF area (green+Red).

COLOR MAPPING

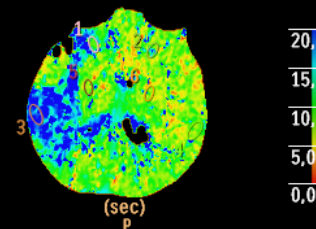
DONATO 1Y CBV Philips, Brilliance 64 SW 5,00 mm



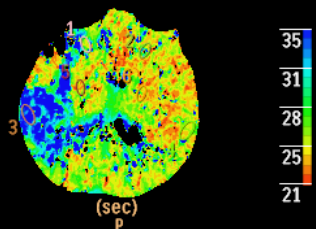
DONATO I/51Y CBF Philips, Brilliance 64 SW 5,00 mm



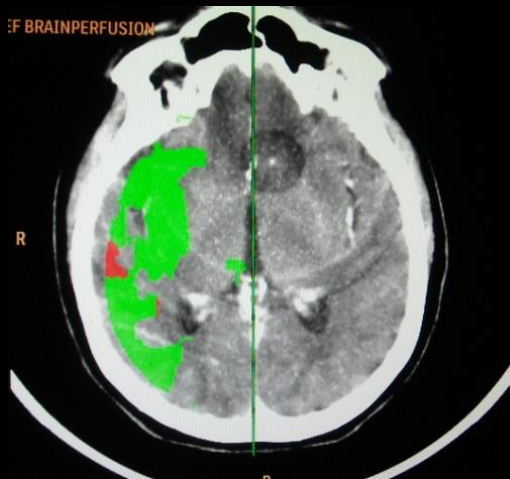
DONATO I/51Y MTT Philips, Brilliance 64 SW 5,00 mm



DONATO I/51Y IIP Philips, Brilliance 64 SW 5,00 mm

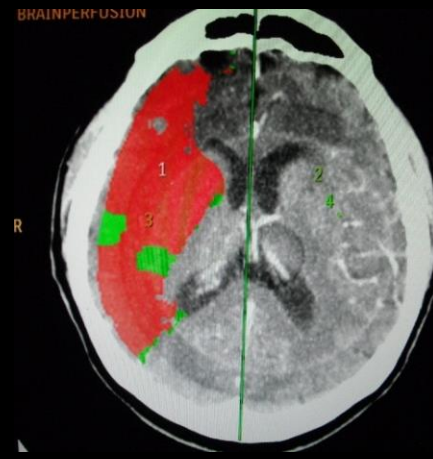


SUMMARY MAP

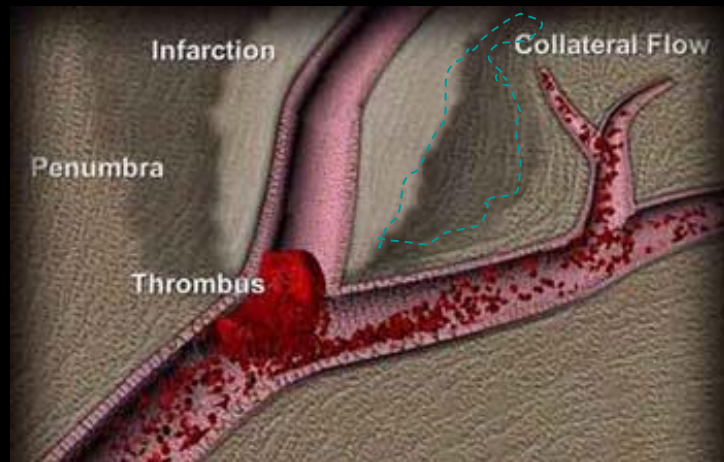


Green: increase of MTT above 50%, CBV above 2,0ml/100g.

Red: increase of MTT over 50%, CBV below 2,0ml/100g.

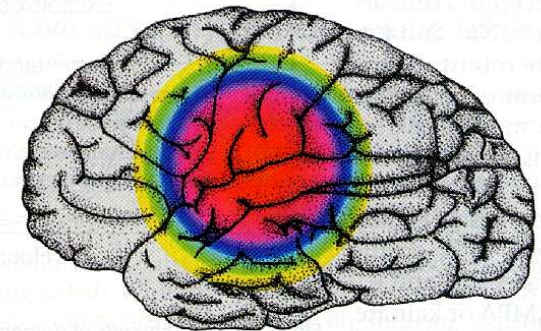


Dinamiche spazio-temporali dello sviluppo e dell'evoluzione del danno ischemico cerebrale



Morphology	Biochemistry
Infarction	Ionic failure Anoxic depolarization Glucose use ↓ Glutamate release Glucose use ↑
Inflammation and apoptosis	Protein synthesis ↓ Acidosis Oxygen extraction ↑
	Selective gene expression

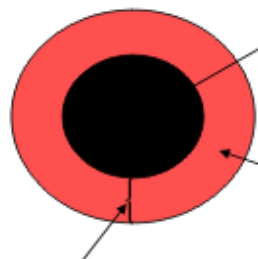
PENUMBRA CORE



trends in Neurosciences

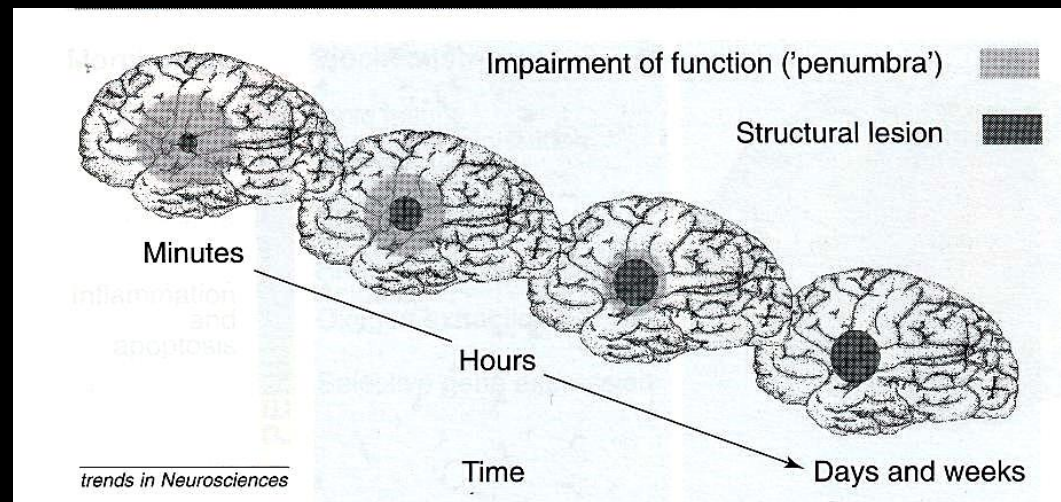
Ischemic Penumbra

DWI / PWI Mismatch



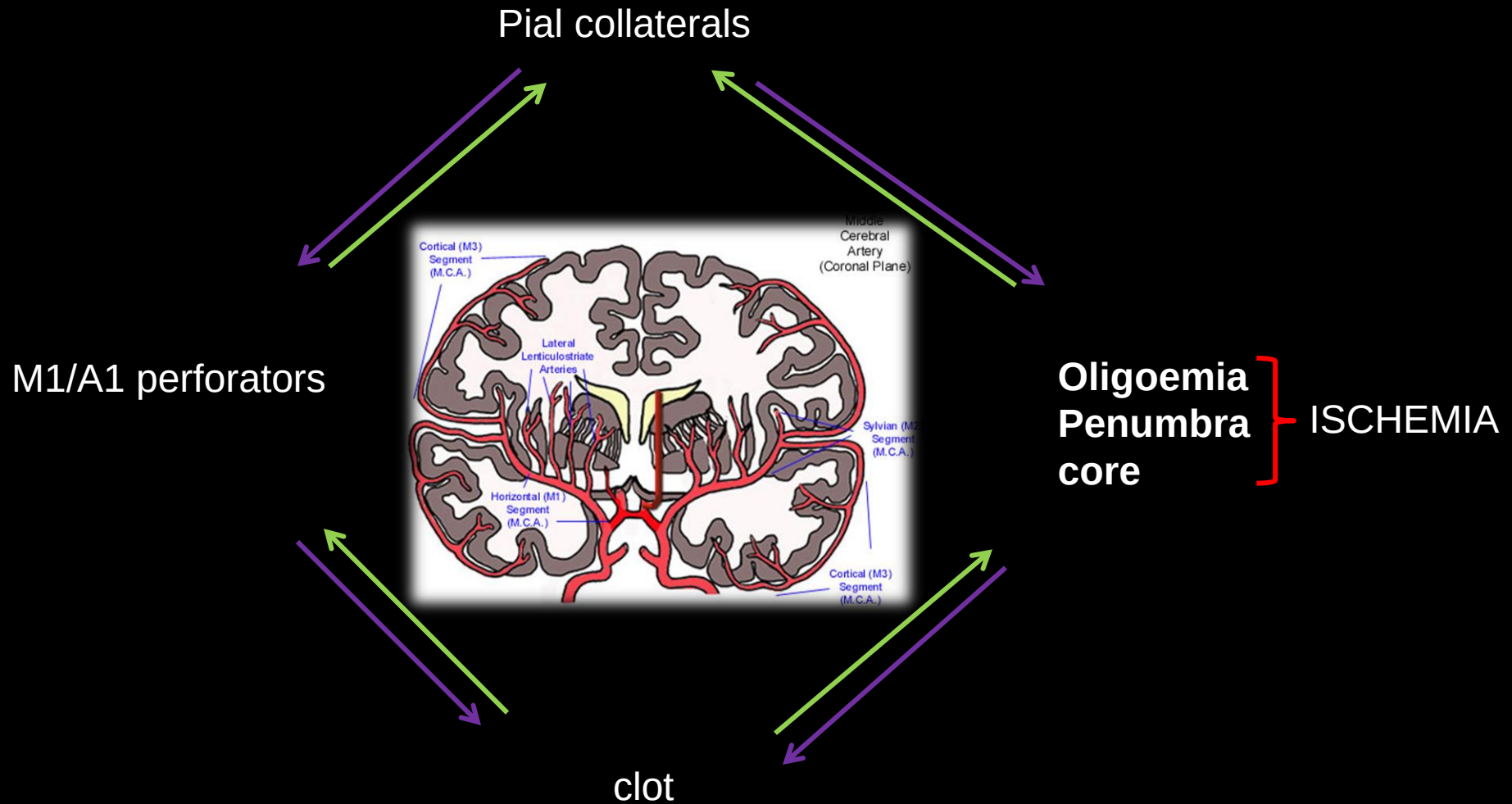
- Diffusion Abnormality
- CBF < 10 ml/100g/min
- Cytotoxic edema
- Irreversible ischemia

- Perfusion Abnormality
- CBF = 10-18 ml/100g/min
- Neuronal paralysis
- Reversible ischemia



trends in Neurosciences

THE BASIC INTERACTING COMPONENTS OF ACUTE NEOPALLIAL ISCHEMIA



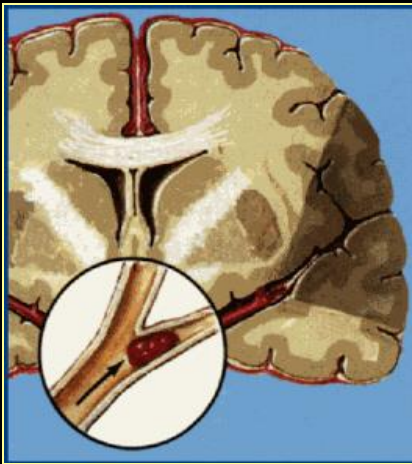
Meccanismo e Strategie della Riperfusione



SCOPO: valutare le differenti modalità operative di rimozione del trombo in caso di stroke iperacuto, meccanica e farmacologica da sole od in associazione, con i relativi tassi di ricanalizzazione nel breve e lungo periodo.

Riperfusione

- E' dimostrato che il rapido ripristino del flusso ematico cerebrale in caso di occlusione vascolare acuta può determinare il completo recupero della funzionalità del tessuto cerebrale



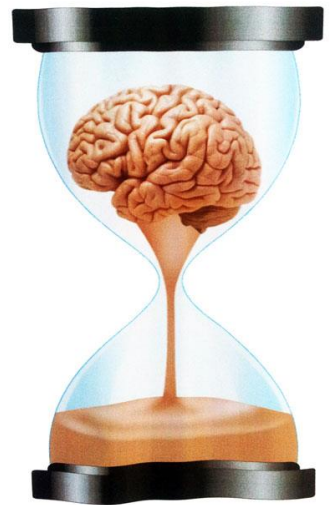
- La riperfusione del tessuto ischemico può avvenire attraverso 3 meccanismi:
- Ricanalizzazione spontanea
- Trombolisi farmacologica e/o meccanica
- Collaterali leptomeningei

A 15 anni dall'avvento delle prime terapie trombolitiche, numerosi studi e la pratica clinica hanno confermato il beneficio della riperfusione precoce

TIMING LEADS

- 4,5 – 6h trombolisi sistemica
- 6 – 8h trombolisi locoregionale
- 12h circolo vertebro-basilare

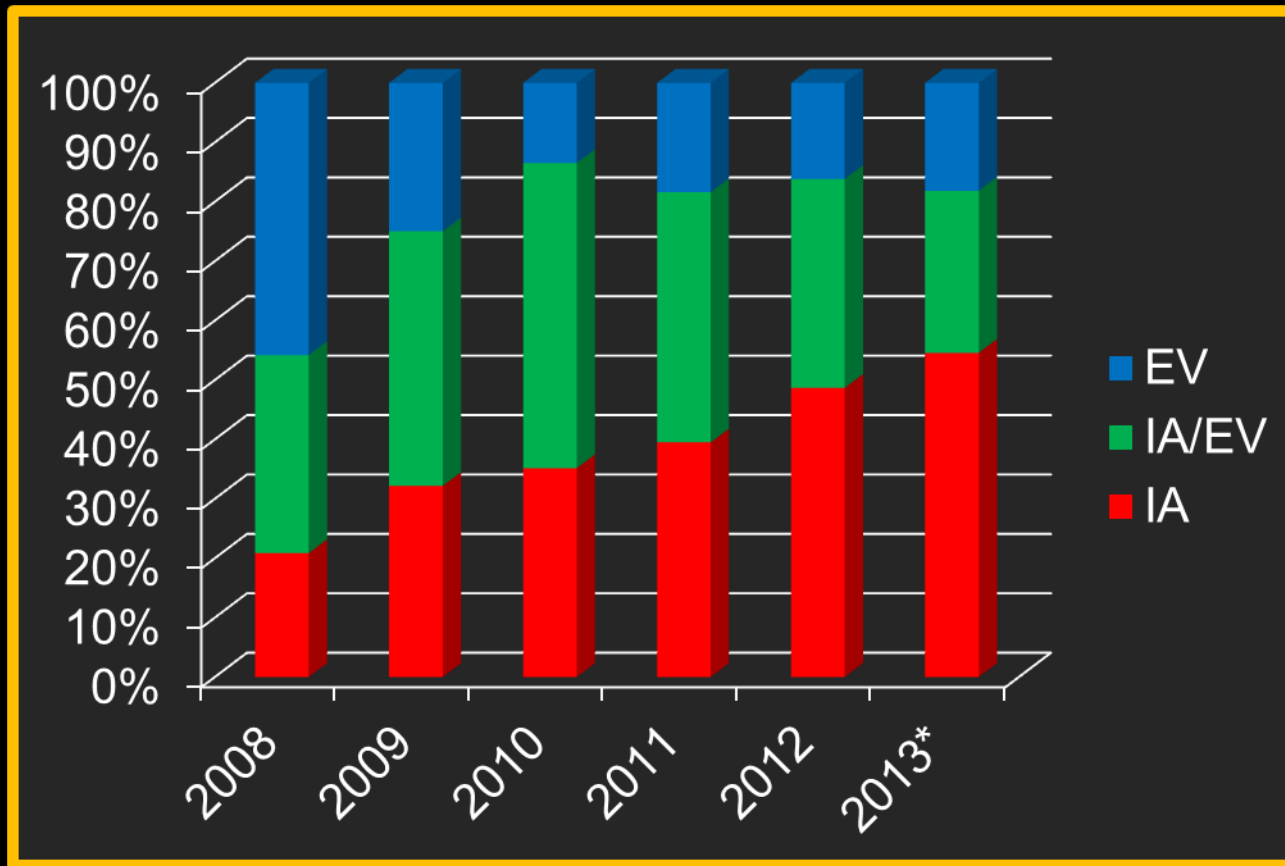
In each minute, 1.9 million neurons, 14 billion synapses, and 12 km (7.5 miles) of myelinated fibers are destroyed.



Stroke : Time lost is brain lost

TROMBOLISI ASL TERAMO

RADIOLOGIA VASCOLARE INTERVENTISTICA



METODO:

245 pazienti consecutivi stroke iperacuto (età media 42,5 anni, da aprile 2009 a marzo 2016),

on-set inferiore alle 6 ore per il circolo anteriore e 12 per il circolo vertebro-basilare,

sono stati sottoposti a trattamento endovascolare multimodale incluso, tromboaspirazione, trombolisi meccanica o farmacologica intravenosa o intra-arteriosa, o PTA/posizionamento di stent permanente in due differenti centri.

Imaging basato su TC multimodale perfusionale/angio ed Angiografia.

REPORT MULTICENTRICO

- Rivascolarizzazione precoce nelle occlusioni maggiori intracraniche.
- Due centri (245 pts)
- CT, CTA-CTP selected (2458 pts)
- Analisi multivariata
- Studio prospettico
- Preliminare

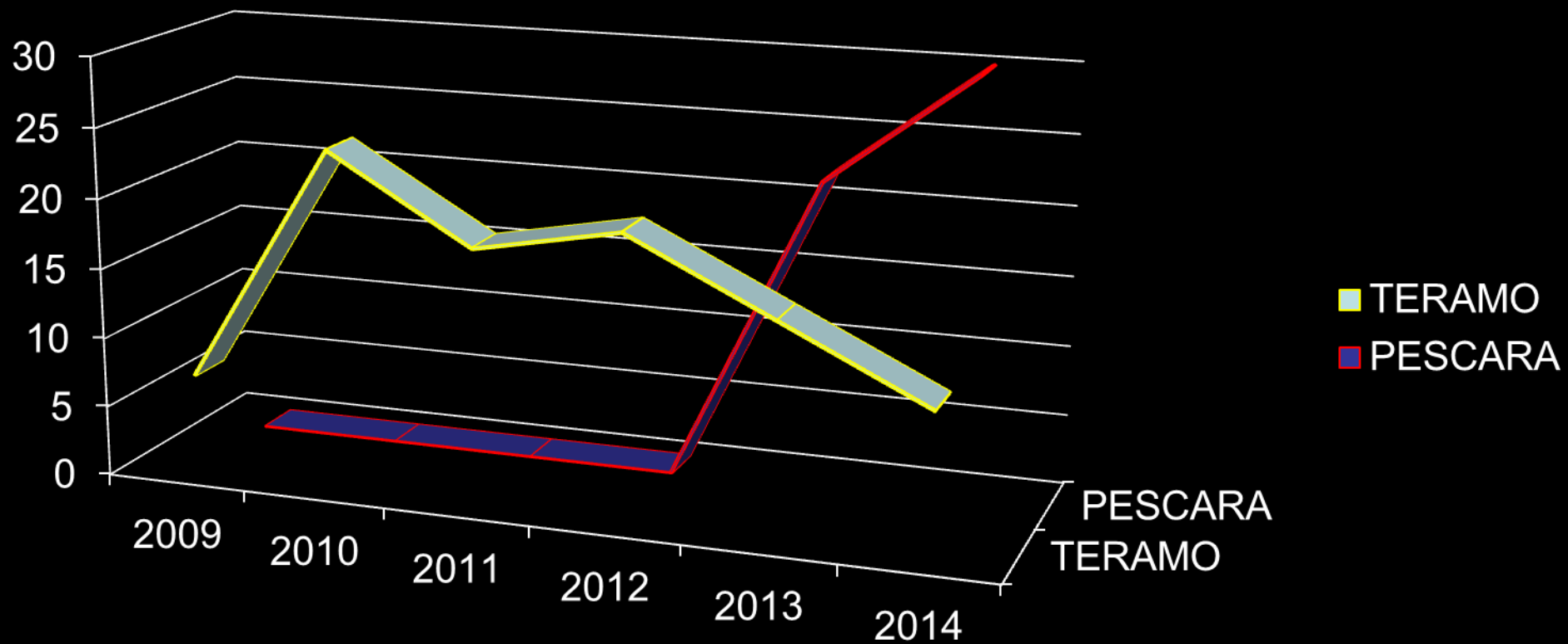


PESCARA



TERAMO

ANALISI MULTICENTRICA



	2009	2010	2011	2012	2013	2014	2015-16
TERAMO	7	24	18	20	15	10	109
PESCARA	0	0	0	0	22	30	52

Hub-spoke

Centralizzazione sistema reticolare-microreticolare



MATERIALE E METODO

Per la fibrinolisi **farmacologica** abbiamo usato attivatore tissutale del plasminogeno - recombinant tissue plasminogen activator - r-tPA,

Per la trombolisi **meccanica** sono stati utilizzati diversi sistemi di embolectomia meccanica quali stent completamente recuperabili , sistemi di trombo aspirazione o microguide.

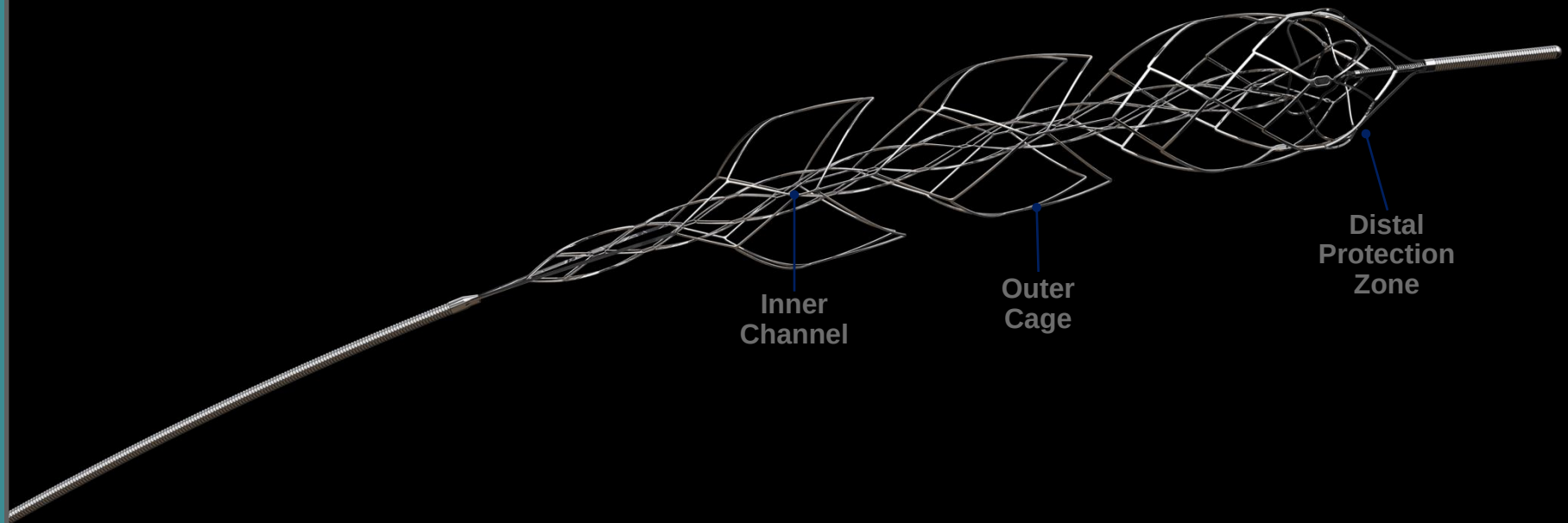
Understanding the Challenge



LA RETE DELL'EMERGENZA STROKE:
MODELLI ORGANIZZATIVI A CONFRONTO – NAPOLI
2016

emboTrap[®]

- Open design to **TRAP** inside
- Rapidly restore **FLOW** with minimal compression
- To **PROTECT** against embolization

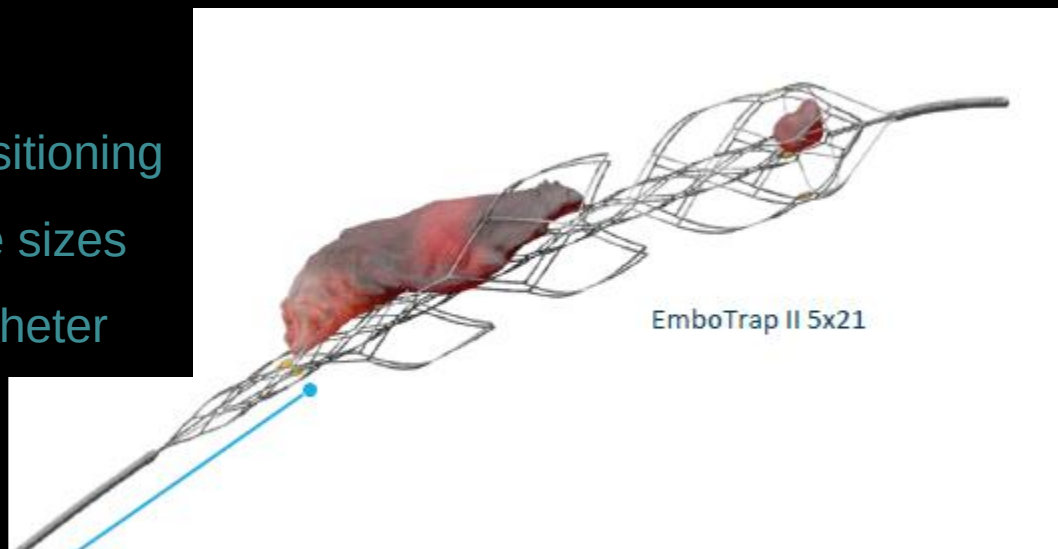
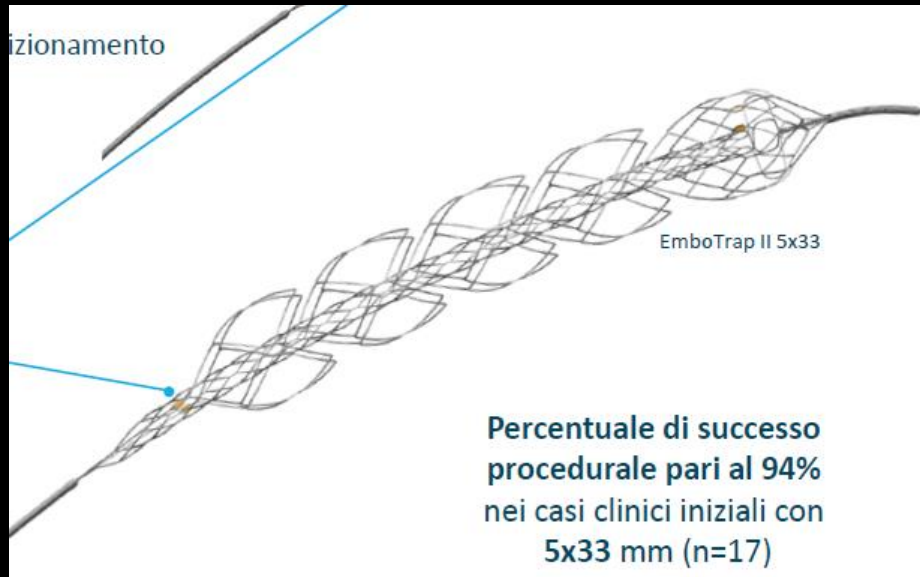


New!!

emboTrap® II

designed to
Compress Less, Trap more

- Built on Embotrap platform
- **Enhanced visibility** to aid positioning
- **5x21mm and 5x33mm** device sizes
- Deliverable in **0.021"** microcatheter



Strategie terapeutiche per lo stroke acuto

RIPERFUSIONE (approccio vascolare)

(↑ Flusso ematico)

- ↓ Edema tissutale
- Trombolisi
- Angioplastica
- Endarterectomia
- Emodiluizione

NEUROPROTEZIONE (approccio parenchimale)

(↓ vulnerabilità del tessuto)

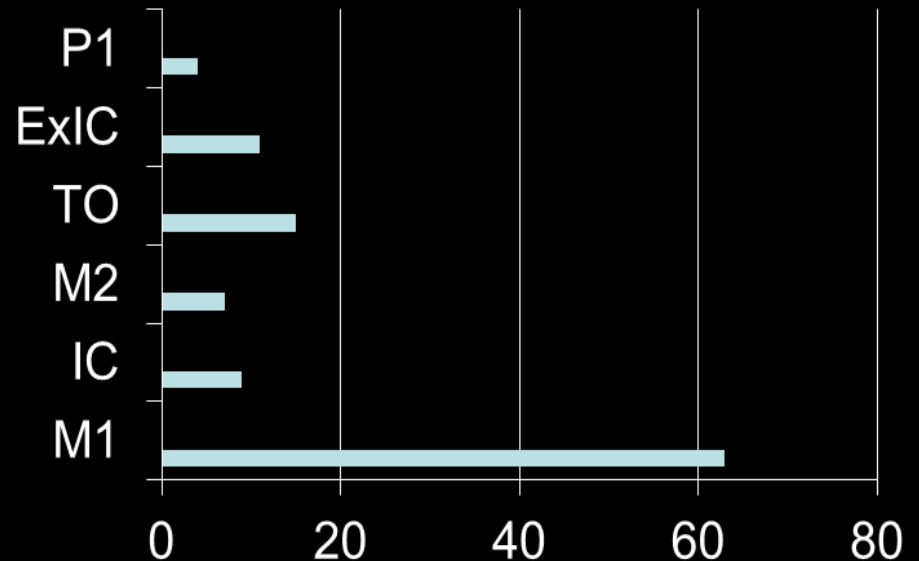
- Eccitotossicità ($[Ca^{2+}]_i$, $[Zn^{2+}]_i$?)
- Radicali liberi
- Infiammazione
- Apoptosi
-

RISULTATI

Il punteggio NIHSS medio alla presentazione è stato di 23 (range 3-36).

Le sedi di occlusione arteriosa sono state:

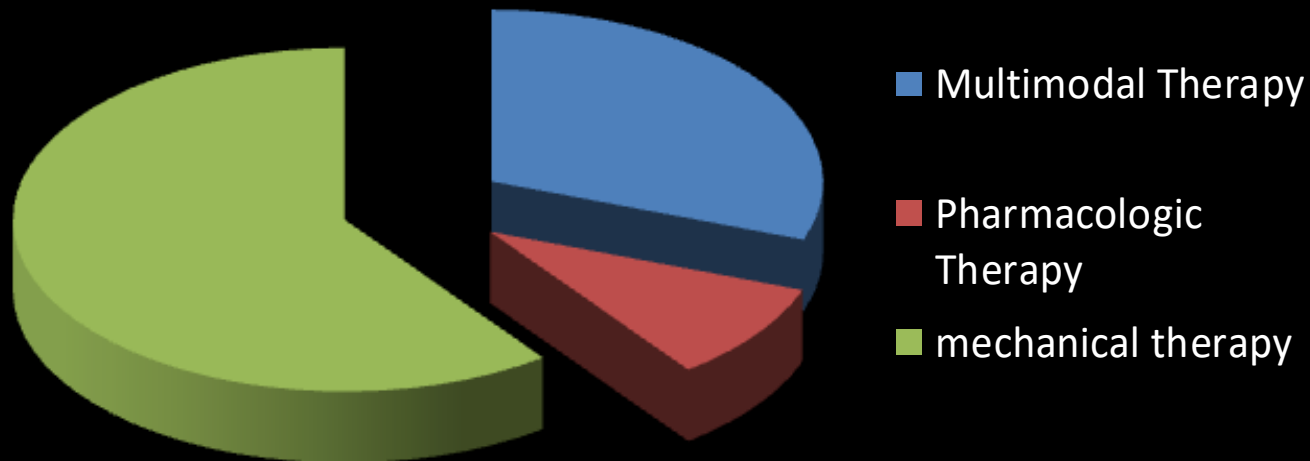
M1 135/245 pazienti (55.10%), bifurcazione carotidea 18/245 (7.34%), M2 - 20/245 (8.16%), tandem occlusion 10/245 (4.08%), occlusioni isolate della carotide interna nel tratto extracranico 15/245 (6.12%), P1 - 12/245 (4,89%), arteria basilare 35/245 (14.28%).



RISULTATI

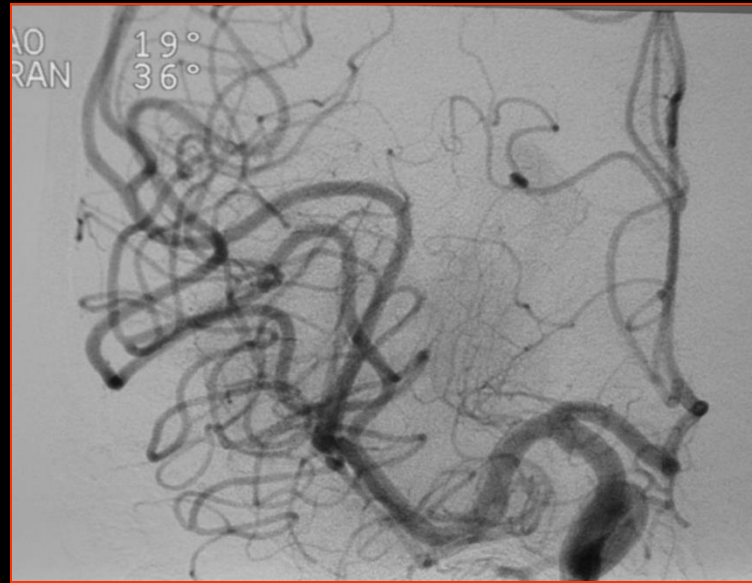
Azioni terapeutiche:

- embolectomia meccanica 234/245 (95.51%) con tromboaspirazione 215/245 (87.75%)
- trombolisi con attivatore tissutale del plasminogeno rtPA 25/245 (10.20%),
- stent permanente 8/245 (3,26%).



RISULTATI

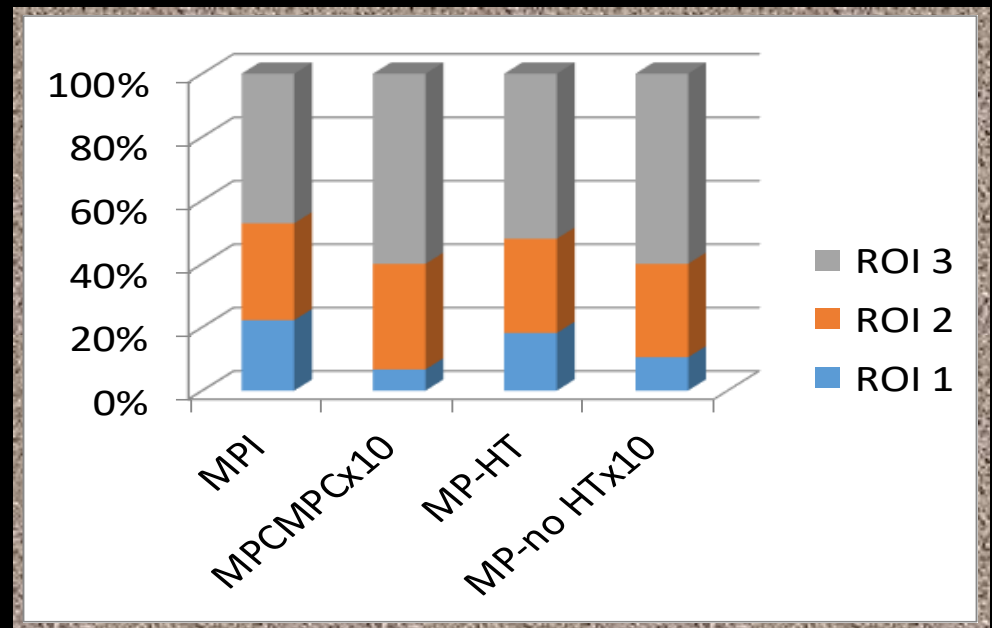
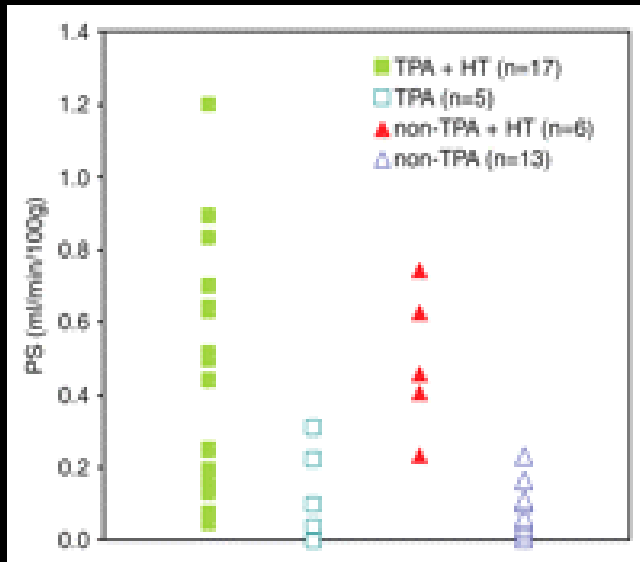
- In 233/245 pazienti si è ottenuta ricanalizzazione efficace TICI IIb/III, con alti tassi di ricanalizzazione nelle embolectomie meccaniche e trombo aspirazione 234/245 (95.51%) vs 12/25 (46.15%) della sola terapia farmacologica sistemica $p < 0.005$.



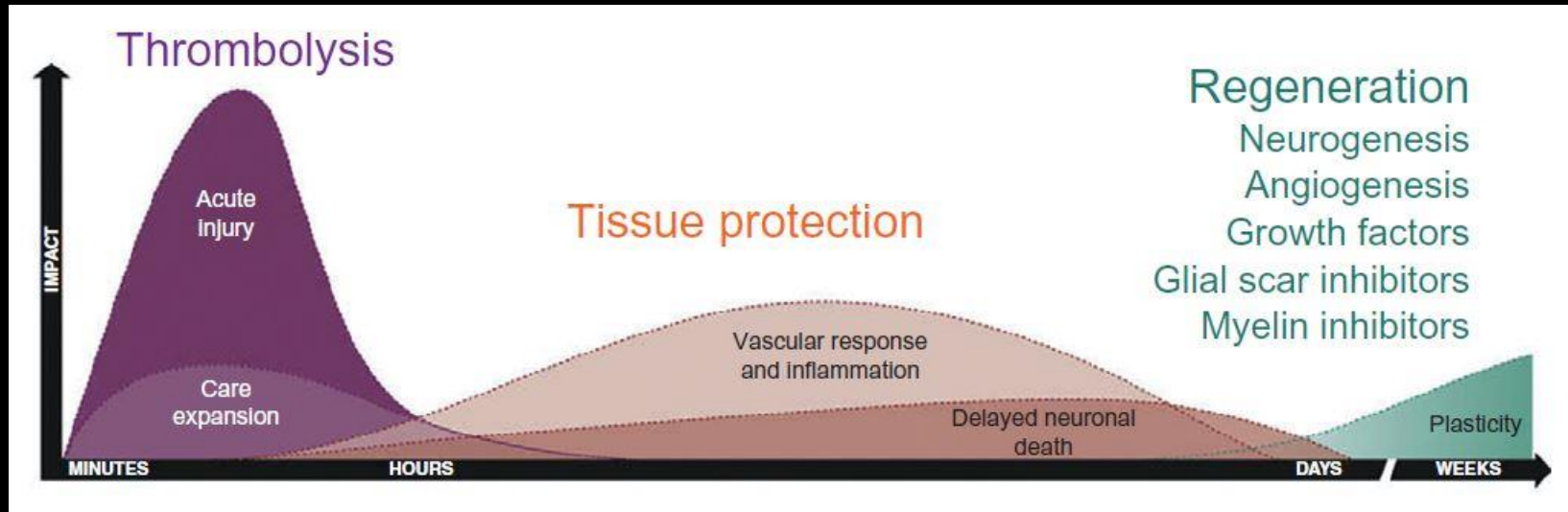
RISULTATI

La trasformazione emorragica a basso volume si è verificata in 6/245 pazienti (2.44%) con spontanea risoluzione in 4 di essi e decesso in 2.

MP-HT ranged from 4.9 to 14 (mean: 8.5 ± 2.4) versus MP No-HT of 0-5.7 (mean: 3.8 ± 2.0 ; $P < .0001$).



Obiettivi



In patients experiencing a typical large vessel acute ischemic stroke, 120 million neurons, 830 billion synapses, and 714 km (447 miles) of myelinated fibers are lost each hour.

Time Is Brain—Quantified

[Jeffrey L. Saver](#), MD Stroke. 2006; 37: 263-266

From the Stroke Center and Department of Neurology, University of California, Los Angeles

Correspondence to Jeffrey L. Saver, MD, UCLA Stroke Center, 710 Westwood Plaza, Los Angeles, CA 90095. E-mail jsaver@ucla.edu

Obiettivi terapeutici

- Buon outcome funzionale a 6 mesi (mRS 0-2) si è ottenuto 188/245 pazienti (76.73%) mentre la mortalità procedurale è stata del 4.48% (11/245).

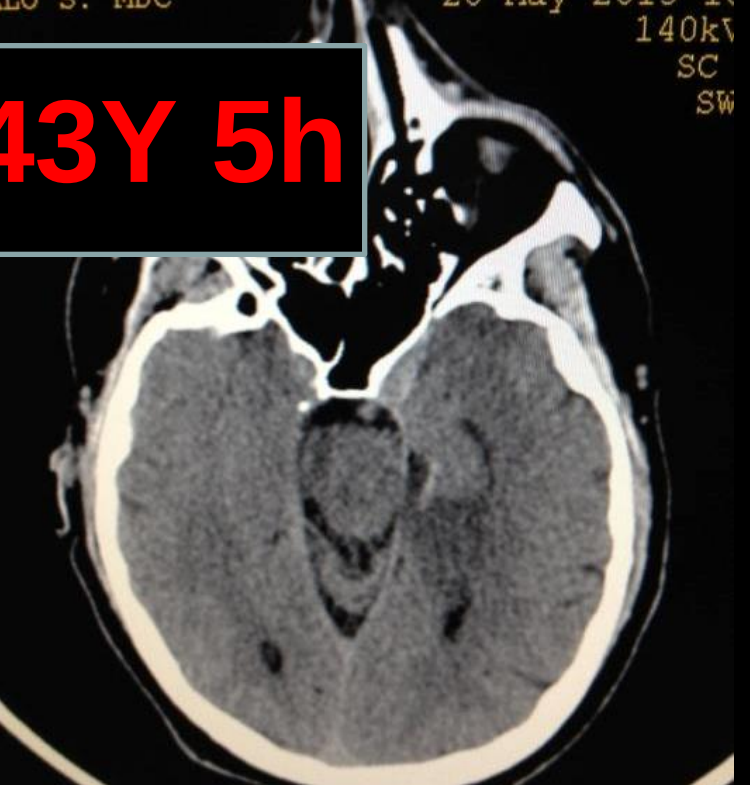
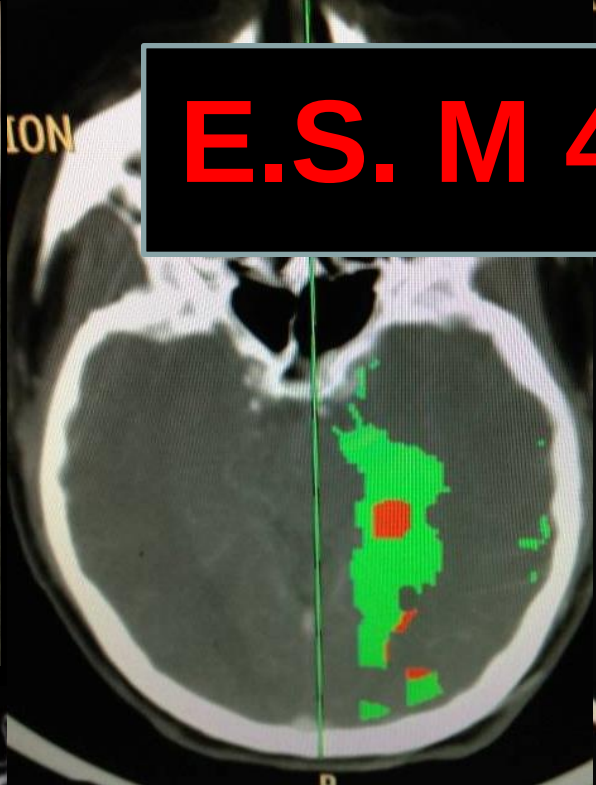


COSA FARE?





E.S. M 43Y 5h



M/44y
CEFALO S. MDC
m





- **ENDOTHELIAL DENUATION** 73%
- **EDEMA OF THE TUNICA MEDIA** 52%
- **MURAL THROMBUS** 5%

Arterial wall response (injury) to mechanical thrombectomy devices (Gory B et al 2013)

(C.A.) M, 65 aa

Emiplegia sinistra, deviazione
sguardo verso sinistra, paresi
facciale sinistra

NHISS: 20

TC CRANIO, TC PERFUSIONALE, ANGIOTC VASI
COLLO e INTRACRANICO

Penombra M1 destra con core ischemico

AGF trombolisi meccanica M1 destra

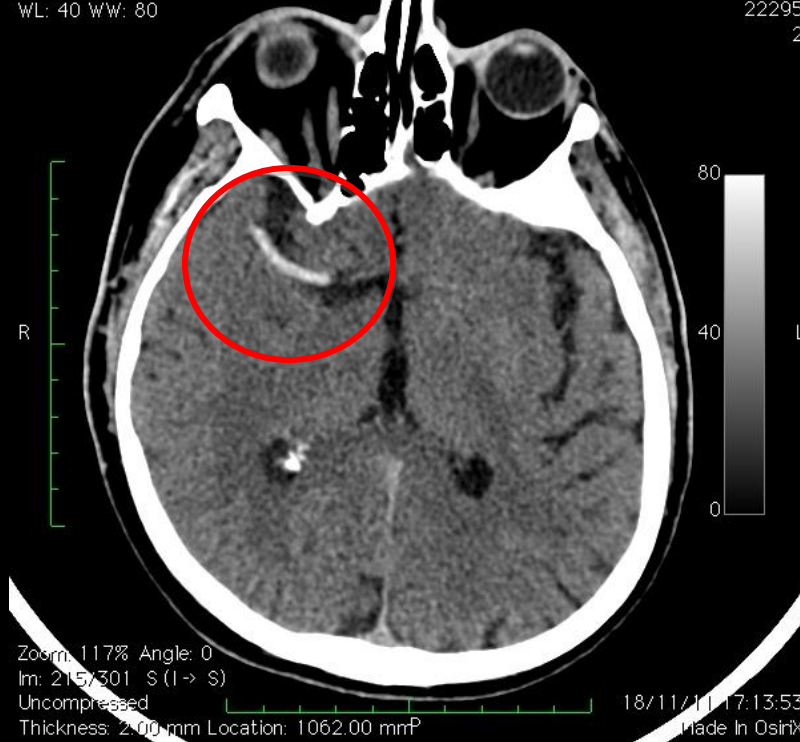
TC CRANIO (controllo dopo procedura) focolaio
emorragico

TC CRANIO (24 h)

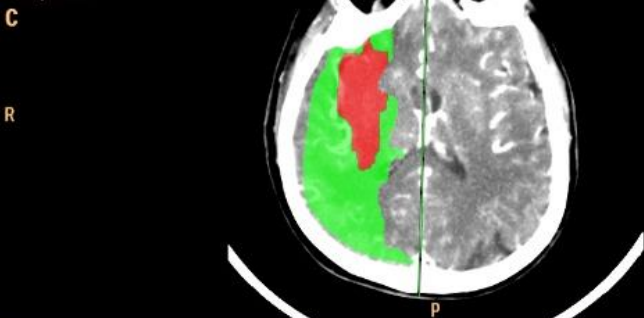
RM CRANIO, DIFFUSIONE E PERFUSIONE (10 gg)

Image size: 512 x 512
View size: 601 x 601
WL: 40 WW: 80

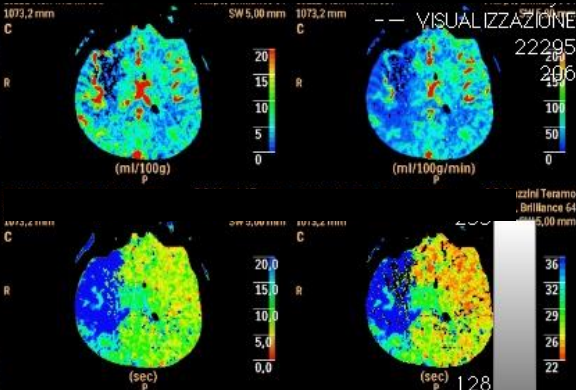
CENTRALE ANTONIO 19222 F.O. 65 y /
ICTUS CEREBR. (Stroke)-EMERGENZE — CRANIO
22295
2



15227 P.O. ATIR-H/65V
View size 1050 X 601
0-8 PERFUSIONE ENCEF BRAINPERFUSION
WL: 127 WW: 255
1073,2 mm



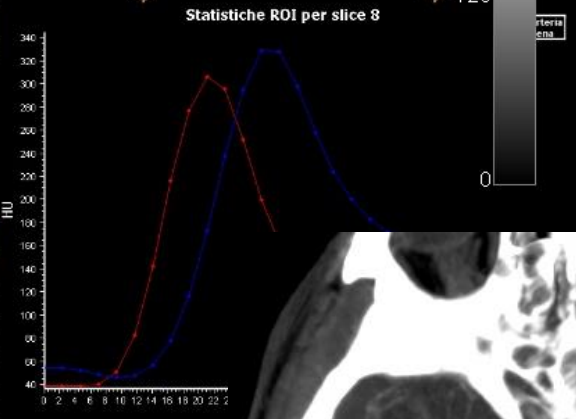
Philips, Brilliance 64
18 Nov, 2011 17.14.19.00
80 kV
FOV 220,0 mm
SW 5,00 mm
Z 1,00



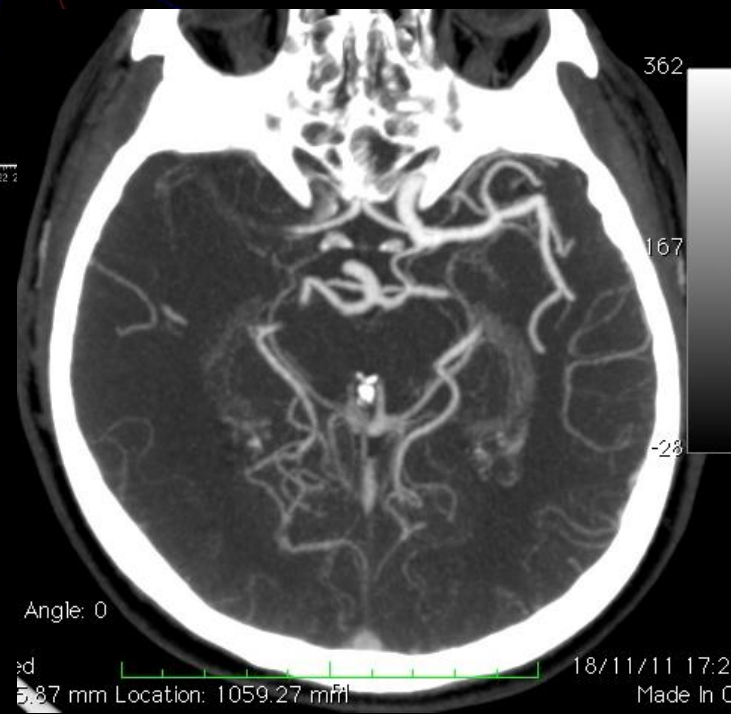
Statistiche ROI per slice 8				
N° ROI	CBF (ml/100 g)	CBV (ml/100 g/min)	MTT	TTP
1	995,3	7,9	11,9,9	1,1
2	1123,3	9,1	0,0	0,0
3	2150,6	17,2	0,0	0,0
4	3002,1	22,0	0,0	0,0
5	3212,6	22,4	223,0	1,6
6	3265,0	22,6	479,6	3,3
7	3366,2	22,7	614,5	4,1
8	3135,6	21,7	1137,9	9,0
9	20150,7	16,9	2636,5	2,5

MTT aumentata Statistiche area					
Numero di slice	CBF normale (mm^2)	(%)	CBF ridotta (mm^2)	(%)	Indice
1	995,3	7,9	11,9,9	1,1	0,89
2	1123,3	9,1	0,0	0,0	1,00
3	2150,6	17,2	0,0	0,0	1,00
4	3002,1	22,0	0,0	0,0	1,00
5	3212,6	22,4	223,0	1,6	0,93
6	3265,0	22,6	479,6	3,3	0,87
7	3366,2	22,7	614,5	4,1	0,85
8	3135,6	21,7	1137,9	9,0	0,73
9	20150,7	16,9	2636,5	2,5	0,60

Zoom: 63% Angle: 0
Im: 1/4
Uncompressed
Position: HFS



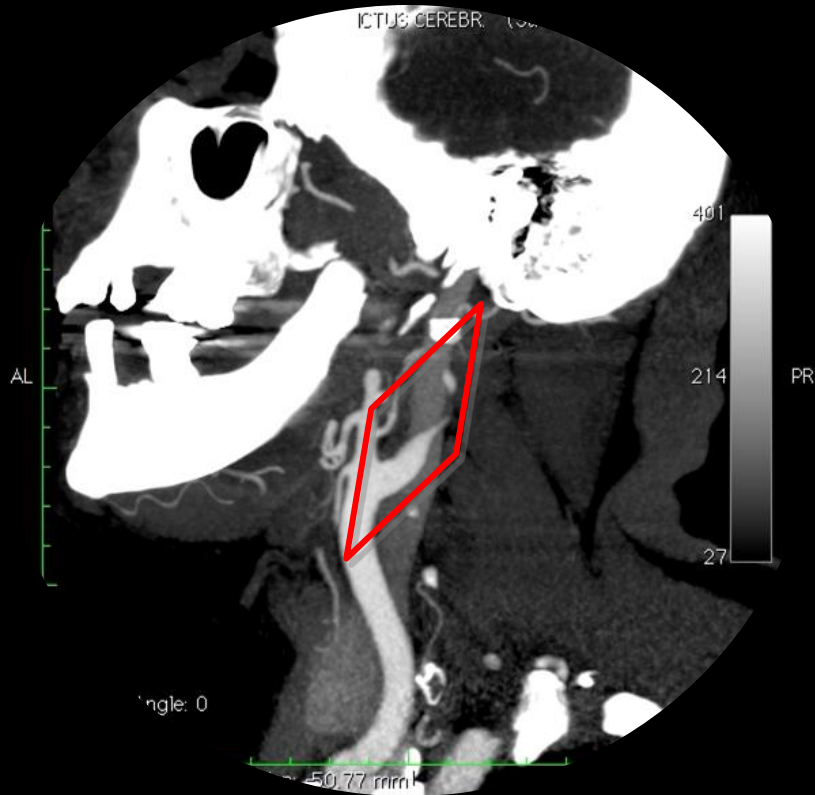
ANGIOTAC



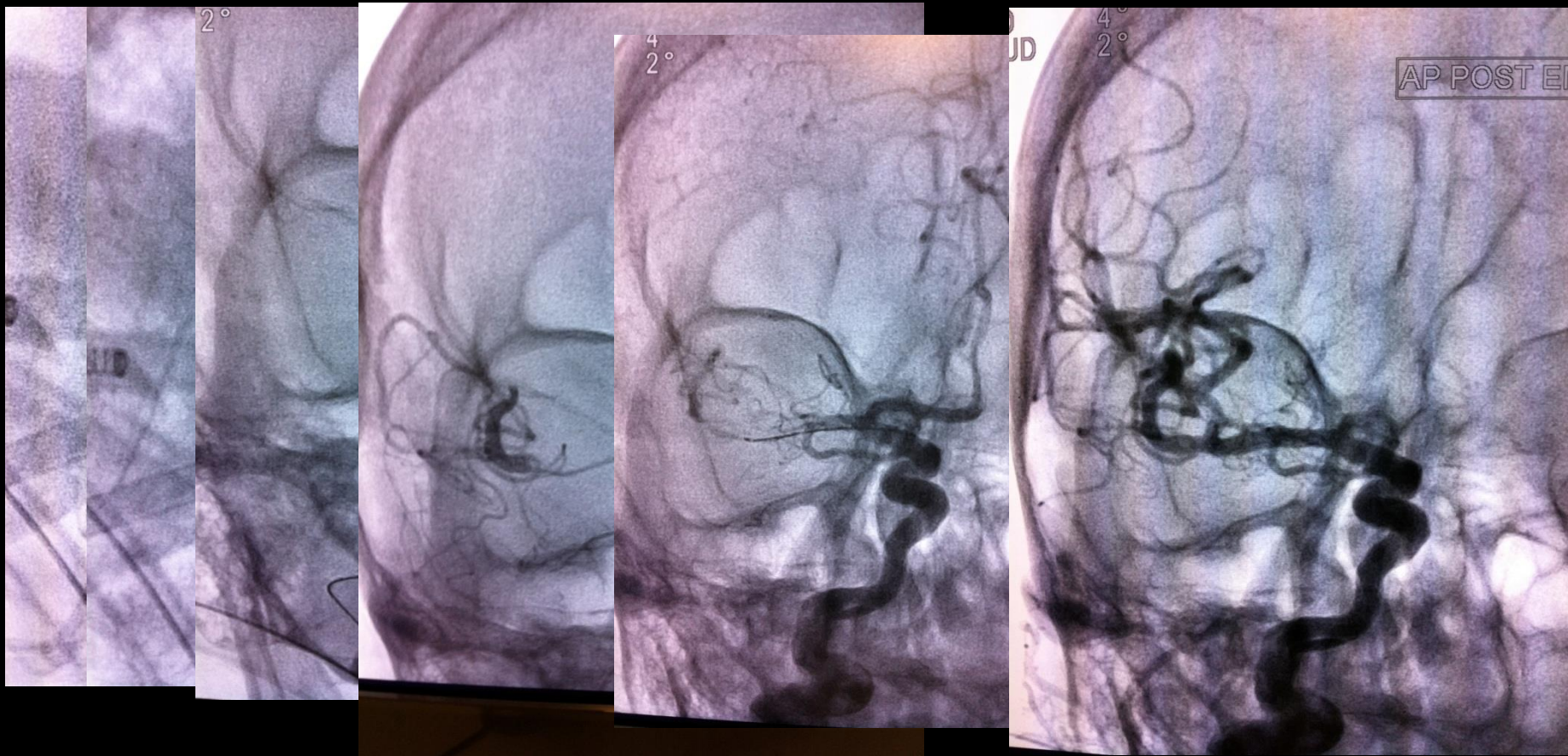
TC PERFUSIONALE
VERDE: PENOMBRA
ROSSO: CORE ISCHEMICO

Angle: 0
5.87 mm Location: 1059.27 mmHl
18/11/11 17:22:4
Made In Osir

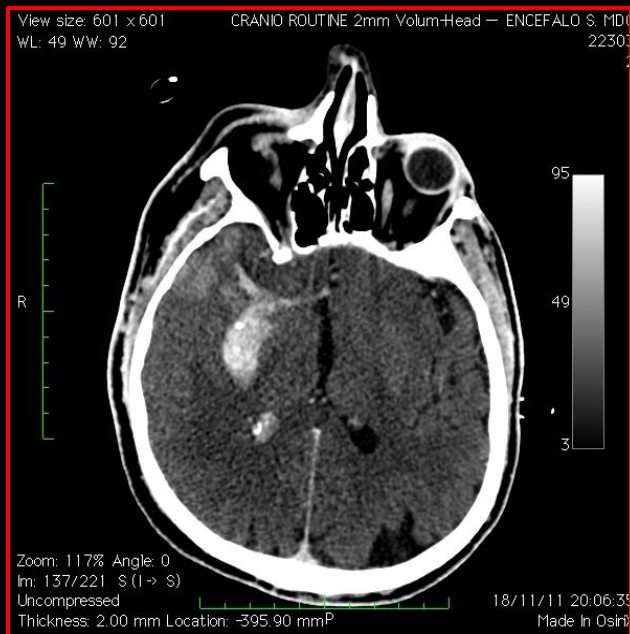
OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO



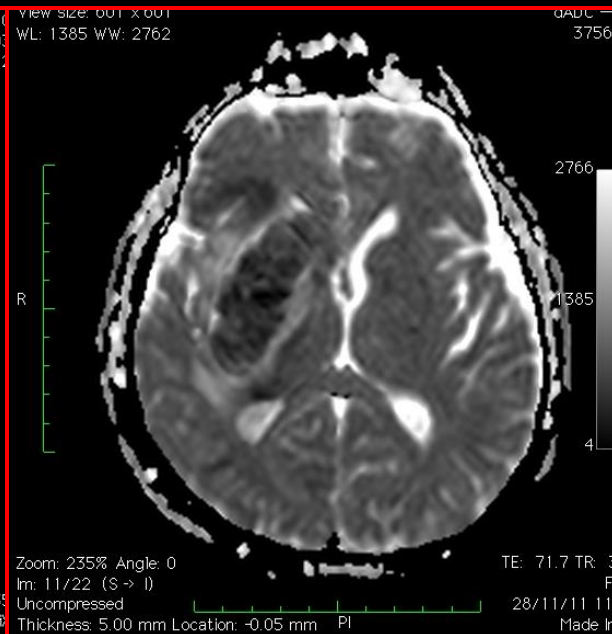
OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO - PROCEDURA



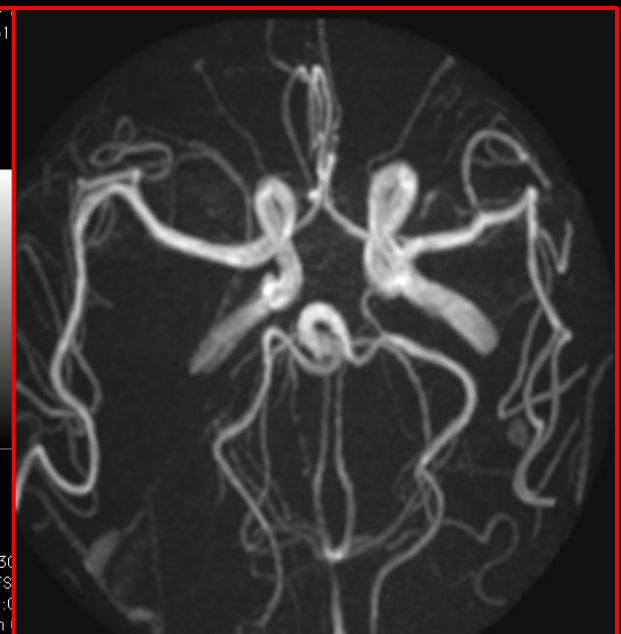
OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO - CONTROLLO



TAC



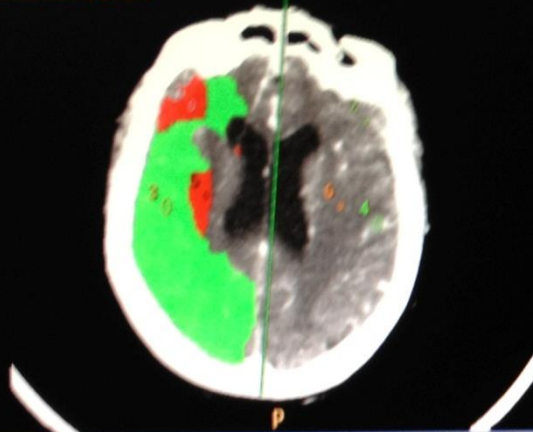
RM- DIFFUSIONE



ANGIORM

A.A. F 73Y 5h 30min

8254 F/TZY
6 PERFUSIONE ENCEF BRAINPERFUSION
17,9 mm



Philips, Brilliance 64
30 Aug, 2013 9.40.30.00
80 kV
FOV 220,0 mm
SW 5,00 mm
Z 1,00

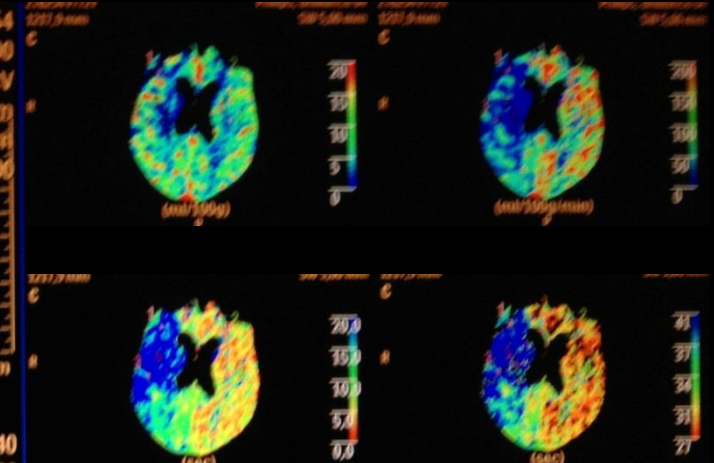
C 40
W 80

Statistiche ROI per slice 6

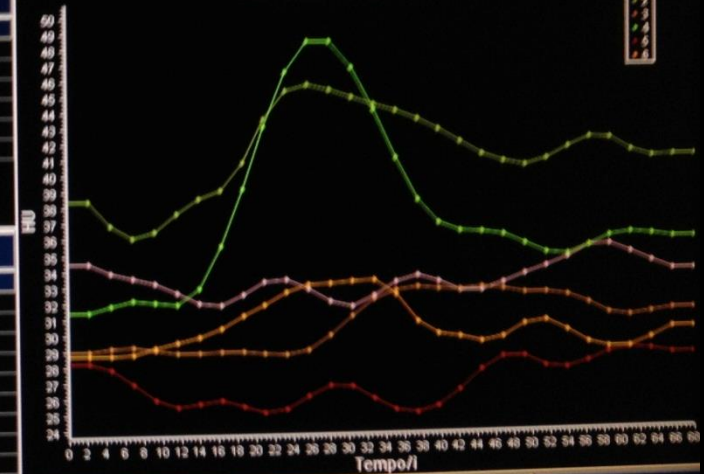
N° ROI	CBV (ml/100 g)	CBV (ml/100 g/min)	MTT	TTP
1	0,47	0,99	29,54	57,40
2	8,04	149,49	3,23	26,91
3	4,69	15,17	18,56	39,48
4	13,40	315,43	2,55	27,11
5	0,30	0,53	34,09	62,54
6	3,54	41,74	5,09	30,02

MTT aumentata Statistiche area

Numero di slice	CBV normale (mm ²)	(%)	CBV ridotto (mm ²)	(%)	Indice
1	3008,8	31,5	11,1	0,1	1,00
2	2939,3	30,5	0,0	0,0	1,00
3	3013,2	30,2	127,8	1,3	0,96
4	3240,6	32,4	249,6	2,5	0,93
5	2879,5	29,2	375,2	3,8	0,88
6	3091,5	31,4	470,4	4,8	0,87
7	3335,2	33,4	65,7	0,7	0,98
8	3468,1	33,5	0,0	0,0	1,00
		31,5	1299,8	1,6	0,95

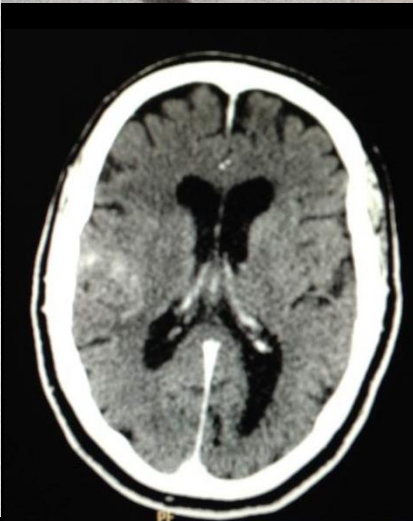
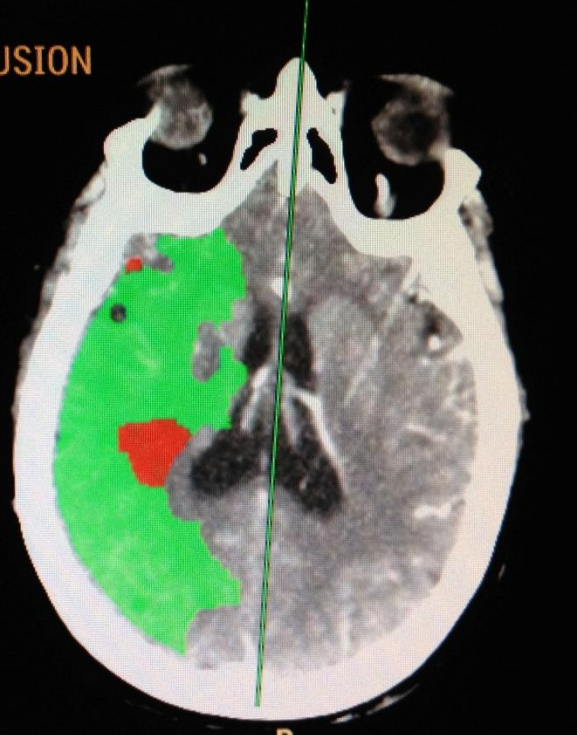


Statistiche ROI per slice 6



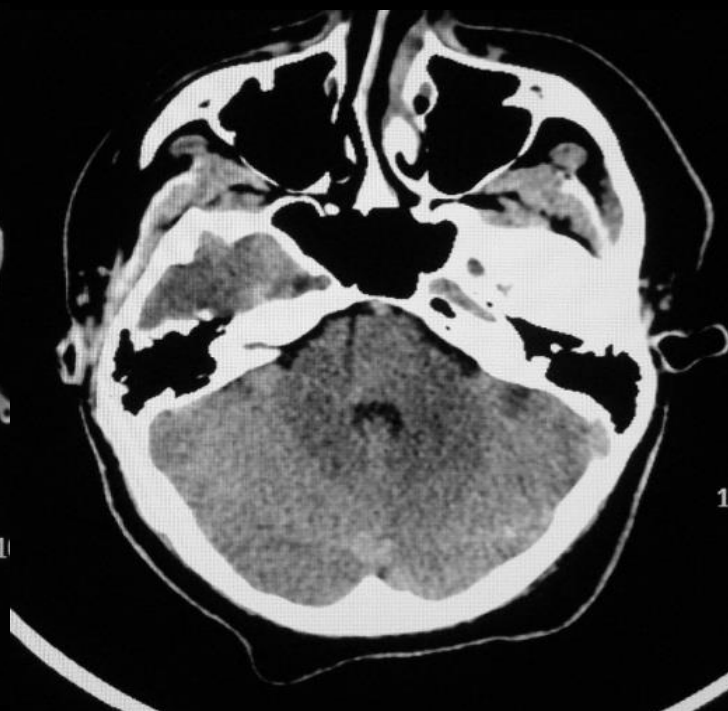
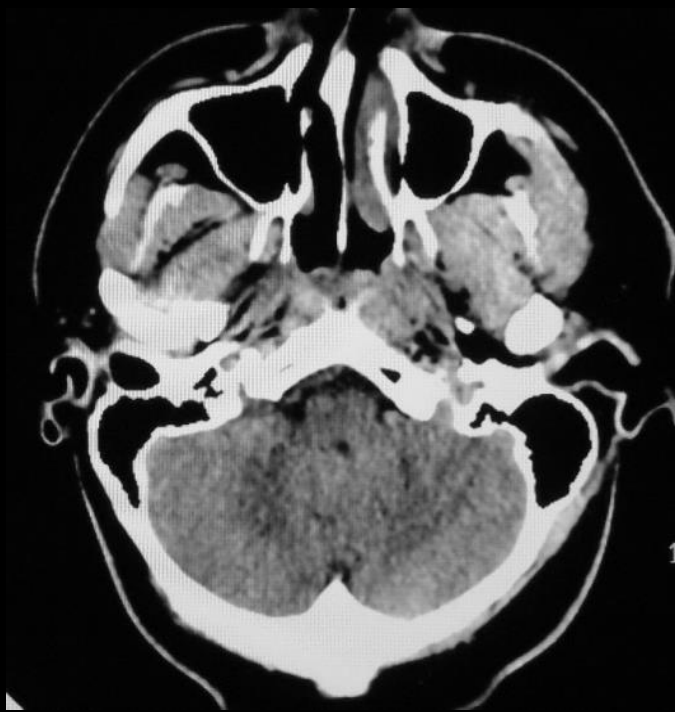
NIHSS 15

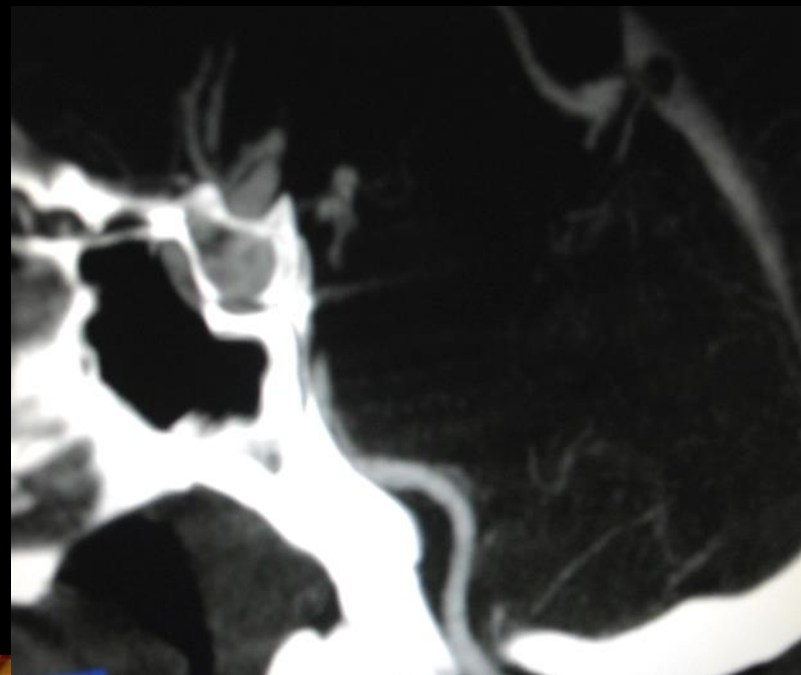
RFUSION



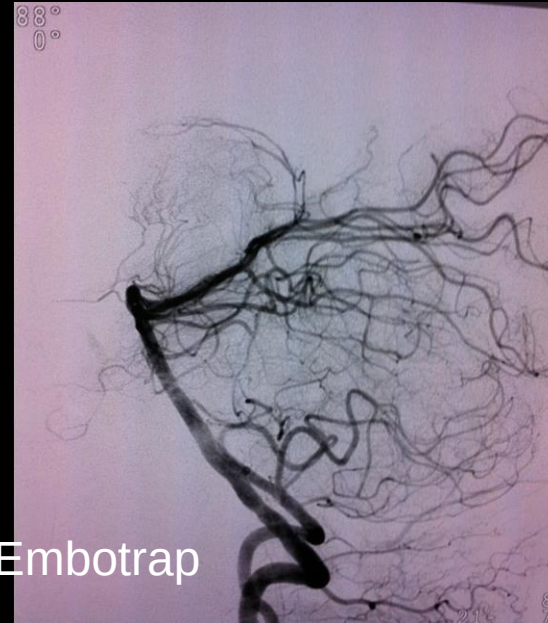
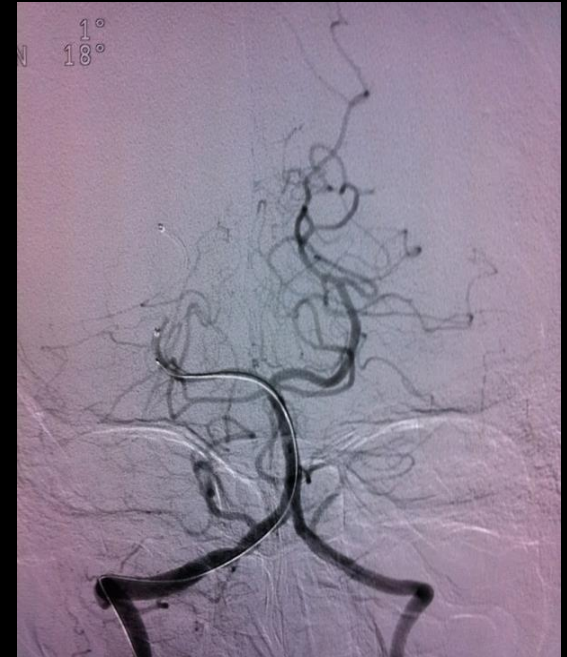
1 passaggio Embotrap

C.A. M 19 Y
Onset 4,5h
Atassia
Vertigo
NIHSS 18





21:00 intra arterial Embolectomy + Actilyse



1 Passagio Embotrap



1



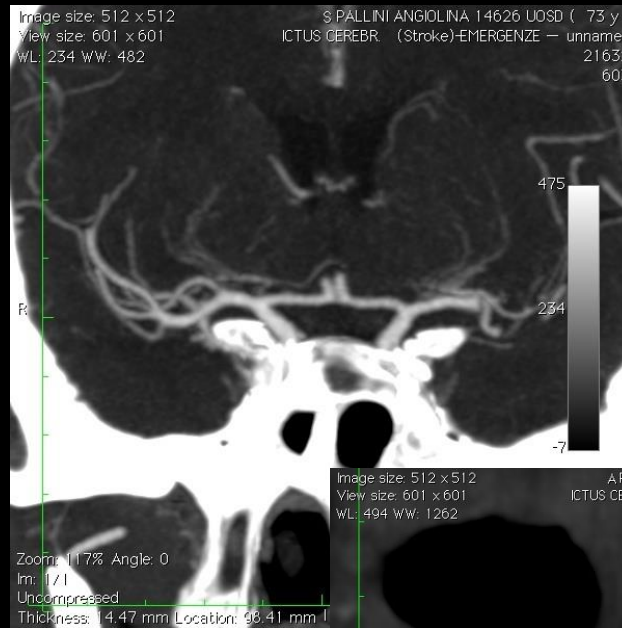
SW 2,02 ml
Z 1,1

10 cm



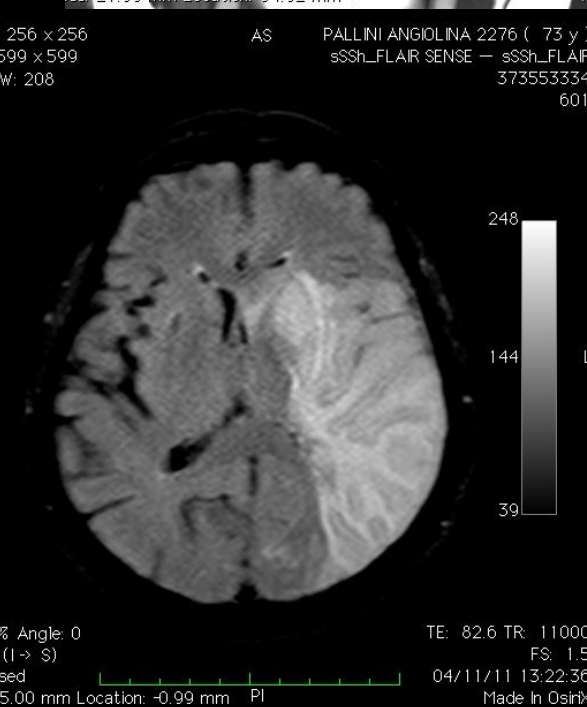
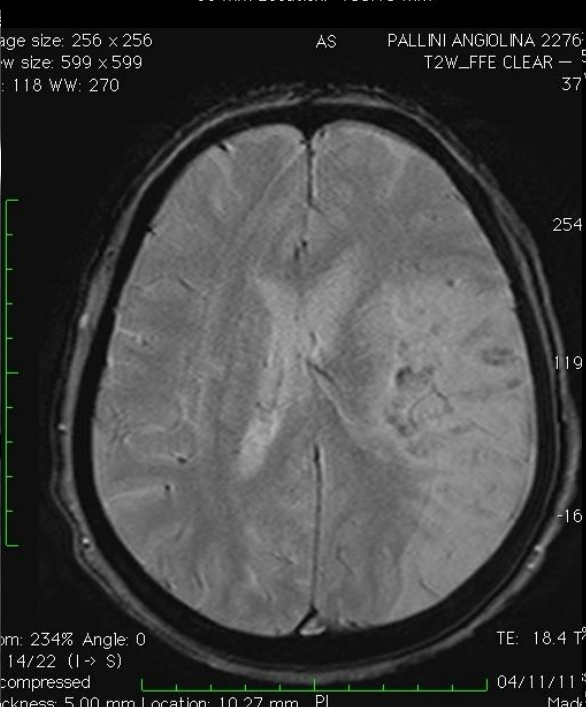
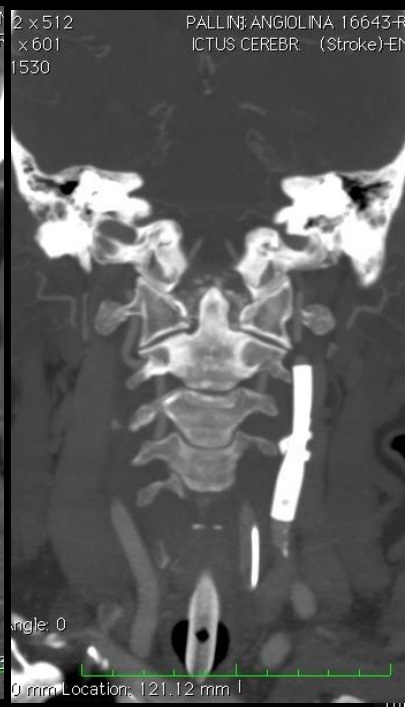
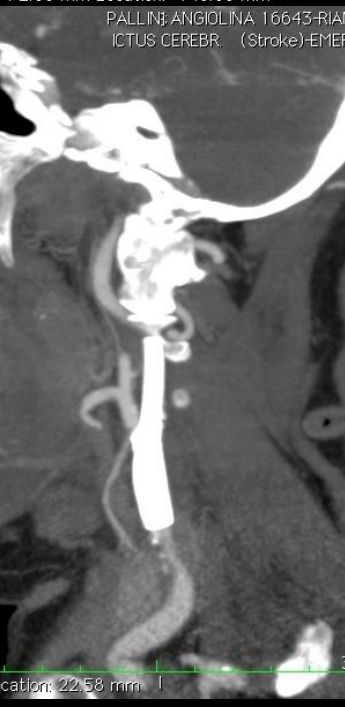
10 cm

(P.A.) F, 77 aa
4h onset, Right hemiplegia, afasia,
Diabetic, NIHSS 21



512 x 512
601 x 601
W: 80

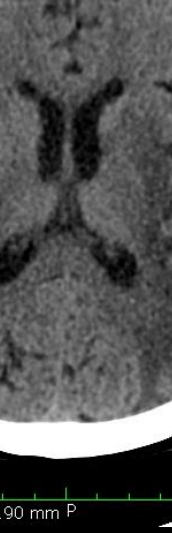
PALLINI ANGIOLINA 16643-RIANIMA
CRANIO ROUTINE 2mm Volum-Head — EN
601 x 601
#: 260



TE: 18.4 T% Angle: 0
(I → S)
04/11/11 sed
Mad: 5.00 mm Location: -0.99 mm PI

TE: 82.6 TR: 11000
FS: 1.5
04/11/11 13:22:36
Made in Osiri

PALLINI ANGIOLINA 15379 -NEUROL (73 y)
CRANIO ROUTINE 2mm Volum-Head — ENCEFALO S. MDC
22467
2

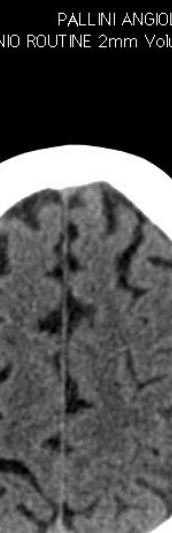


80
40
0

23/11/11 18:31:29
Made in Osirix

220.90 mm P

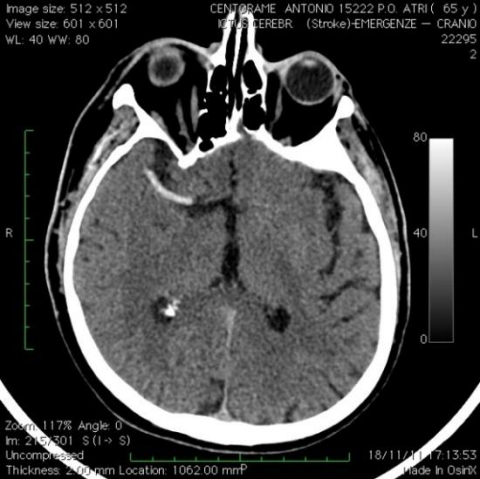
PALLINI ANGIOLINA 15379 -NEUROL (73 y)
CRANIO ROUTINE 2mm Volum-Head — ENCEFALO S. MDC
22467
2



81
42
3

23/11/11 18:31:30
Made in Osirix

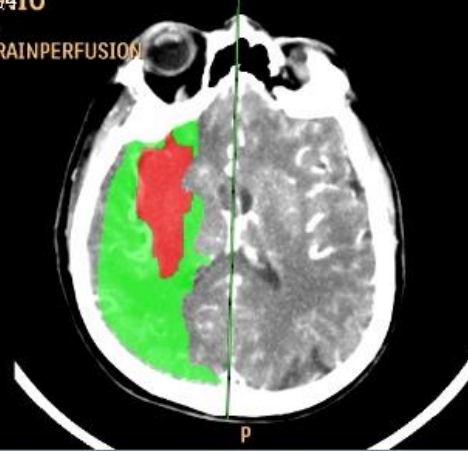
255.90 mm P



(C.A.) M, 65 y, onset 3h, Left Hemiplegia, visual loss and left deviation of ocular globes, NIHSS 25

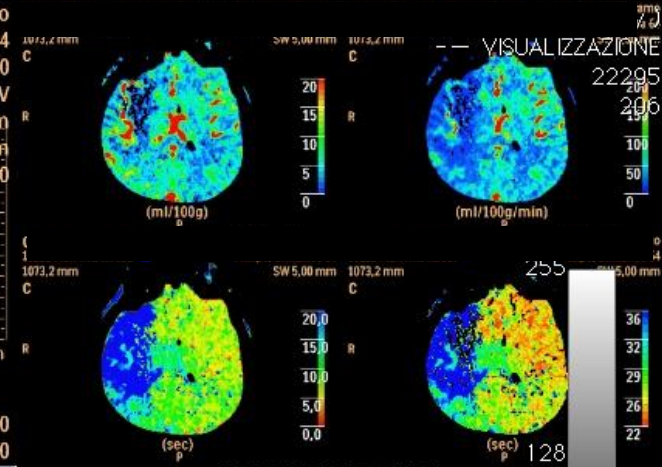


66 ANTIO
195410
465V
50 x 601
ENCEFALOPATIA
255



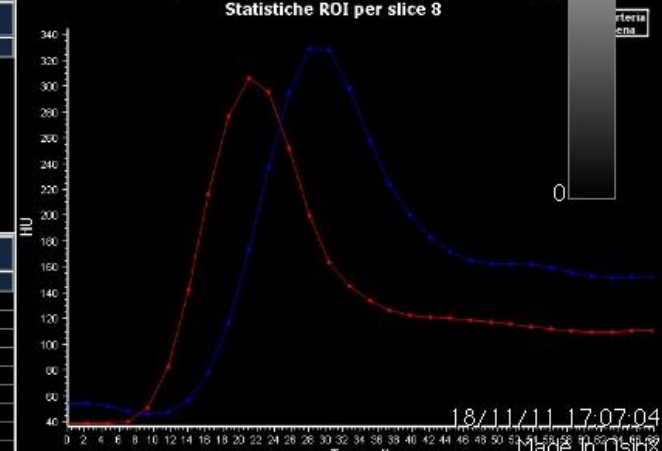
O.C. Mazzini Teramo
Philips, Brilliance 64
18 Nov, 2011 17.14.19.00

80 KV
FOV 220,0 mm
SW 5,00 mm
Z 1,00



Statistiche ROI per slice 8				
N° ROI	CBV (ml/100 g)	CBV (ml/100 g/min)	MTT	TTP
1	935,3	7,9	118,9	1,1
2	1123,3	9,1	0,0	0,0
3	2150,6	17,2	0,0	0,0
4	3002,1	22,9	0,0	0,0
5	3212,6	22,4	223,0	1,6
6	3265,0	22,6	478,6	3,3
7	3366,2	22,3	614,5	4,1
8	3195,6	21,3	1197,9	9,0
9	20150,7	16,9	2636,5	2,5

MTT aumentata Statistiche area					
Numero di slice	CBV normale (mm ³ /2)	(%)	CBV ridotto (mm ³ /2)	(%)	Indice
1	935,3	7,9	118,9	1,1	0,69
2	1123,3	9,1	0,0	0,0	1,00
3	2150,6	17,2	0,0	0,0	1,00
4	3002,1	22,9	0,0	0,0	1,00
5	3212,6	22,4	223,0	1,6	0,93
6	3265,0	22,6	478,6	3,3	0,67
7	3366,2	22,3	614,5	4,1	0,65
8	3195,6	21,3	1197,9	9,0	0,73
9	20150,7	16,9	2636,5	2,5	0,69



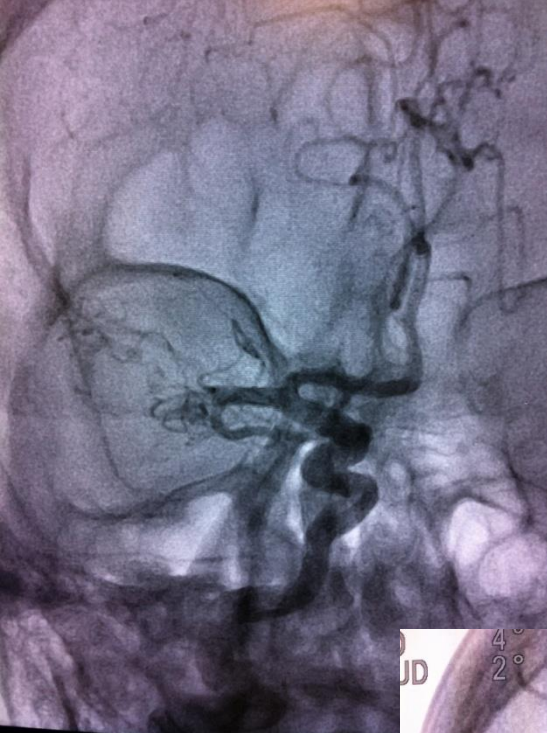
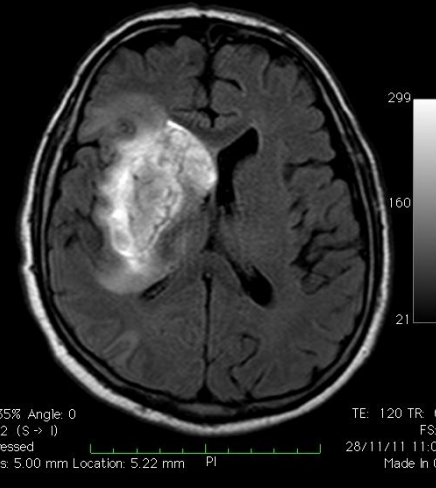
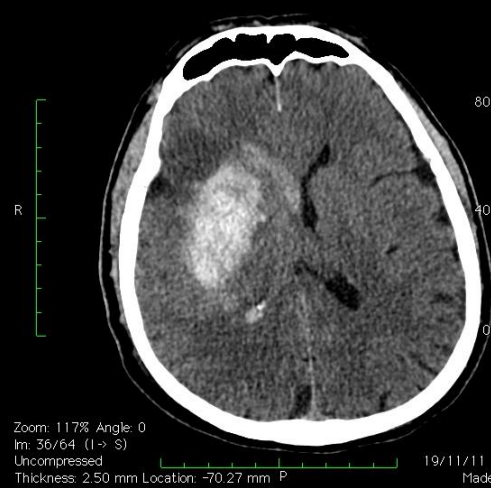


Image size: 512 x 512
View size: 601 x 601
WL: 40 WW: 80

AS CENTORAME ANTONIO 15242-ASL (65 y)
CRANIO SEQ. 2,5mm-Head - ENCEP View size: 256 x 256
2; WL: 160 WW: 278

AS CENTORAME ANTONIO 2854 (65 y)
T2W_FLAIR CLEAR - T2W_FLAIR
375619430
301



Zoom: 117% Angle: 0
Im: 36/64 (I -> S)
Uncompressed
Thickness: 2.50 mm Location: -70.27 mm P

Zoom: 235% Angle: 0
Im: 10/22 (S -> I)
Uncompressed
Thickness: 5.00 mm Location: 5.22 mm PI

TE: 120 TR: 6000
FS: 1.5
28/11/11 11:00:07
Made in Osirix

Image size: 320 x 320
View size: 601 x 601
WL: 105 WW: 184

AS CENTORAME ANTONIO 2854 (65 y)
T2W_FLAIR CLEAR - T2W_FLAIR
375619430
701

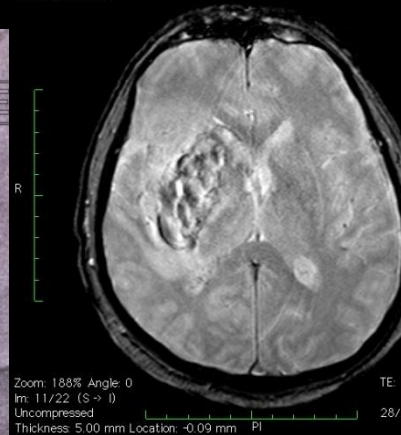


Image size: 320 x 320
View size: 601 x 601
WL: 163

TE: 18.4 TR: 572.45
FS: 1.5
28/11/11 11:05:10
Made in Osirix

AS CENTORAME ANTONIO 2854 (65 y)
MIP 3D_PCA SENSE - 3D_PCA
375619430
1102



mRs 3

Zoom: 188% Angle: 0
Im: 3/3
Uncompressed
Thickness: 180.00 mm Location: -14.36 mm PI

TE: 5.9 TR: 17.7
FS: 1.5
28/11/11 11:11:34
Made in Osirix

30/10/1946

Esami :

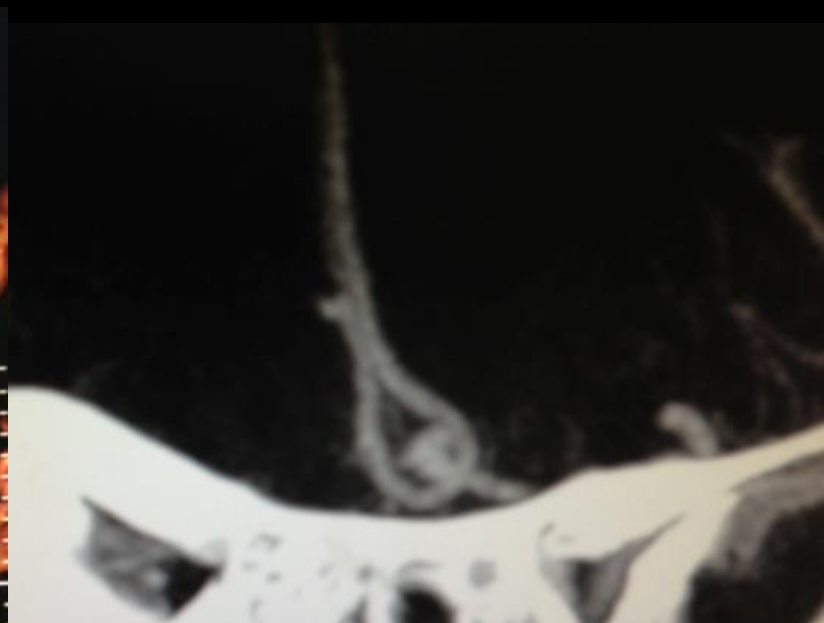
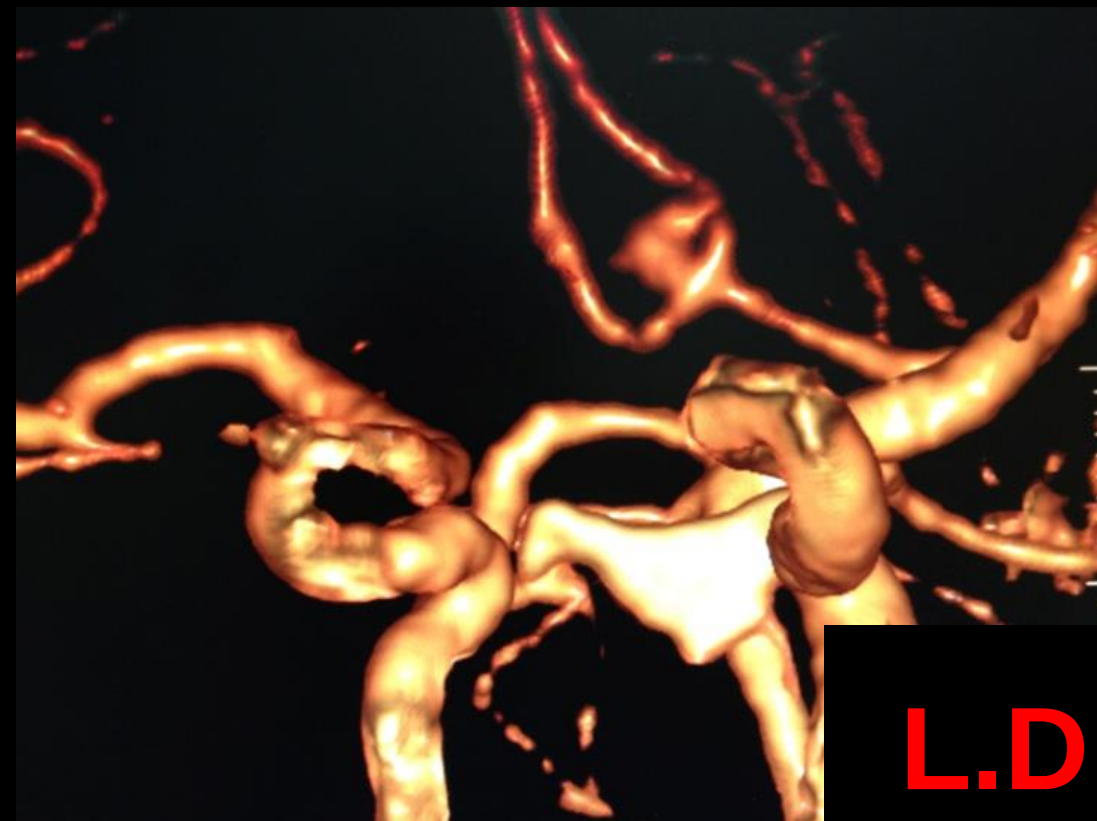
Ricostruzioni tridimensionali TC (*) 30786
ANGIO TC ESOCRANICO
ANGIO TC INTRACRANICO
TC CEREBRALE (senza e con contrasto)

P.O. TERAMO Rianimazione

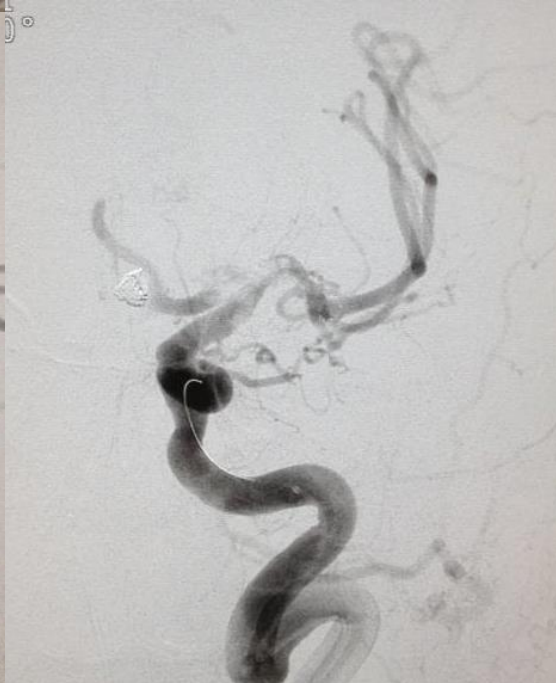
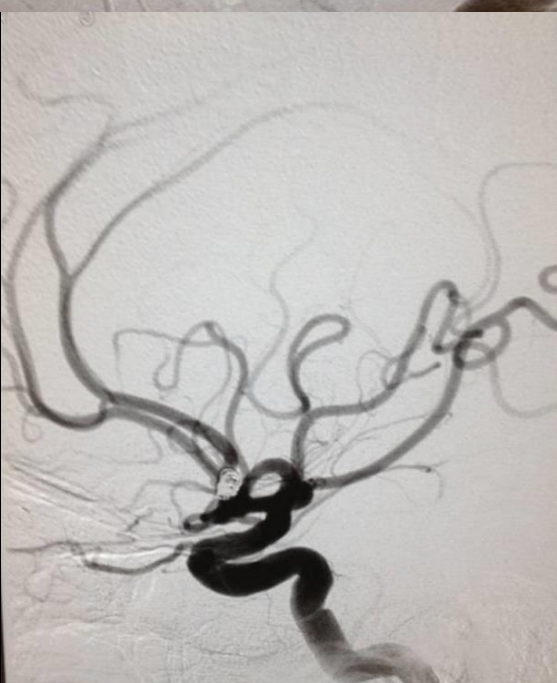
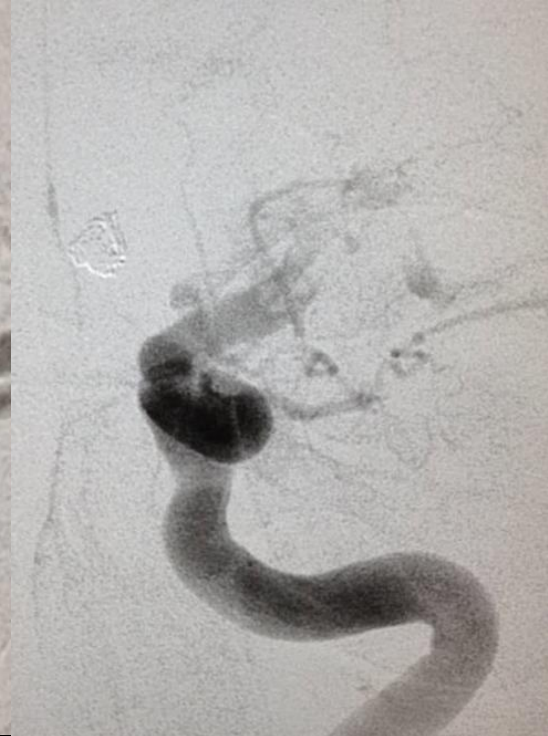
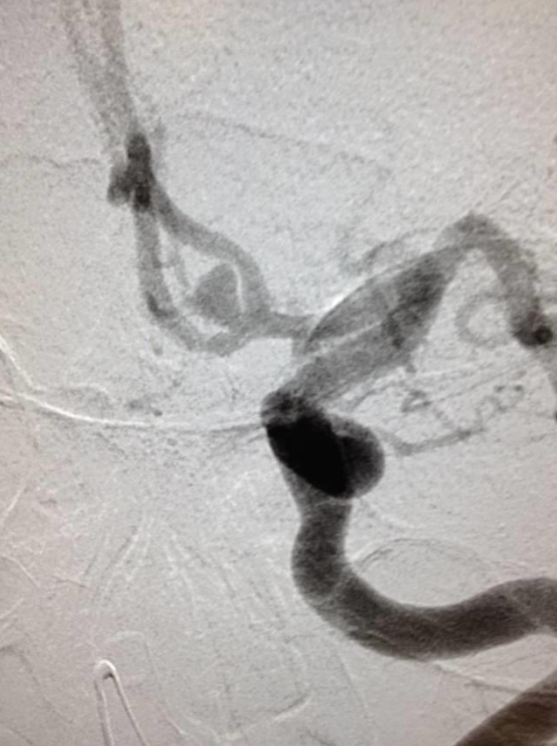
Numero Rich: **121070955**

Del 27/12/2012

URGENTE



L.D.D M 67Y ESA



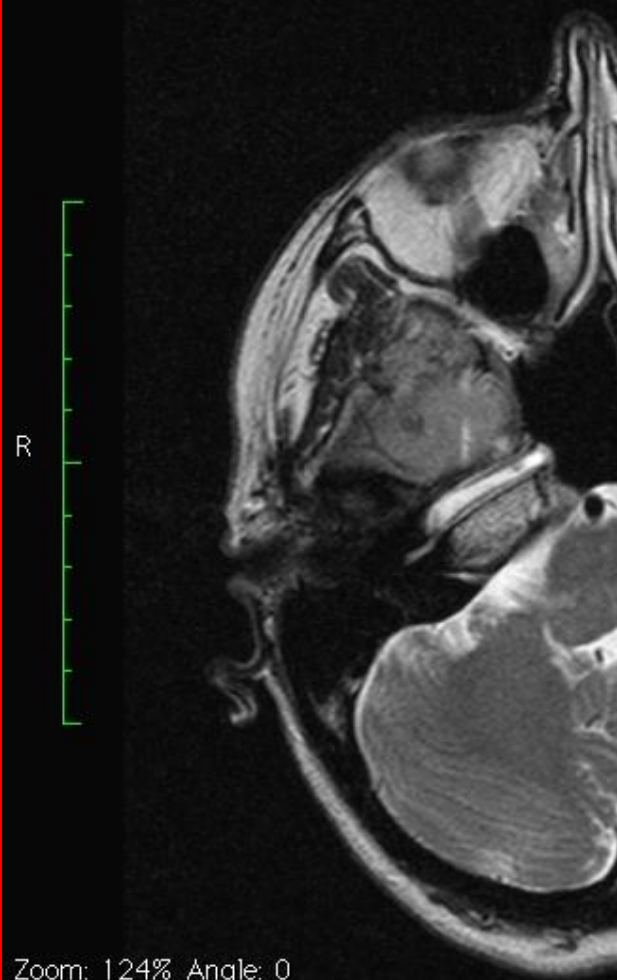
1 Passaggio EmboTrap

**B. A. DONNA 41 ANNI
EMIPLEGIA F.B.C. SN
DEV. SGUARDO yp
TC NEG. IN ALTRA SEDE
SOSPETTO INF. ACM DX**



View size: 635 x 635
WL: 917 WW: 1936

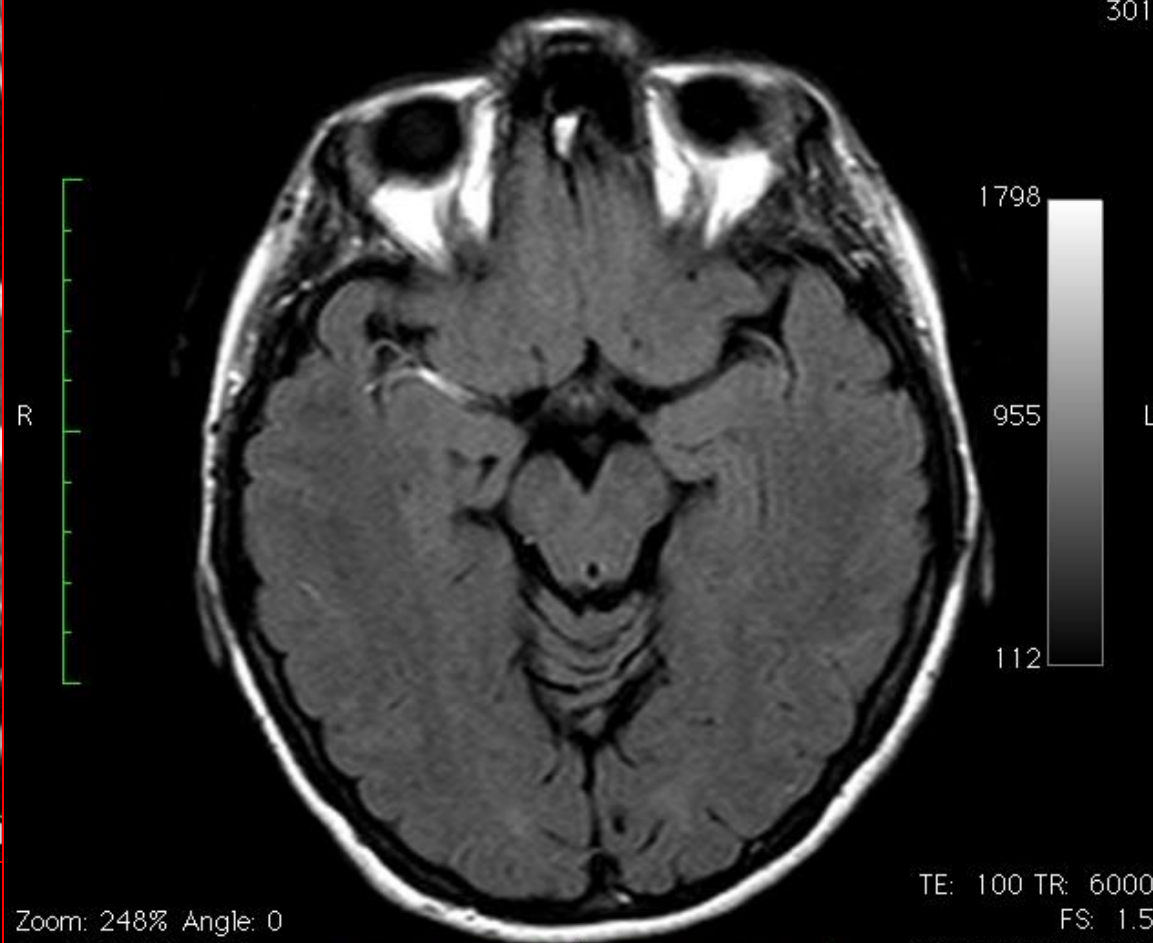
40 y , 40 y
T2W/TSE
26285511
401



Zoom: 124% Angle: 0
Im: 4/22 I(I -> S)
Thickness: 3.00 mm Location: 7.29 mm PI

View size: 635 x 635
WL: 955 WW: 1685

40 y , 40 y
FLAIR-TRA
26285511
301



Zoom: 248% Angle: 0
Im: 9/22 I(I -> S)
Thickness: 5.00 mm Location: 20.61 mm PI

TE: 100 TR: 6000
FS: 1.5
18/05/10 17.56.23
Made In OsiriX

Pixel Size: 500 x 500
WL: 369 WW: 734

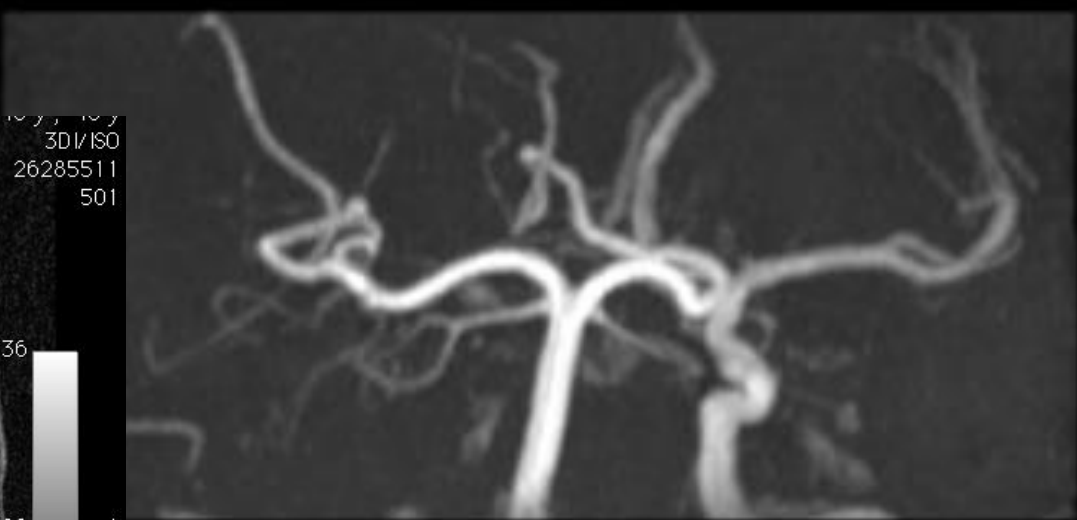
R

10 y, 10 y
301/150
26285511
501

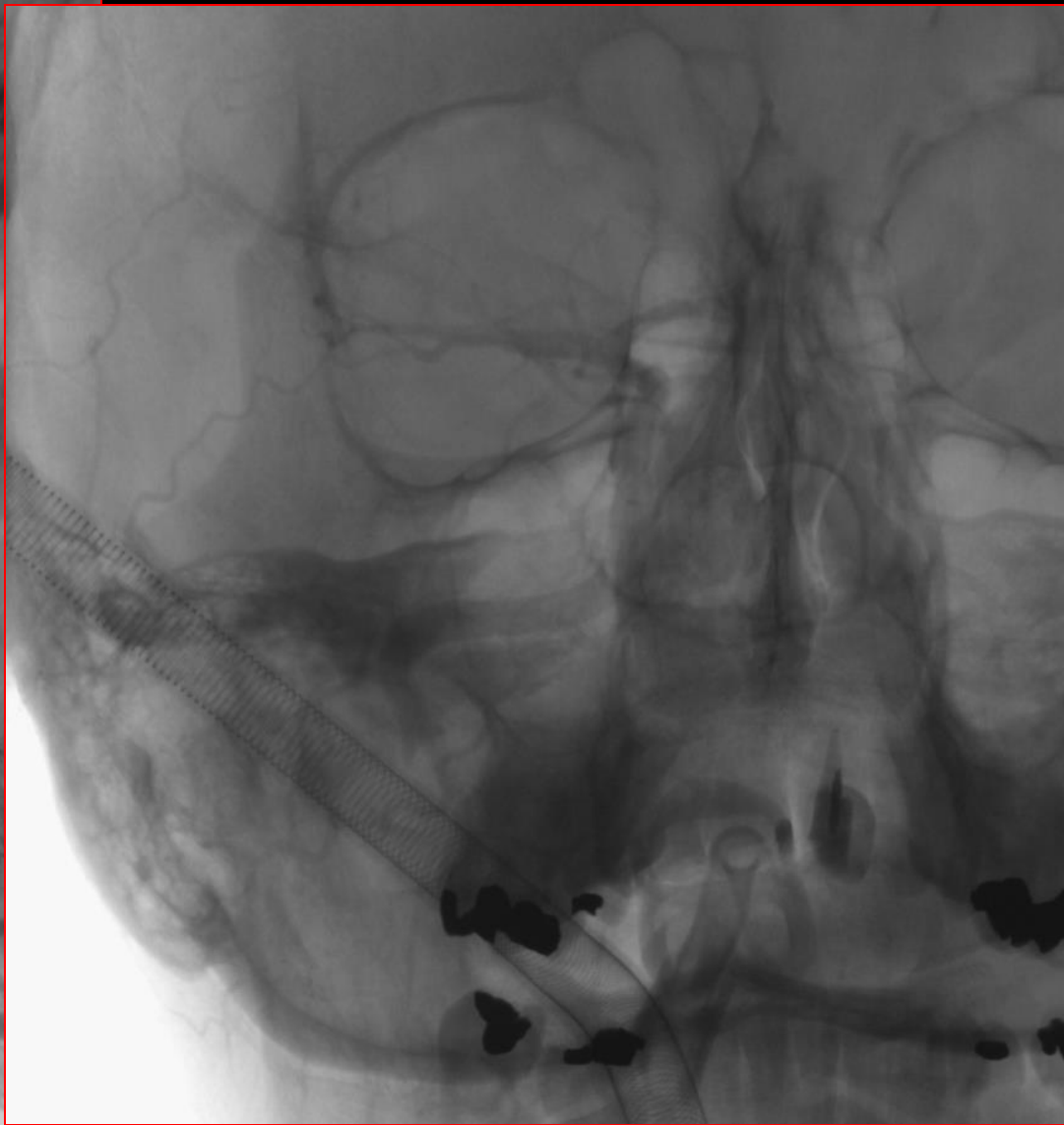
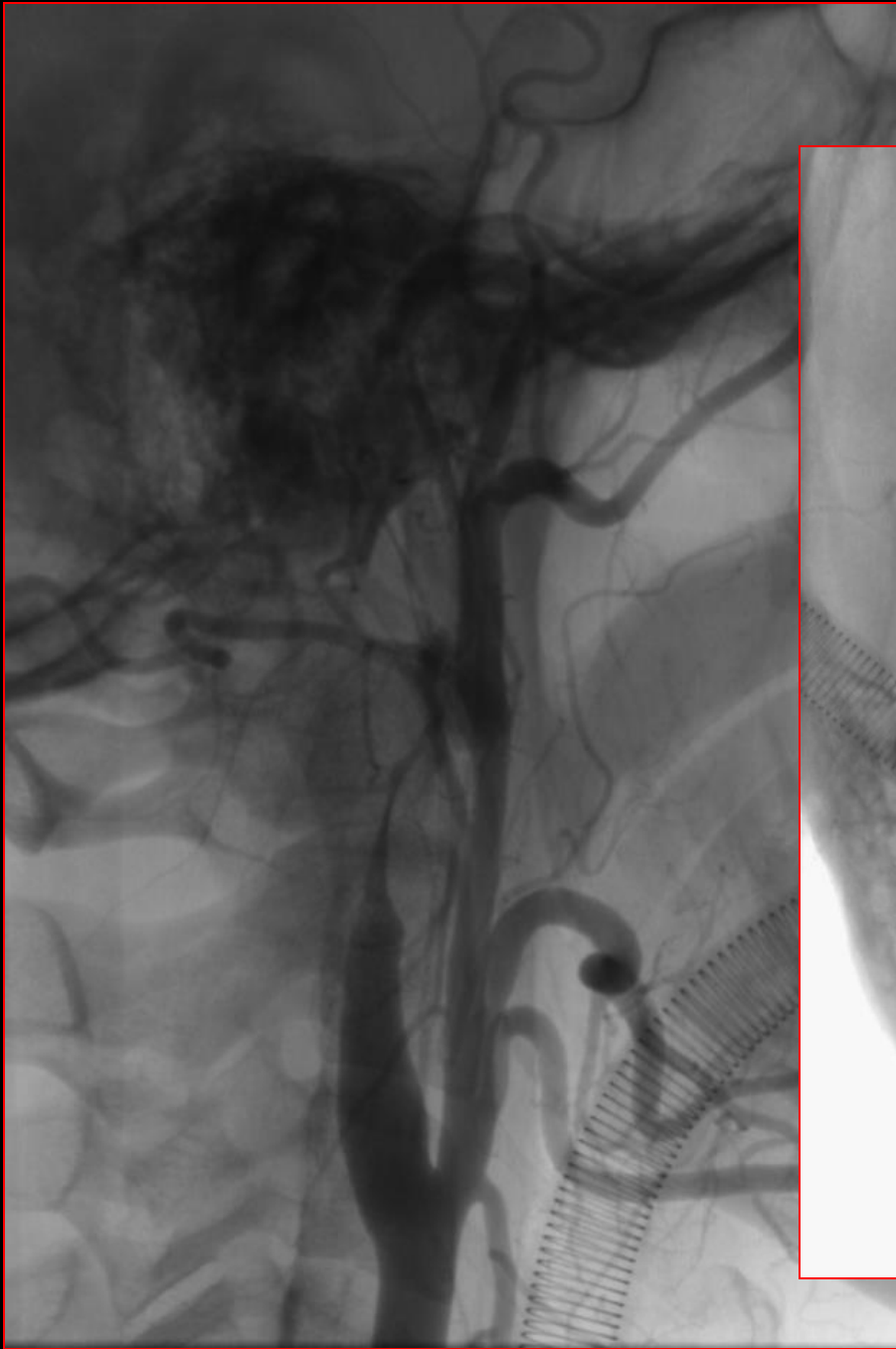
736
369
2

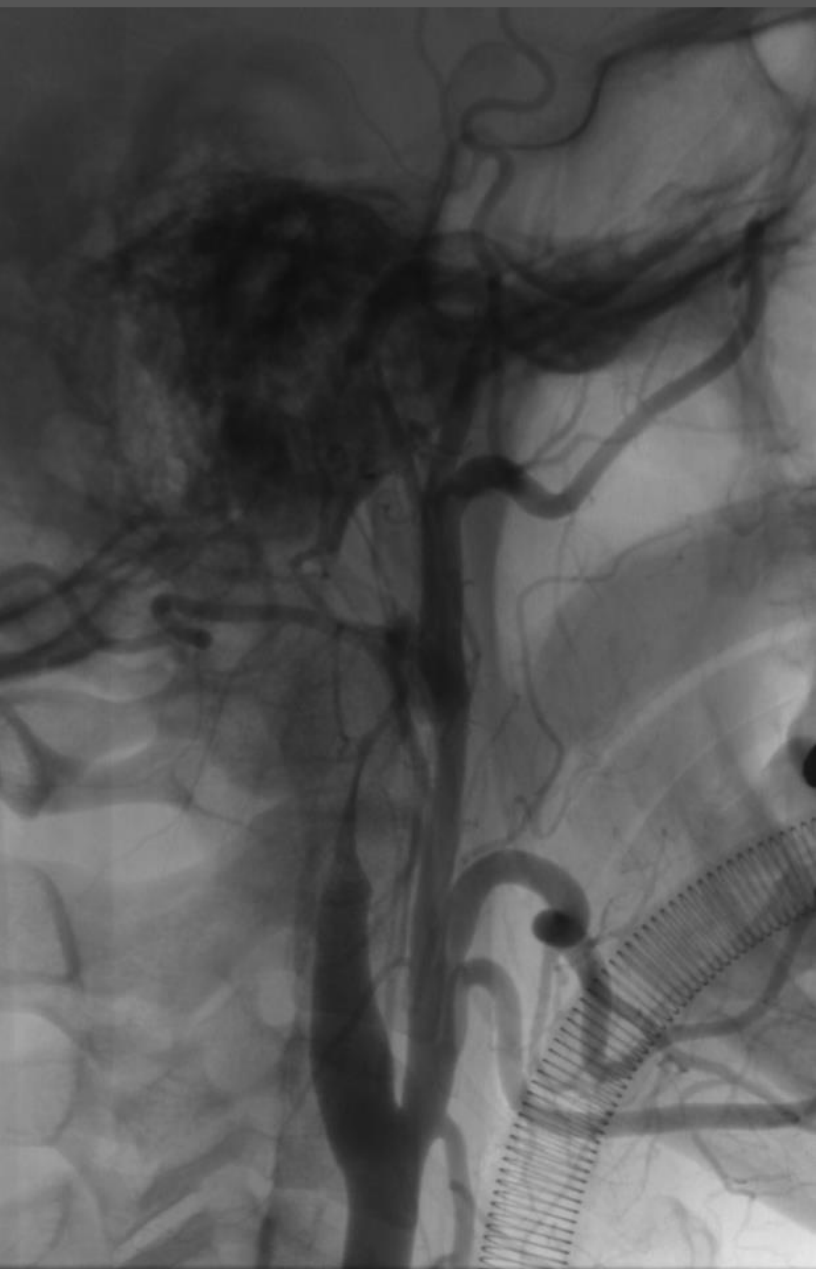
Zoom: 124% Angle: 0
Im: 1/100 1 (I -> S)
Thickness: 1.00 mm Location: -11.22 mm PI

TE: 3.4 TR: 3
FS: 1
18/05/10 18.03.4
Made in Osiri



1744
894
44
TE: 3













View size: 635 x 635

WL: 127 WW: 255

40 y, 40 y

4586

915

R



Zoom: 124% Angle: 0

Im: 1/1

Position: HFS

View size: 635 x 635

WL: 127 WW: 255

40 y, 40 y

4586

922

R

F

Zoom: 124% Angle: 0

Im: 1/1

Position: HFS

F

255

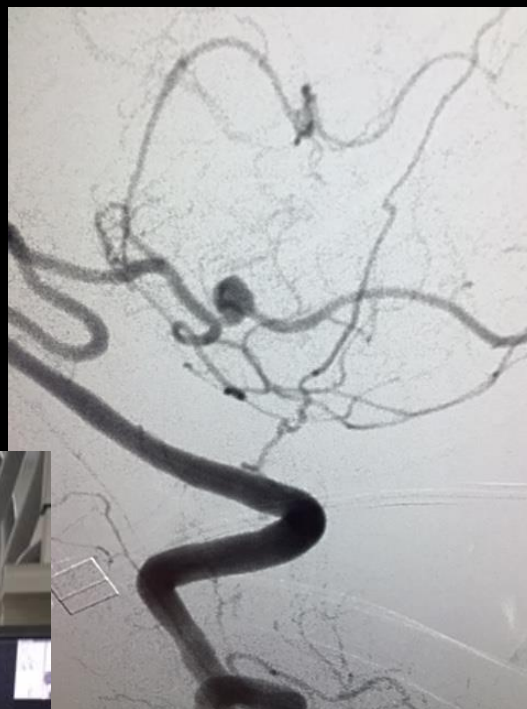
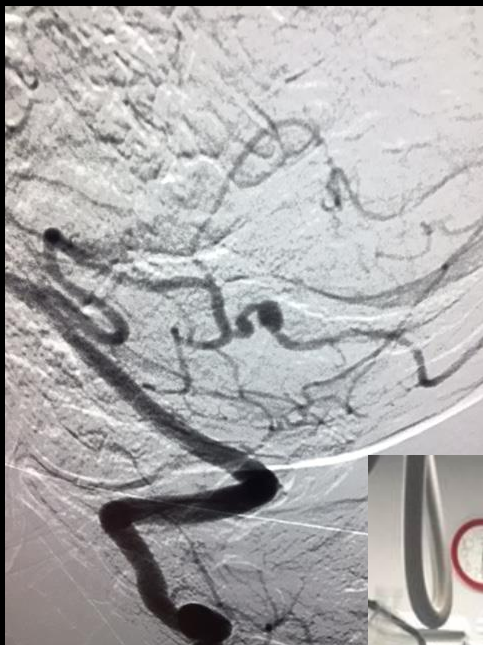
128

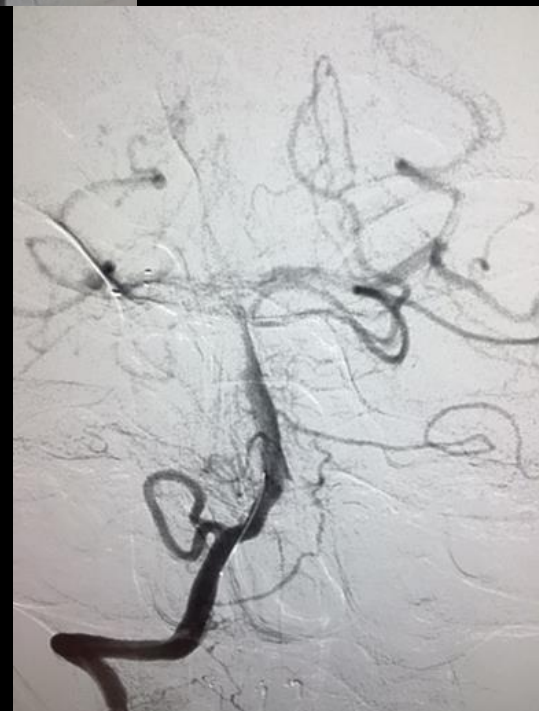
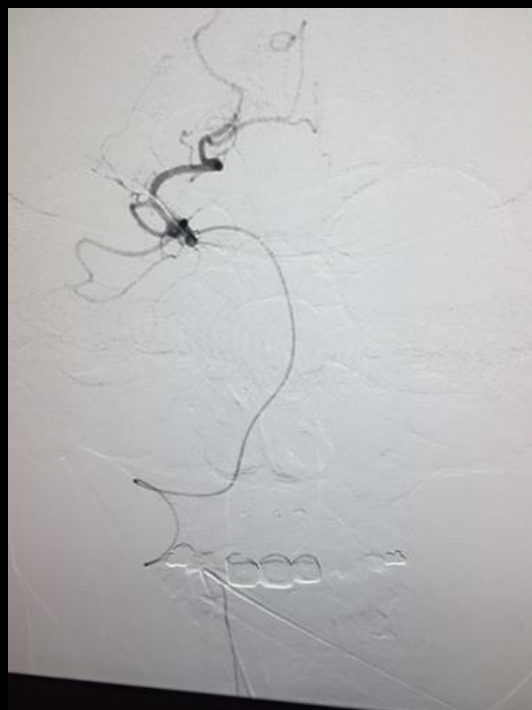
0

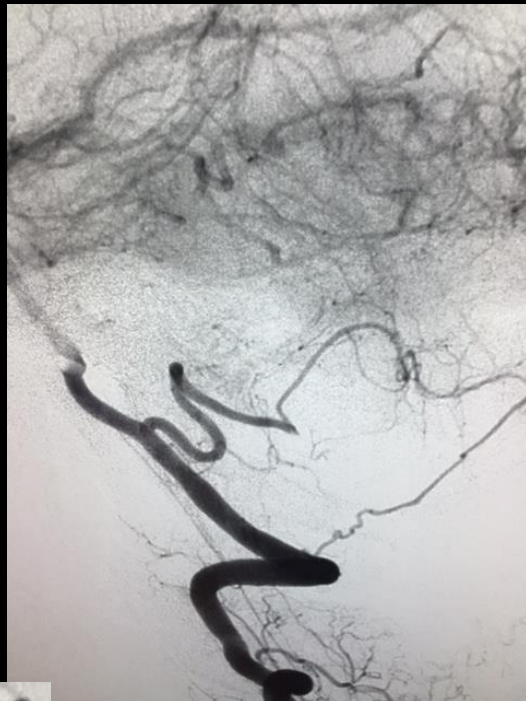
3 cm

19/05/10 16:36:51

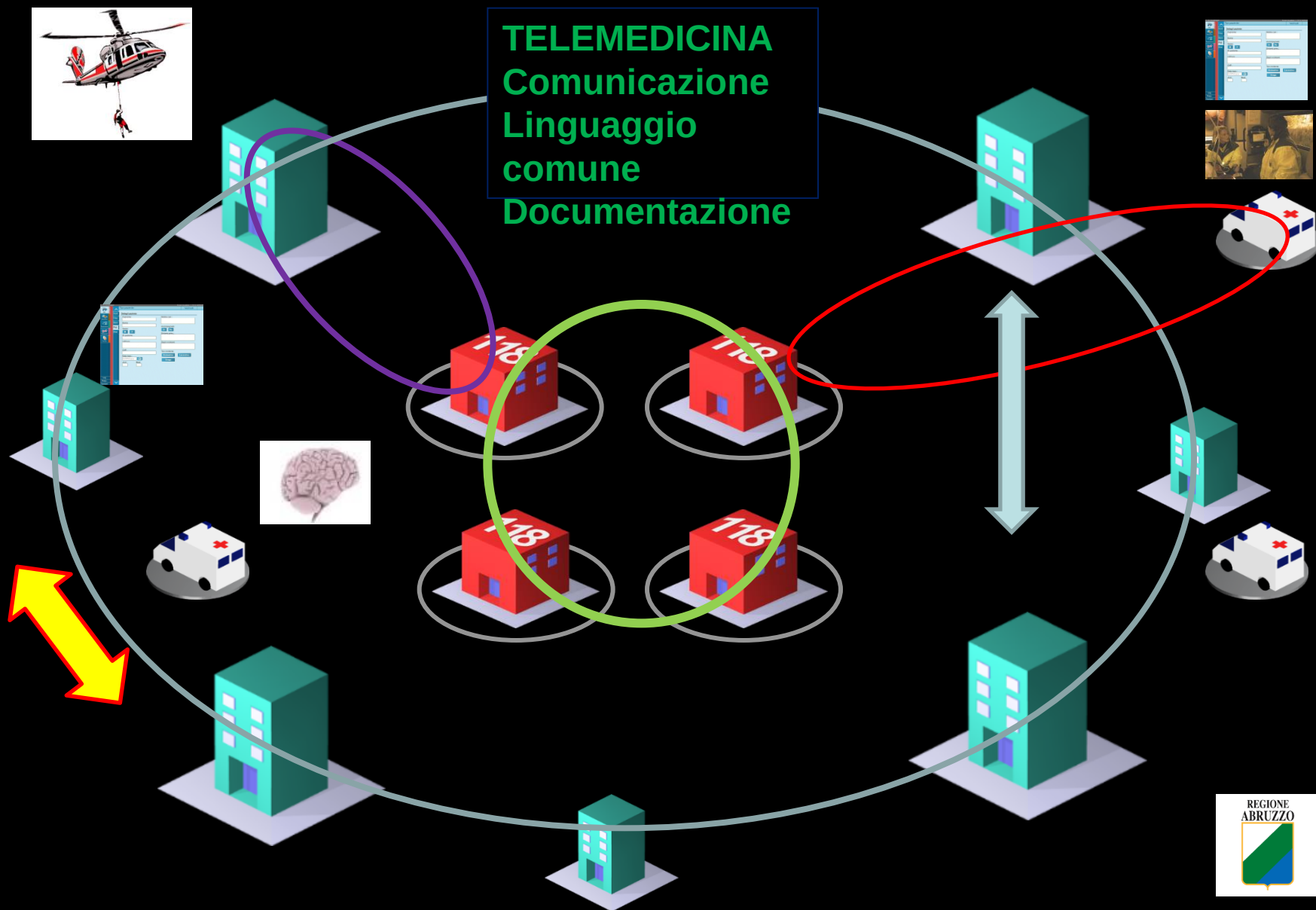
Made In OsiriX







RETE dell'EMERGENZA



RCT of endovascular treatment

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Endovascular Therapy after Intravenous t-PA versus t-PA Alone for Stroke

Joseph P. Broderick, M.D., Peter Y. Pongchai, M.D., Andrew M. Demchuk, M.D., Wayne C. Hamm, Ph.D., Pradyumn K. Mehta, M.D., Michael S. Hill, M.D., Edward T. Looch, M.D., Tadeusz Jurk, M.D., Bernard Han, M.D., Patrick Stone, M.D., Rainer von Kromann, M.D., Curtis A. Mittleman, M.D., Scott M. Solomon, M.D., Ronald Budzik, M.D., Wayne M. Clark, M.D., Thomas D. Zoller, M.D., Terence M. Hahn, M.D., Michael Good, M.D., Alexander J. Thompson, M.D., Walter Hargrett, M.D., Ph.D., Robert T. Gregson, M.D., Douglas Long, M.D., Ph.D., Judith Selinger, B.S., B.S.N., James Gonzalez, B.S., B.A., B.T.P., Kelly Roubicek, B.S., B.N., J. Scott Jans, Ph.D., Robert H. Morris, Ph.D., Lydia S. Ficker, M.D., and Thomas A. Tomasz, M.D., for the International Management of Stroke (IMS) Investigators

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

A Trial of Imaging Selection and Endovascular Treatment for Ischemic Stroke

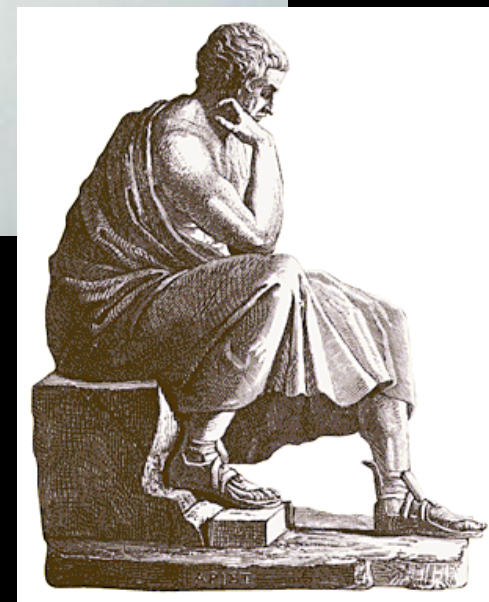
Christian S. Palesi, M.D., Arjun Jahan, M.D., Jeffrey Goodman, D.Phil., John A. Ryan, Ph.D., Val Tienari, Ph.D., Zahra Ajami, M.D., Lei Feng, M.D., Ph.D., Eric C. Thaler, M.D., Scott Olson, M.D., Ian M. Schaeffer, M.D., Albert Y. Tiao, M.D., Kenneth S. Murthy, M.D., Philip M. Meyers, M.D., David E. Nussel, M.D., and Christopher M. Long, M.D., for the SYNTHESIS Expansion Investigators

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Endovascular Treatment for Acute Ischemic Stroke

Alessia Costone, M.D., Luca Valassori, M.D., Michele Nichelatti, Ph.D., Annalisa Spurio, Ph.D., Michela Porzio, Ph.D., Roberto Giusti, M.D., and Edwards Bonardi, M.D., for the SYNTHESIS Expansion Investigators



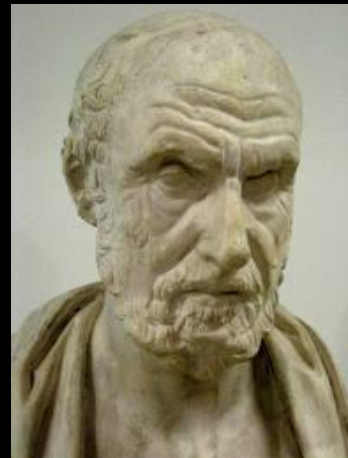
CONCLUSIONI

- Il trattamento endovascolare offre tassi di ricanalizzazione significativamente migliori;
- L'approccio meccanico sembra incrementare significativamente le probabilità di ricanalizzazione stabile;
- L'approccio meccanico è sicuro ed efficace nella rimozione dei coaguli, se utilizzato nelle appropriate finestre terapeutiche.



CONCLUSIONI

- Tuttavia, ulteriori validazioni andranno testate nella reale efficacia clinica del trattamento endovascolare.
- Aziende e ricerca devono superare ambizioni personali;
- Limitare gli studi sottodimensionati con scarsa numerosità e carenze strutturali;
- Stilare protocolli condivisi con i neurologi;
- Passare ad un sistema «Ippocratico».



Grazie per la cortese attenzione

