



Online Training Neuroradiologia Vascolare

24-25 Novembre
1 Dicembre 2020

angela

LASCIA IL SEGNO



angela

LASCIA IL SEGNO

25 NOVEMBRE 2020





LA DIAGNOSI DI ICTUS

Massimo Del Sette

Dir. Dipartimento

Dir. S.C. Neurologia

E.O. Ospedali Galliera

angela

LASCIA IL SEGNO



angela

LASCIA IL SEGNO

Diagnosi neurologiche in ordine di frequenza in una serie di pazienti ammessi in un Dipartimento di emergenza

Diagnosi	Diagnosi finale (n = 1679) %
Stroke	563 (33,8)
Crisi epilettiche	349 (20,8)
Cefalea	117 (7)
Perdita di coscienza	94 (5,7)
Confusione	95 (5,7)
Disturbi neurologici periferici	72 (4,3)
Vertigini	21 (1,3)
Disfunzioni cognitive	77 (4,6)
Disturbi della deambulazione	37 (2,2)
Sclerosi multipla	43 (2,6)
Coma neurologico	5 (0,3)
Malattie infettive	24 (1,4)
Disturbi psichiatrici	43 (2,6)
Ematoma sottodurale	22 (1,1)
Tumore cerebrale	36 (2,1)
Patologia non neurologica	77 (4,6)
Miscellanea	0

Modificata da: Moulin et al.¹



Con un'incidenza media sul territorio nazionale di circa 2,5 casi ogni 1000 abitanti per anno in un Pronto Soccorso l'ictus cerebrale è in assoluto la patologia neurologica più frequente e segnatamente la più frequente causa di deficit neurologico focale.

Deficit neurologici focali

Suggestivi per interessamento emisferico/circolo anteriore:

- ❑ deficit funzione corticale: afasia, deficit visuo- spaziale, agnosia, aprassia;
- ❑ difetto di campo visivo laterale omonimo, o, più raramente, monoculare;
- ❑ deficit motorio e/o sensitivo, anche isolato, di un emisoma (facio-brachio-crurale) o di parte (emiparesi brachio-crurale, monoparesi);

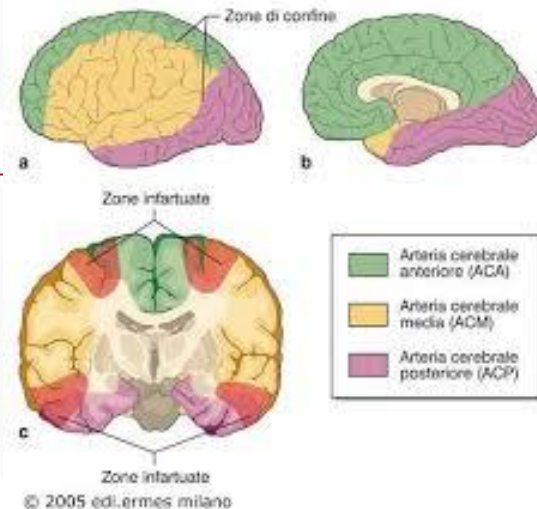


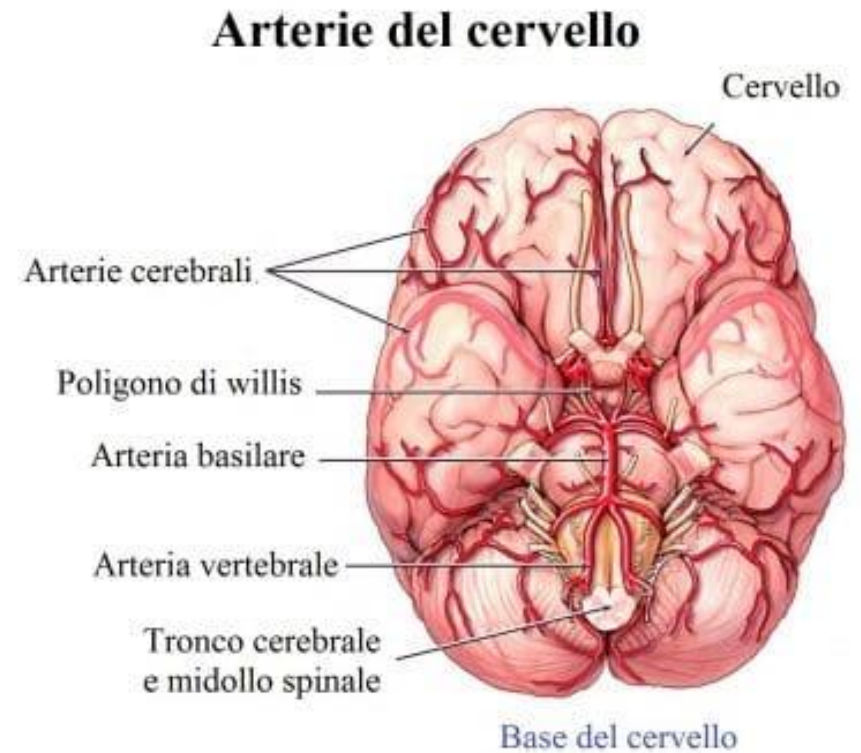
Table 1. Most Common Symptoms and Signs of Ischemic Stroke

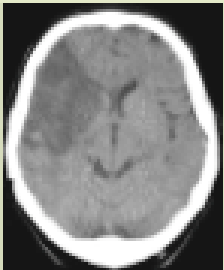
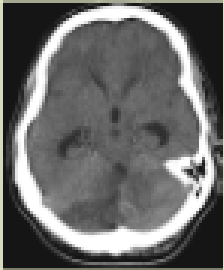
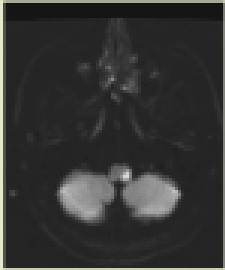
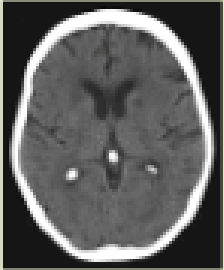
Symptom or sign	Prevalence (%) ⁵	Agreement between examiners (kappa) ⁴
Symptoms		
Acute onset	96	Good (0.63) ⁴
Subjective arm weakness*	63	Moderate (0.59) ⁴
Subjective leg weakness*	54	Moderate (0.59) ⁴
Self-reported speech disturbance	53	Good (0.64) ⁴
Subjective facial weakness	23	—
Arm paresthesia†	20	Good (0.62) ⁴
Leg paresthesia†	17	Good (0.62) ⁴
Headache	14	Good (0.65) ⁴
Nonorthostatic dizziness	13	—
Signs		
Arm paresis	69	Moderate to excellent (0.42 to 1.00) ^{4,6}
Leg paresis	61	Fair to excellent (0.40 to 0.84) ^{4,6}
Dysphasia or dysarthria	57	Moderate to excellent (0.54 to 0.84) ^{4,6} Fair to excellent (0.29 to 1.00) ^{4,6}
Hemiparetic/ataxic gait	53	Excellent (0.91) ⁶
Facial paresis	45	Poor to excellent (0.13 to 1.00) ^{4,6}
Eye movement abnormality	27	Fair to excellent (0.33 to 1.00) ⁶
Visual field defect	24	Poor to excellent (0.16 to 0.81) ^{4,6}

Deficit neurologici focali

Sintomi di deficit troncoencefalico/cerebellare (circolo posteriore)

- ❑ deficit funzione cerebellare: dismetria, atassia, disartria cerebellare
- ❑ difetto di campo visivo laterale omonimo;
- ❑ deficit funzione tronco-encefalica: disartria, disfagia, paresi facciale, diplopia, nistagmo, VERTIGINE



OCSF term	Clinical features	Vascular basis	Example CT	Example MRI
Total Anterior Circulation Syndrome (TACS)	• Hemiparesis AND • Higher cortical dysfunction (dysphasia or visuospatial neglect) AND • Homonymous hemianopia	Usually proximal MCA or ICA occlusion		
Partial Anterior Circulation Syndrome (PACS)	• Isolated higher cortical dysfunction OR • Any 2 of hemiparesis, higher cortical dysfunction, hemianopia	Usually branch MCA occlusion		
Posterior Circulation Syndrome (POCS)	• Isolated hemianopia (PCA), brainstem or cerebellar syndromes	Occlusion of vertebral, basilar, cerebellar or PCA vessels		
Lacunar Syndrome (LACS)	• Pure motor stroke OR • Pure sensory stroke OR • Sensorimotor stroke OR • Ataxic hemiparesis OR • Clumsy hand-dysarthria	Usually proximal MCA or ICA occlusion		

Alcuni dati anamnestici possono orientare la diagnosi eziologica delle varie cause di deficit neurologico focale

Modalità di esordio dei sintomi:

Comparsa improvvisa senza segni premonitori (evento cerebro-vascolare).

Progressione dei sintomi in alcuni secondi (crisi comiziale).

Esordio progressivo in minuti/ore (aura emicranica).

Esordio subacuto progressivo in ore/giorni (patologia infiammatoria, encefalite).

Lento sviluppo dei sintomi in settimane/mesi (lesione occupante spazio).

Durata dei sintomi:

Minuti/ore (TIA, durata dei sintomi inferiore alle 24 ore, abitualmente 1-2 ore al massimo; aura emicranica).

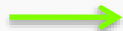
Secondi/minuti (crisi comiziale).

Natura dei sintomi (in ordine decrescente di probabile eziologia):



SINTOMI/SEGNI NEGATIVI

perdita del visus
deficit motorio
ipo- anestesia cutanea
afasia



evento cerebrovascolare
aura emicranica
lesioni occupanti spazio
patologia infiammatoria
crisi comiziale

SINTOMI/SEGNI POSITIVI

clonie
movimenti coreici
movimenti ballici
parestesie/disestesie
fenomeni dispercettivi
(visivi, uditivi, olfattivi, gustativi)



crisi comiziale
aura emicranica
lesioni occupanti spazio
evento cerebrovascolare

Segni e sintomi aggiuntivi (red flag):

Esordio in concomitanza con **sforzo fisico**, spesso accompagnato da violenta cefalea cervico-nucale, suggestivo per **ESA**.

Perdita monolaterale del visus transitoria (amaurosi fugax) o persistente in soggetto anziano, in eventuale associazione con **dolore** in regione temporale, suggestiva per **arterite temporale** o patologia atero-trombo-embolica carotidea.

Perdita di coscienza: altamente suggestiva per **ESA**, **emorragia intraparenchimale**, **evento cerebrovascolare tronco-encefalico**, o ictus emisferico esteso.

Post-coital intra-cerebral venous hemorrhage in a 78-year-old man with jugular valve incompetence: a case report

Beatrice Albano¹, Carlo Gandolfo² *Albano et al. Journal of Medical Case Reports 2010, 4:225*



Figure 1 Cerebral computed tomography scan showing a small left cortical temporo-occipital hemorrhage, with mild mass effect and hypodense halo.

Sintomi focali ed età



aura emicranica

aneurisma/malformazione
artero-venosa [MAV]

ictus ischemico

sclerosi multipla

Ictus

neoplasia

disturbi metabolici



Comorbidità e terapie

Antecedenti patologici:

Fattori di rischio cerebrovascolare

Trauma (dissezioni)

Patologia psichiatrica nota

Farmaci:

Terapia anticoagulante orale (emorragia...).

Contraccettivi orali (ictus, trombosi dei seni venosi).

Abuso di droghe/alcol (ictus ischemico/emorragico)

Cocaine Use and Risk of Ischemic Stroke in Young Adults

Yu-Ching Cheng, PhD; Kathleen A. Ryan, MPH; Saad A. Qadwai, MD; Jay Shah, MD;
Mary J. Sparks, RN, BSN; Marcella A. Wozniak, MD, PhD; Barney J. Stern, MD;
Michael S. Phipps, MD, MHS; Carolyn A. Cronin, MD, PhD; Laurence S. Magder, MPH, PhD;
John W. Cole, MD, MS; Steven J. Kittner, MD, MPH

Clinical characteristics and outcomes of methamphetamine-associated intracerebral hemorrhage *Neurology*® 2019;93:e1-e7.

Dionne E. Swor, DO, Matthew B. Maas, MD, MS, Sandeep S. Wallia, MD, David P. Bissig, MD, PhD,
Eric M. Liotta, MD, Andrew M. Naidech, MD, MSPH, and Kwan L. Ng, MD, PhD

Correspondence:
Dr. Ng
kng@ucsf.edu

Methods—A population-based case-control study design with 1090 cases and 1154 controls was used to investigate the relationship of cocaine use and young-onset IS. Stroke cases were between the ages of 15 and 49 years. Logistic regression analysis was used to evaluate the association between cocaine use and IS with and without adjustment for potential confounders.

Results—Ever use of cocaine was not associated with stroke with 28% of cases and 26% of controls reporting ever use. In contrast, acute cocaine use in the previous 24 hours was strongly associated with increased risk of stroke (age-sex-race adjusted odds ratio, 6.4; 95% confidence interval, 2.2–18.6). Among acute users, the smoking route had an adjusted odds ratio of 7.9 (95% confidence interval, 1.8–35.0), whereas the inhalation route had an adjusted odds ratio of 3.5 (95% confidence interval, 0.7–16.9). After additional adjustment for current alcohol, smoking use, and hypertension, the odds ratio for acute cocaine use by any route was 5.7 (95% confidence interval, 1.7–19.7). Of the 26 patients with cocaine use within 24 hours of their stroke, 14 reported use within 6 hours of their event.

Conclusions—Our data are consistent with a causal association between acute cocaine use and risk of early-onset IS. (*Stroke*. 2016;47:918-922. DOI: 10.1161/STROKEAHA.115.011417.)

Methods

We performed a retrospective analysis of patients diagnosed with spontaneous, nontraumatic ICH over a 3-year period between January 2013 and December 2016. Demographics, clinical measures, and outcomes were compared between ICH patients with positive methamphetamine toxicology tests vs those with negative methamphetamine toxicology tests.

Results

Methamphetamine-positive ICH patients were younger than methamphetamine-negative ICH patients (52 vs 67 years, $p < 0.001$). Patients with methamphetamine-positive ICH had higher diastolic blood pressure (115 vs 101, $p = 0.003$), higher mean arterial pressure (144 vs 129, $p = 0.01$), longer lengths of hospital (18 vs 8 days, $p < 0.001$) and intensive care unit (ICU) stay (10 vs 5 days, $p < 0.001$), required more days of IV antihypertensive medications (5 vs 3 days, $p = 0.02$), and had more subcortical hemorrhages (63% vs 46%, $p = 0.05$). The methamphetamine-positive group had better premorbid modified Rankin Scale (mRS) scores ($p < 0.001$) and a greater change in functional ability as measured by mRS at the time of hospital discharge ($p = 0.001$). In multivariate analyses, methamphetamine use predicted both hospital length of stay (risk ratio [RR] 1.54, confidence interval [CI] 1.39–1.70, $p < 0.001$) and ICU length of stay (RR 1.36, CI 1.18–1.56, $p < 0.001$), but did not predict poor outcome (mRS 4–6).

Conclusions

Methamphetamine use is associated with earlier age at onset of ICH, longer hospital stays, and greater change in functional ability, but did not predict outcome.

Somatoform or conversion disorder

Fluctuations in clinical picture, nonanatomic symptoms or signs or history of mental illness^{9,29}

Among the most common stroke mimics in patients treated with thrombolysis

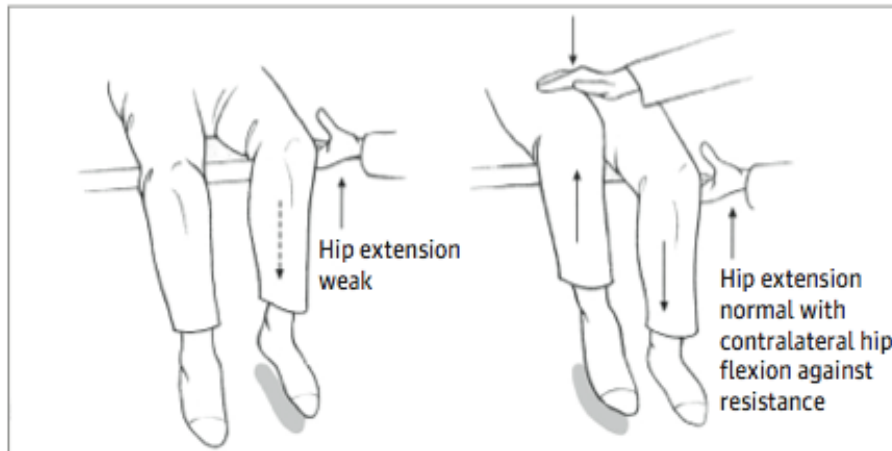
Reported prevalence of 0.4% to 11.7%²⁶⁻³¹

Younger age and history of psychiatric disease increases the risk^{29,30}

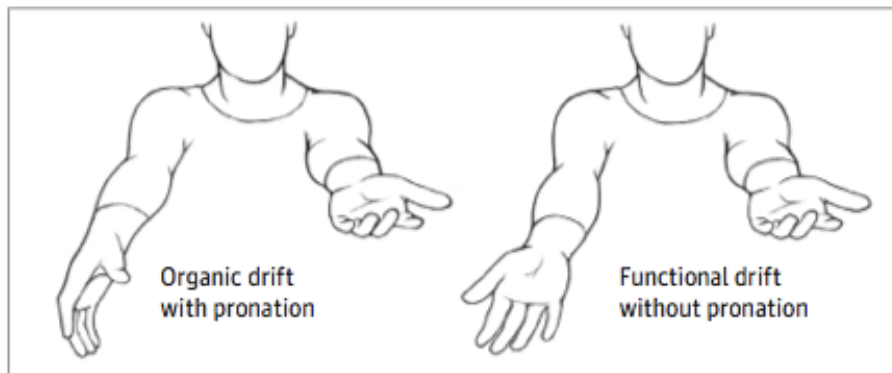
May coexist with stroke

One-third of patients older than 50 years with features of conversion had a coexisting stroke compared with no patients younger than 50 years with that presentation²⁹

A Hoover sign in the weak leg



B Drift without pronation of the weak arm



C Tonic contraction of the mouth with jaw and tongue deviation, fixed posturing of hand, and fixed posturing of foot



Stroke mimics and chameleons.

Moulin S¹, Leys D².

 Author information

Abstract

PURPOSE OF REVIEW: A stroke mimic is a situation in which a diagnosis of stroke at admission is not confirmed, and a stroke chameleon is a situation in which a stroke is revealed by clinical symptoms that are not usual in stroke. The objective of this review is to identify the most frequent clinical situations in which stroke mimics and chameleons are encountered and consequences for the patient.

RECENT FINDINGS: The safety profile of intravenous thrombolysis (IVT) in patients who have stroke mimics is excellent, and intracranial hemorrhages are rare. Modern neuroimaging techniques help identifying most mimics. For stroke chameleons the role of imaging may be less important, especially when the clinical presentation is not suggestive of a brain disorder that request immediate neuroimaging. Education of health providers to identify such situations is crucial.

SUMMARY: Stroke mimics account for up to 25% of admissions for probable strokes. The proportion of patients with stroke mimics decreases with use of MRI at baseline. Mimics cannot always be ruled out in emergency. The problem with mimics is that stroke facilities are not properly used, and patients may receive IVT. However, thrombolysis is usually well tolerated in mimics and we should not spend much time in all patients to improve diagnostic accuracy, knowing that the time lost is harmful in all patients, and will only prevent treating one mimic out of 100 patients. The problem with chameleons is more serious, because patients are not identified, and are not properly treated.

[View this abstract](#)

[View this article](#)

Neurol Sci. 2018 Jun;39(6):1125-1127. doi: 10.1007/s10072-018-3249-x. Epub 2018 Jan 25.

Stroke chameleon (cortical hand syndrome) in a patient with moderate carotid stenosis: a neurological double-trouble.

Giorli E¹, Chiti A², Celoria G³, Ciarmiello A⁴, Del Sette M⁵.

Neurol Sci. 2018 Oct 19. doi: 10.1007/s10072-018-3609-6. [Epub ahead of print]

Stroke or Stramonium? A novel stroke mimic.

Colella M^{1,2}, Strada L¹, Bianchini D¹, Ajmar G¹, Del Sette M³.



Effects of alteplase for acute stroke on the distribution of functional outcomes: a pooled analysis of nine trials

Kennedy R Lees, MD¹, Jonathan Emberson, PhD², Lisa Blackwell, BSc², Erich Bluhmki, PhD³, Stephen M Davis, MD⁴, Geoffrey A Donnan, MD⁵, James C Grotta, MD⁶, Markku Kaste, MD⁷, Prof Rüdiger von Kummer, Drmed⁸, Maarten G Lansberg, MD⁹, Richard I Lindley, MD¹⁰, Patrick Lyden, MD¹¹, Gordon D Murray, PhD¹², Peter AG Sandercock, DM¹³, Danilo Toni, MD¹⁴, Kazunori Toyoda, MD¹⁵, Joanna M Wardlaw, MD¹³, William N Whiteley, MD¹³, Colin Baigent, BM BCh², Werner Hacke, MD¹⁶, and George Howard, DrPH¹⁷ On behalf of the Stroke Thrombolysis Trialists' Collaborators Group*

Stroke. 2016 September ; 47(9): 2373–2379.

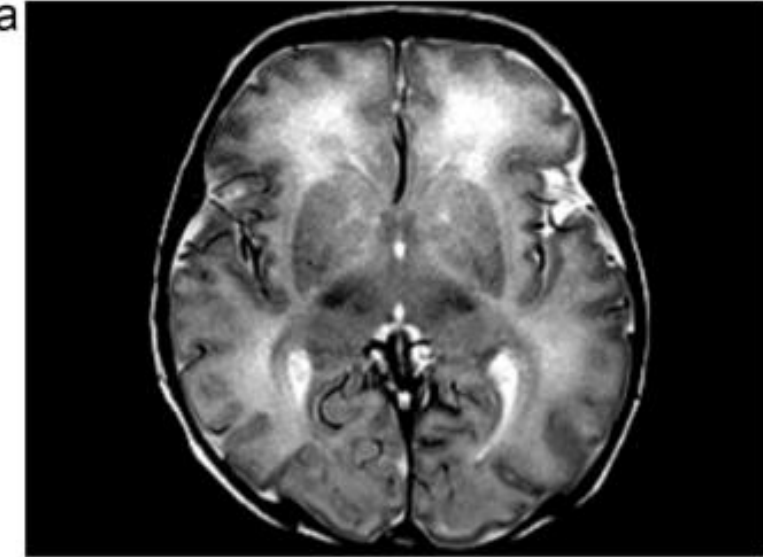
NINDS A	NINDS B	ECASS I	ECASS II	ATLANTIS A	ATLANTIS B	ECASS III	EPTTHET	IST-3
---------	---------	---------	----------	------------	------------	-----------	---------	-------

Treatment with intravenous alteplase initiated within 4.5 hours of stroke onset increases the chance of achieving an improved level of function for all patients across the age spectrum including the over 80s and across all severities of stroke studied (top vs bottom fifth means: 22 vs 4); the earlier that treatment is initiated, the greater the benefit.

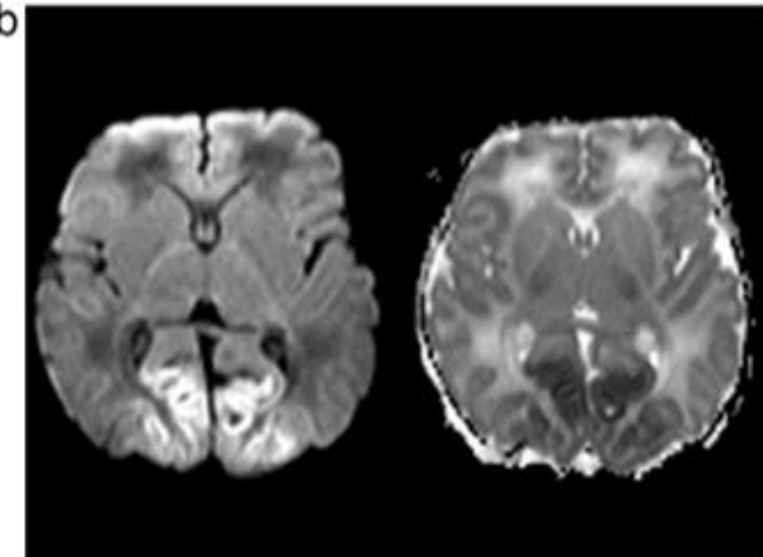
Linee guida ISO-SPREAD 2020

- Raccomandazione 9.1 Grado Forte a Favore
- In pazienti adulti con ictus ischemico acuto **entro 4.5 ore** dall'esordio dei sintomi, è raccomandata la trombolisi con r-tPA e.v. (0.9 mg/kg...) **senza limiti superiori di età e gravità**. E' inoltre raccomandato che il trattamento sia effettuato il più precocemente possibile
- Raccomandazione 9.4 Grado Forte a Favore
- In pazienti adulti con ictus ischemico acuto entro 4.5 ore dall'esordio dei sintomi, la trombolisi con r-tPA e.v. è raccomandata in **presenza di deficit lieve (NIHSS<5)** o in rapido miglioramento ma ancora rilevabile al momento di iniziare il trattamento

Disturbi metabolici



In un paziente con deficit motorio focale effettuare sempre valutazione di **glicemia** capillare !



Pensare sempre all'**iponatriemia** soprattutto in pazienti anziani con anamnesi positiva per insufficienza cardiaca, renale, o epatica, uso di diuretici, di carbamazepina, di antidepressivi (in particolare SSRI), specie se in associazione fra loro o con ACE-inibitori o con bloccanti del recettore dell'angiotensina.

Hypoglycemia. Female newborn with difficulties in breast feeding (no breast suction); several episodes of abnormal mouth and eye movements and hypoglycemia. (a) Axial T2 WI. Slight bilateral and symmetrical medial occipital cortex high T2 signal with the affected cortex appearing absent ("missing cortex" sign). (b) Axial DWI and corresponding ADC map. Corresponding cortical cytotoxic oedema.

Emicrania

25%-30% di stroke presenta cefalea!

La relazione tra emicrania e patologia cerebrovascolare appare complessa e bidirezionale, includendo diverse prospettive:

- l'emicrania come fattore di rischio per lo stroke,
- l'emicrania come causa di stroke (infarto emicranico, "migraine induced"),
- lo stroke come causa di emicrania (cefalea secondaria, "migraine mimic")
- fattori di rischio/eziologici comuni tra emicrania e stroke.

	Stroke type	No. of studies included	Heterogeneity	Migraine (M)	Migraine with aura (MA)	Migraine without aura (MO)
Etminan et al. (7)	Ischemic stroke	14 Total; 14 M, 7 MA, 6 MO	M: $R_i = 0.00$ MA $R_i = 0.49$ MO $R_i = 0.60$	RR (95% CI) 2.16 (1.89–2.48)	RR (95% CI) 2.27 (1.61–3.19)	RR (95% CI) 1.83 (1.06–3.15)
Schurks et al. (8)	Ischemic stroke	25 Total; 9 M, 8 MA, 8 MO	M: $I^2 = 65\%$ MA: $I^2 = 39\%$ MO: $I^2 = 39\%$	RR (95% CI) 1.73 (1.31–2.29)	RR (95% CI) 2.16 (1.53–3.03)	RR (95% CI) 1.23 (0.9–1.69)
Spector et al. (9)	Ischemic stroke	21 Total; 12 M, 7 MA, 6 MO	M: $I^2 = 63.5\%$ MA: $I^2 = 55.3\%$ MO: $I^2 = 47.1\%$	OR (95% CI) 2.04 (1.72–2.76)	OR (95% CI) 2.25 (1.53–3.33)	OR (95% CI) 1.24 (0.86–2.43)
Sacco et al. (10)	Hemorrhagic stroke	8 Total, 8 M, 3 MA, 3 MO	M $I^2 = 54.7\%$ MA $I^2 = 62.1\%$ MO $I^2 = 45.3\%$	OR (95% CI) 1.48 (1.16–1.88)	OR (95% CI) 1.62 (0.87–3.03)	OR (95% CI) 1.39 (0.74–2.72)

tale condizione è tuttavia rara. La diagnosi si basa sul manifestarsi, nel corso di un attacco emicranico di un deficit neurologico analogo alla sintomatologia auratica degli attacchi precedenti, ma con la persistenza di uno o più sintomi per oltre 60 minuti.

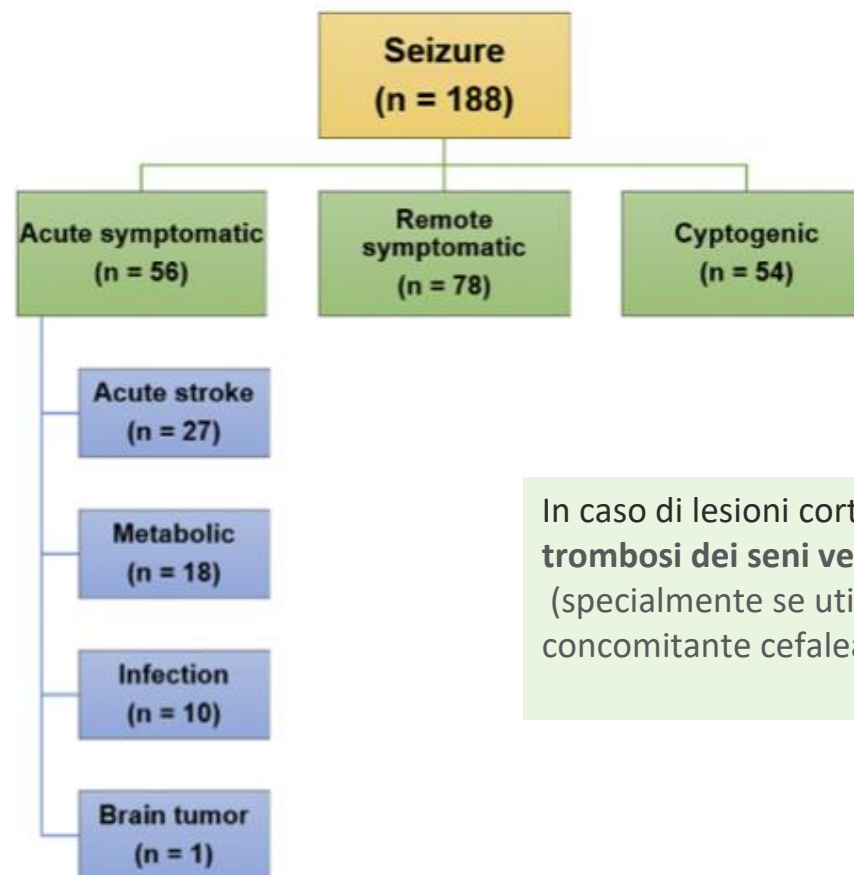
> Am J Emerg Med. 2019 Oct;37(10):1871–1875.

Seizure in code stroke: Stroke mimic and initial manifestation of stroke

Soo Jeong Kim, MD^a, Dong Wook Kim, MD^{a,*}, Hahn Young Kim, MD^a, Hong Gee Roh, MD^b, Jeong-Jin Park, MD^a

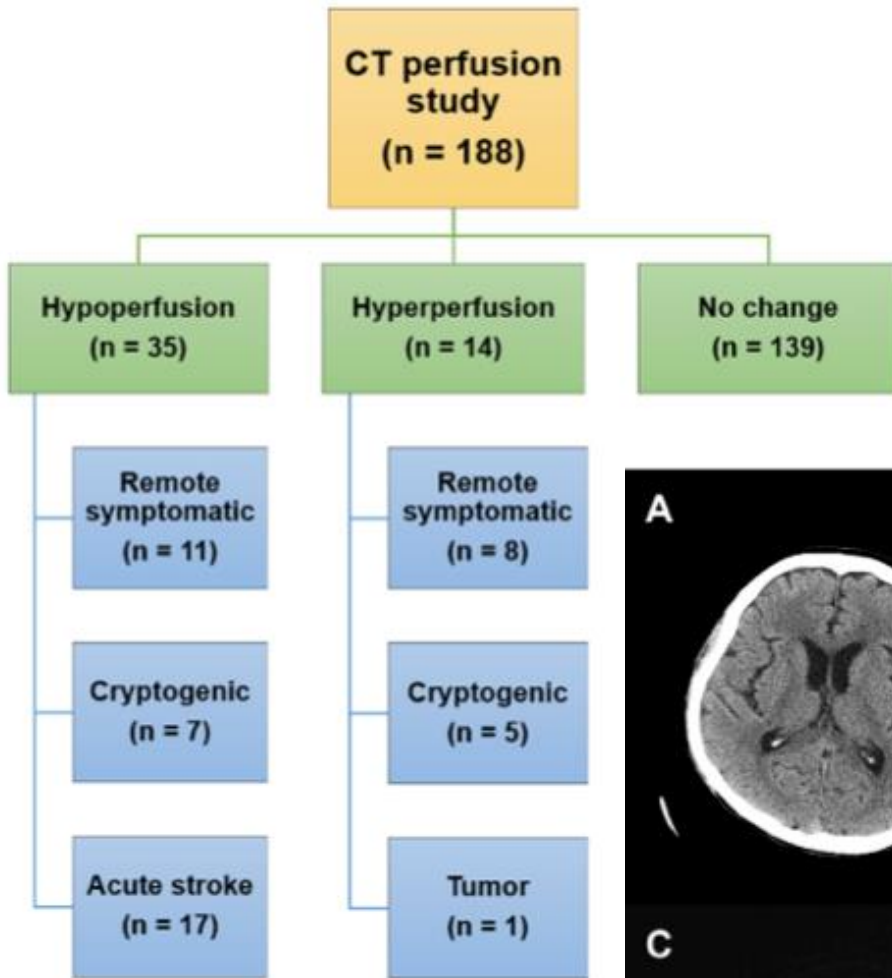
Final diagnosis of 4673 patients who activated code stroke alarming system in emergency room.

Final diagnosis	Number of patients (%)
Stroke	2276 (48.7%)
Peripheral vertigo	911 (19.5%)
Metabolic disorders (drug, alcohol, hyperglycemia etc.)	379 (8.1%)
Seizure (including 27 patients as an initial manifestation of stroke)	188 (4.0%)
Psychogenic	122 (2.6%)
Syncope	121 (2.6%)
Peripheral nerve diseases	118 (2.5%)
General weakness	104 (2.2%)
Transient global amnesia	97 (2.1%)
Incomplete work-up	79 (1.7%)
Headache	76 (1.6%)
CNS infection	58 (1.2%)
Movement disorders	55 (1.2%)
Brain tumors	19 (0.4%)
Ocular diseases	17 (0.4%)
Delirium	12 (0.3%)
Trauma	11 (0.2%)
Spinal cord diseases	9 (0.2%)
Neurodegenerative diseases	6 (0.1%)
Heart diseases	6 (0.1%)
Peripheral vascular diseases	3 (0.1%)
Musculoskeletal diseases	2 (0.0%)
Allergy	2 (0.0%)
Neurobechet disease	1 (0.0%)
Myasthenia gravis	1 (0.0%)
Total	4673 (100%)

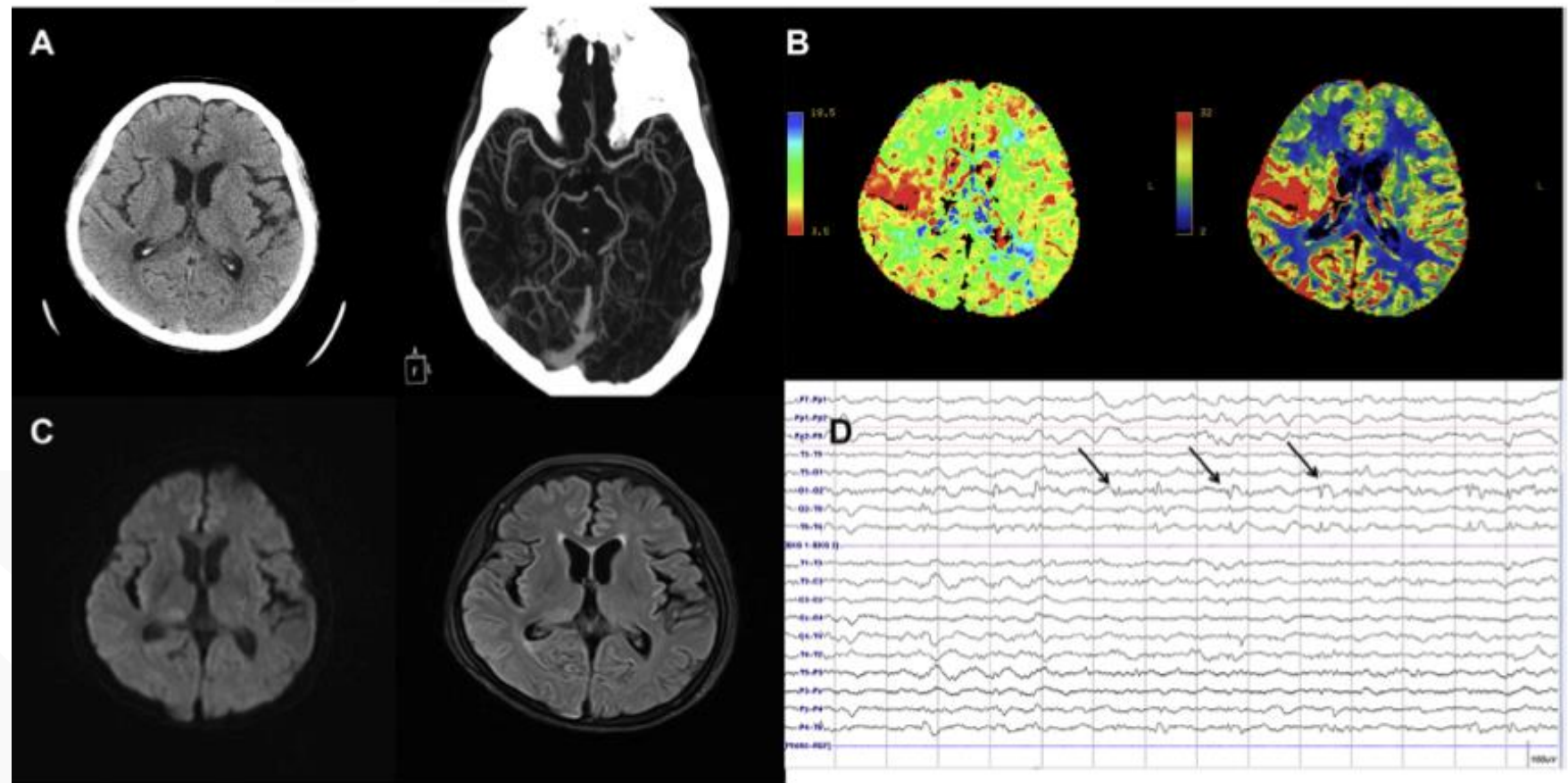


In caso di lesioni corticali, diagnosi differenziale con **trombosi dei seni venosi** (specialmente se utilizzo di contraccettivi orali, concomitante cefalea).

Fig. 1. The etiologies of seizure in patients presenting with stroke-like symptoms.



Seizure is a frequent final diagnosis in acute stroke management. However, careful interpretation of clinical features and results of perfusion imaging is necessary to avoid unnecessary thrombolysis in patients with seizure as a stroke mimic and thrombolysis failure due to delayed diagnosis of seizure as an initial manifestation of stroke.



Initial multi-modal CT evaluation of an illustrative case shows no abnormality in the initial non-contrast CT and CT angiography (A). However, CT perfusion showed markedly increased perfusion in the right temporal area (B). High signal intensity was observed in the right pulvinar area of thalamus in the DWI and FLAIR MRI (C). Scalp EEG showed persistent 1-Hz sharp waves (arrows) in the right temporo-occipital area (D)

Linee guida ISO-SPREAD 2020: ICTUS esordito con CRISI EPILETTICA

- Raccomandazione 9.7 Grado GPP
- In pazienti adulti con ictus ischemico acuto esordito con crisi epilettica, il Gruppo di lavoro **suggerisce il trattamento con r-tPA** e.v. entro 4.5 ore dall'esordio dei sintomi quando ci siano evidenze cliniche, eventualmente supportate da **neuroimmagini**, che il deficit neurologico residuo non sia un deficit post-critico ma sia attribuibile ad ischemia cerebrale

Sclerosi multipla

Il paziente con SM, specie all'esordio di malattia, viene visto in un terzo dei casi in Pronto Soccorso, e spesso presenta sintomi che impongono la diagnosi differenziale con un accidente cerebrovascolare

Quadri clinici all'esordio della SM

Sintomi	%
Deficit motori	51
Deficit sensitivi	34
Disturbi troncoencefalici	32
Cali visivi	22
Disturbi cerebellari	13
Disturbi sfinterici	9

Caratteristiche demografiche e cliniche tipiche di SM vs accidenti cerebrovascolari

Sintomi	Sclerosi multipla	Accidente cerebrovascolare
Genere	F>M	M>F
Età	20-40 anni	>60 anni
Fattori di rischio vascolare	-	+++
Insorgenza	Subacuta/lenta	Iperacuta/acuta
Deficit motori	+++	+++
Disturbi sensitivi	+++	+++
Disturbi visivi	+++	+++
Quadri midollari	+	-

Sindrome da encefalopatia posteriore reversibile (Posterior Reversible Encephalopathy Syndrome – PRES)

- Più frequentemente disturbo di campo visivo fino a cecità
- Possibile anche deficit neurologico focale sensitivo-motorio lieve.
- In genere, presenza di cefalea da alcuni giorni e, soprattutto, presenza di crisi parziali con possibile secondaria generalizzazione

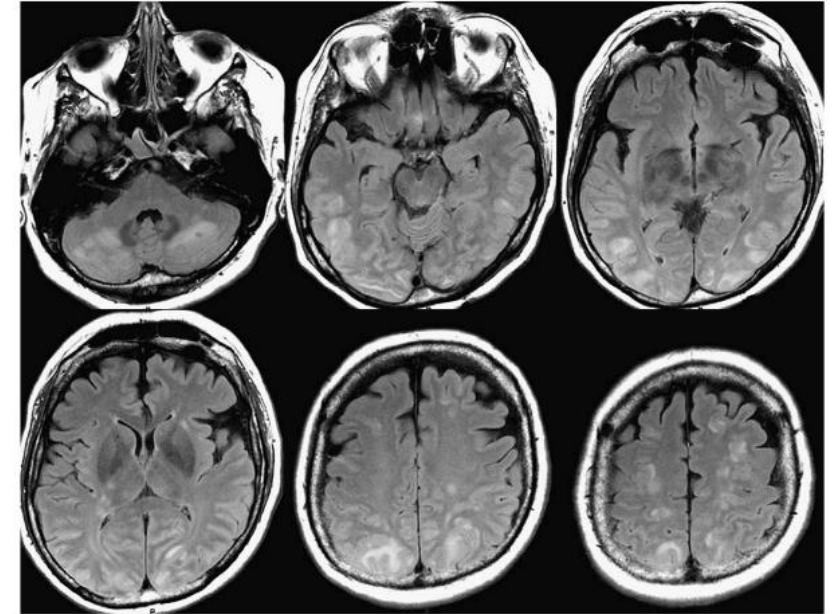
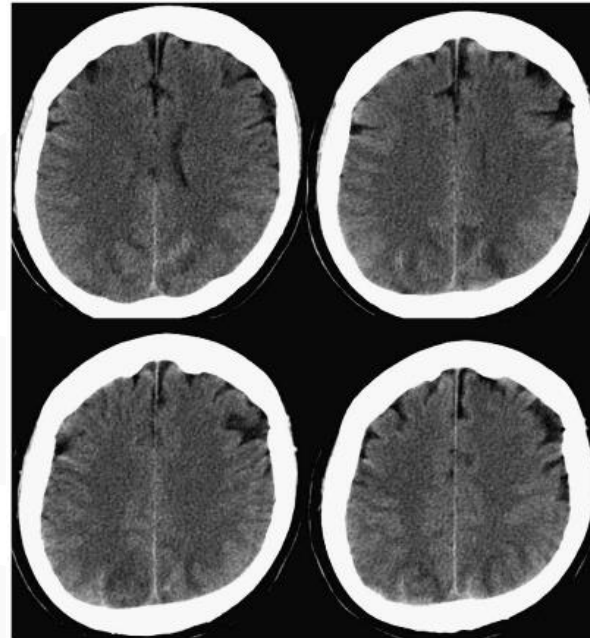


Tabella 2 Farmaci predisponenti alla PRES e condizioni occasionalmente associate.

Farmaci

- Ciclosporina
- Tacrolimus
- Citarabina
- Cisplatino
- Gemcitabina
- Bevacizumab
- Immunoglobuline ev
- Eritropoietina
- Terapia steroidea ad alte dosi

Patologie

- Feocromocitoma
- Porfiria acuta intermittente
- Porpora trombotica trombocitopenica
- Ipercalcemia
- Sindrome di Guillain-Barré

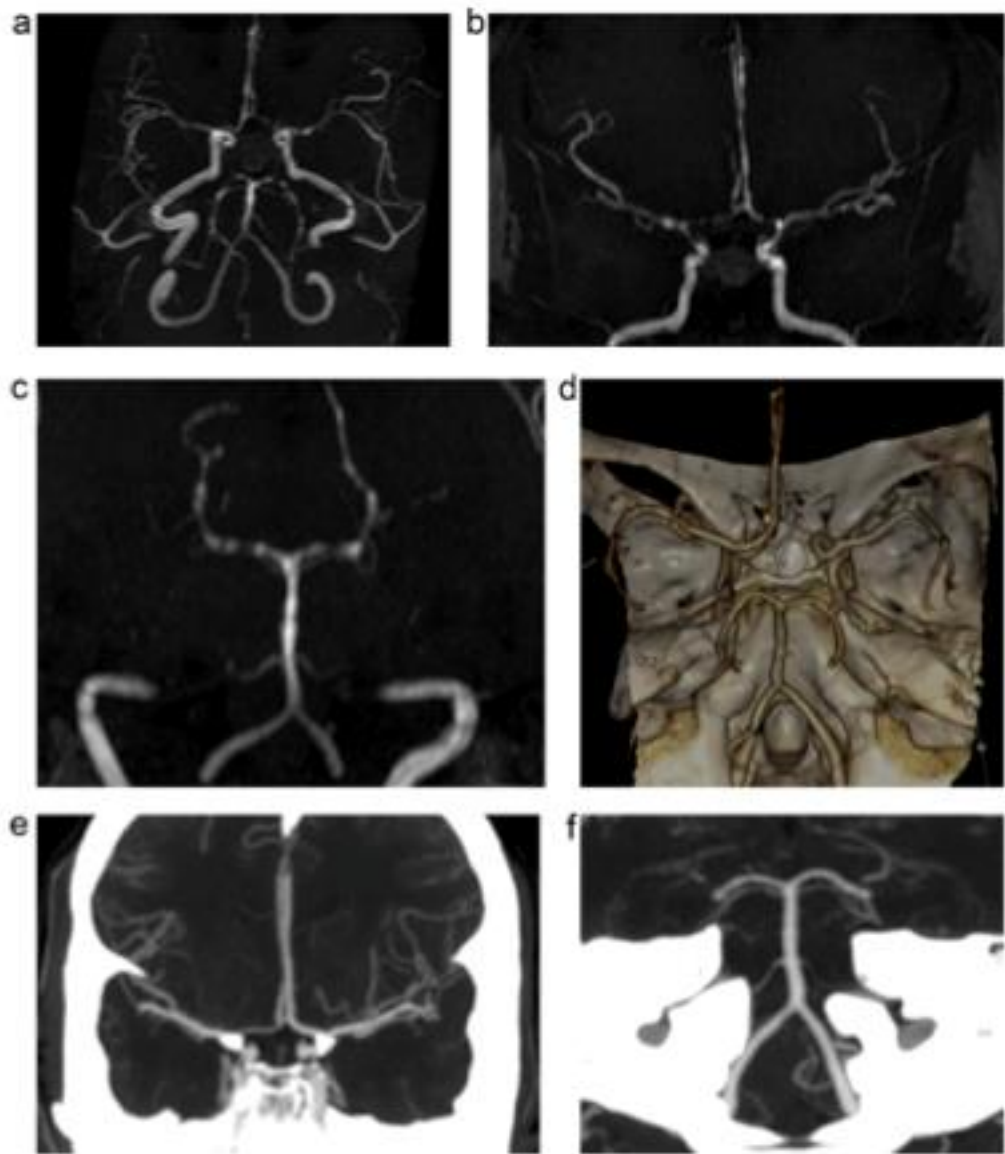
Tabella 3 PRES: diagnosi differenziale.

Trombosi venosa cerebrale
Infarto ischemico
Vasculite
Encefalite infettiva
Leucoencefalopatia multifocale progressiva
Encefalomielite acuta disseminata
Gliomatosi cerebrale

Tabella 1 Condizioni patologiche tipiche a rischio di PRES.

Encefalopatia ipertensiva
Preeclampsia/eclampsia
Malattie autoimmuni (lupus eritematoso sistemico, sindrome di Wegener, sclerosi sistemica, panarterite nodosa)
Post-trapianto (midollo osseo allogenico/organo solido)
Stati infettivi/sepsi
Farmaci

Sindrome da vasocostrizione cerebrale reversibile (SVCR)



Cefalea a esordio acuto di grado severo, in genere del tipo “a colpo di tuono”, talora associata all’insorgenza di infarti cerebrali, emorragie intracraniche o edema cerebrale che possono determinare la comparsa di deficit neurologici focali e/o crisi epilettiche

Reversible Cerebral Vasoconstriction Syndrome (RCVS) Postpartum 30 year-old female presenting with thunderclap headache without other neurological symptoms or signs (brain MRI – not shown – was normal). (a–c) 3D TOF MRA. Multiple areas of arterial constriction in the anterior and posterior arterial territories, affecting mostly the basilar artery, posterior cerebral arteries, supraclinoid ICA segments, M1 and M2 middle cerebral arteries segments, anterior cerebral artery. (d–f) Follow up CTA showing the reversal of the arterial abnormalities.

Vertigo or dizziness

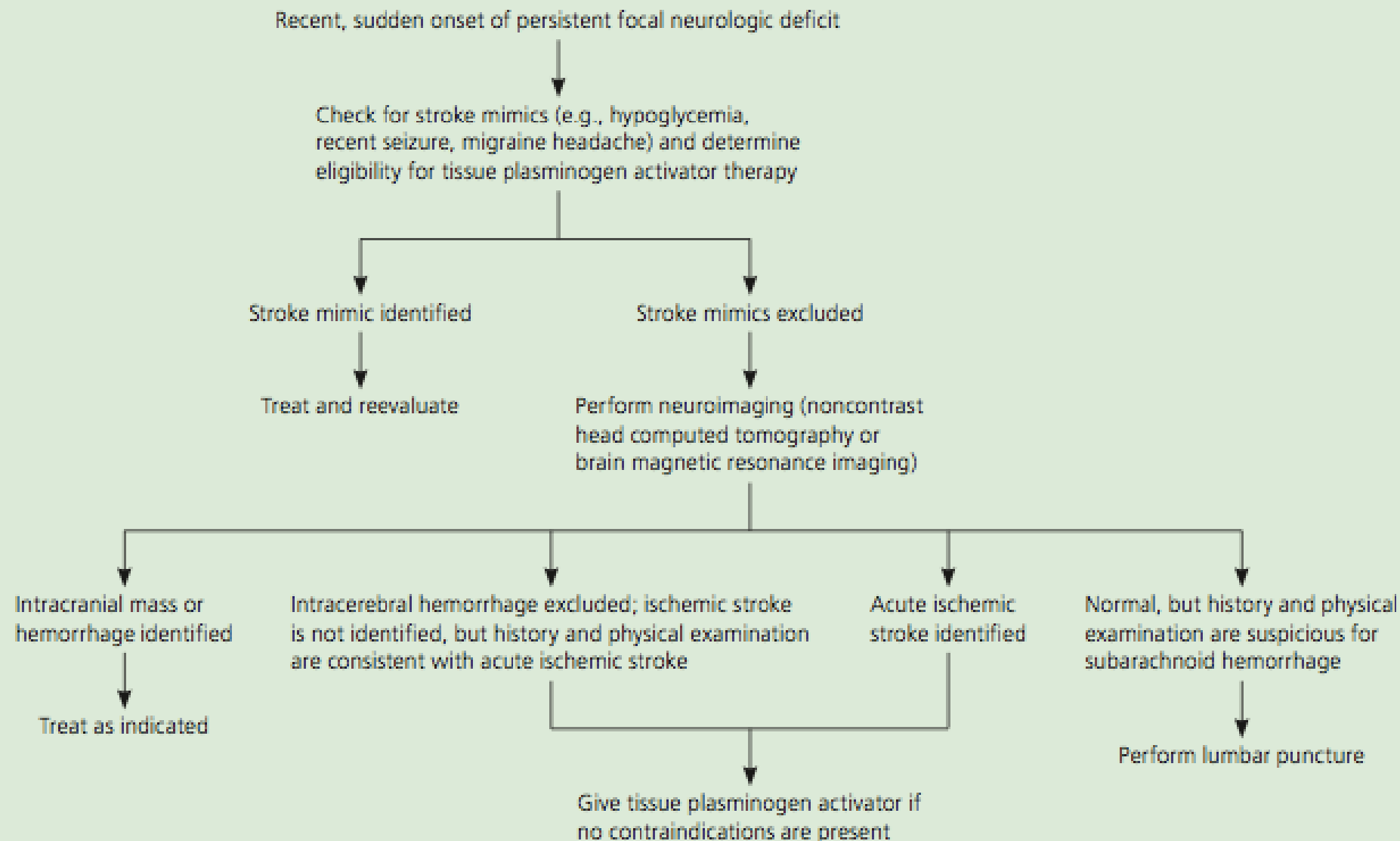
Prevalence of stroke or transient ischemic attack in adults older than 44 years with isolated dizziness symptoms in emergency setting is 0.7%¹⁶

Stroke prevalence is about 25% in patients presenting with acute vestibular syndrome¹⁹

Table 3. Bedside Predictors of Stroke and Other Central Etiologies in Patients with Acute Vestibular Syndrome

<i>Bedside diagnostic predictor</i>	<i>Test description</i>	<i>Sensitivity (95% CI)</i>	<i>Specificity (95% CI)</i>	<i>LR+ (95% CI)</i>	<i>LR- (95% CI)</i>
Normal result on horizontal head impulse test	Turn the patient's head laterally 10 to 20 degrees while observing his or her eyes. A normal result is for the eyes to stay fixed on a target. An abnormal result is for the eyes to rapidly move back to the target once head movement stops. The test also may be performed by turning the patient's head back to center from 10 to 20 degrees off-center. ²⁰	0.85 (0.79 to 0.91)	0.95 (0.90 to 1.00)	18.39 (6.08 to 55.64)	0.16 (0.11 to 0.23)
Direction-changing nystagmus	Nystagmus in the setting of acute vertiginous syndrome is normally unidirectional, with the fast beat of nystagmus away from the affected side and a slow return toward the affected side. Nystagmus is enhanced when the eye moves toward the side of the fast beat and decreases or disappears when the eye moves toward the side of slow beat. With central lesions, the fast beat of nystagmus may change directions toward the direction the eyes are moving, hence the term "direction-changing nystagmus." ²⁰	0.38 (0.32 to 0.44)	0.92 (0.86 to 0.98)	4.51 (2.18 to 9.34)	0.68 (0.60 to 0.76)
Skew deviation	Normally during the cover-uncover test there is no eye movement. Upward or downward movement on the cover-uncover test (refixation) indicates skew deviation and is associated with a central lesion. ²⁰	0.30 (0.22 to 0.39)	0.98 (0.95 to 1.00)	19.66 (2.76 to 140.15)	0.71 (0.63 to 0.80)
HINTS positive	HINTS positive is a normal head impulse test result, direction-changing nystagmus, refixation on cover test (skew deviation), or any combination of these findings. ¹⁸	96.8 (92.4 to 99.0)	98.5 (92.8 to 99.9)	63.9 (9.13 to 446.85)	0.03 (0.01 to 0.09)

Diagnosis of Acute Stroke



IT'S A STROKE!



Linee guida ISO-SPREAD 2020: ICTUS fra le 4.5 e le 9 ORE dall'esordio

- Raccomandazione 9.6 Grado Forte a Favore
- In pazienti adulti con ictus ischemico **fra le 4.5 e le 9 ore** dall'esordio teorico dei sintomi acuti, la trombolisi con r-tPA e.v. è raccomandata qualora la RM DWI/PWI o la CTP evidenzii tessuto ischemico in penombra salvabile

CHECKLIST DECISIONE CLINICA

Iter Decisionale Imaging

TROMBOLISI

 0–4.5 ore	 4.5–9 ore
Azione: CT Basale → Escludere Sanguinamento → Valutare segni precoci ed estensione regione danneggiata (<1/3 ACM o ASPECTS>7) Considerare la Trombolisi se non ci sono controindicazioni	Azione: TC Basale → Escludere Sanguinamento → Valutare segni precoci ed estensione regione danneggiata (<1/3 ACM o ASPECTS>7) Azione: TC Perfusionale o RM DW/PW → Verificare presenza tessuto ischemico in penombra salvabile • ECASS IV: RM DW e PW; rapporto volumetrico tessuto ipoperfuso/core ischemico > 1.2; volume di ipoperfusione alla PW ≥ 20 ml; • EXTEND: RM DW/PW o TCP; volume core ischemico < 70 ml; rapporto volumetrico tessuto ipoperfuso/core ischemico > 1.2; differenza assoluta di volume fra tessuto ipoperfuso e core ischemico > 10 ml; • EPITHET: utilizzo di RM DW/PW; rapporto volumetrico PW/DW > 1.2; volume PW–DW ≥10 mL; Considerare la Trombolisi se non ci sono controindicazioni

Linee guida ISO-SPREAD 2020: ICTUS al RISVEGLIO

- Raccomandazione 9.5 Grado Forte a Favore
- In pazienti adulti con ictus ischemico acuto al **risveglio**, la trombolisi con r-tPA e.v. è raccomandata qualora il confronto fra **RM DWI e FLAIR** consenta di datare l'esordio dell'evento entro le 4.5 ore
 - Sintesi 9.3
- La letteratura riporta serie di pazienti adulti con ictus ischemico acuto al risveglio trattati con efficacia e sicurezza con r-tPA e.v. essendo stati selezionati in base a presenza ed estensione dei segni precoci di infarto alla TC

Linee guida ISO-SPREAD 2020: Trattamento endovascolare



- Raccomandazione 9.31 Grado Forte a Favore
- In pazienti adulti con ictus ischemico acuto da occlusione di grossa arteria di circolo anteriore, il **trattamento endovascolare** associato al miglior trattamento medico...è raccomandato **entro 6 ore** dall'esordio dei sintomi, in pazienti precedentemente autonomi (mRS<2) con NIHSS >5 in assenza di ampia lesione ischemica (ASPECT >5)

Linee guida ISO-SPREAD 2020: Trattamento endovascolare



- Raccomandazione 9.37 Grado Forte a Favore
- In pazienti adulti con ictus ischemico acuto da occlusione di grossa arteria di circolo anteriore tra **6 ore e 24 ore** dall'ultima volta in cui sono stati visti/sentiti in benessere, è raccomandato il **trattamento endovascolare** associato al miglior trattamento medico, secondo i criteri dei trial DEFUSE e DAWN

CHECKLIST DECISIONE CLINICA

TROMBECTOMIA



0-6 ore

Azione: TC Basale

- Escludere Sanguinamento
- Valutare segni precoci ed estensione regione danneggiata (<1/3 ACM o ASPECTS>7)

Azione: AngioTC

- Occlusione nella ACI/ACM1/2

Pre-mRS (0-1)

Localizzazione del coagulo (ACI/ACM 1/2)

Età (≥ 18)

ASPECTS (≥ 6)

Considerare la Trombectomia



6-24 ore

Azione: TC Basale

- Escludere Sanguinamento
- Valutare segni precoci ed estensione regione danneggiata (<1/3 ACM o ASPECTS>7)

Azione: AngioTC

- Occlusione nella ACI/ACM1

Azione: CT Perfusione

- Verificare Core Ischemico e Mismatch

(vedi i criteri **DAWN** e **DEFUSE-3** nella pagina seguente)

Considerare la Trombectomia

In conclusione: Cosa chiede il clinico al neuroradiologo?

- Stroke o mimic? => RM
- Sintomi inusuali, o di fossa posteriore: => RM
- Necessità di effettuare trombolisi e.v. in finestra: TC (ASPECT)
- Valutazione trombectomia: angio TC
- Valutazione del paziente con ictus al risveglio/non databile: => RM
DWI/PWI (o CTP)
- Valutazione del paziente fuori finestra per tPA e.v. (4.5- 9 ore) o
trombectomia (6-24 ore): => CTP (o RM)

Conclusioni

- La diagnosi di ictus (clinica e neuroradiologica) non sempre è agevole e richiede medici esperti
- Il processo decisionale comporta stretta interazione tra Neurologo e Neuroradiologo
- I predittori prognostici più rilevanti sono correlati al trattamento di fase acuta
- Necessaria formazione per esperti «Neurovascolari»