Stroke maligno,decompressione? contrario

Paolo Cerrato

Stroke unit

Osp Molinette

2. In patients ≤60 years of age who deteriorate neurologically within 48 hours from brain swelling associated with unilateral MCA infarctions despite medical therapy, decompressive craniectomy with dural expansion is reasonable.	**IIa**	**A**

The pooled results of RCTs demonstrated significant reduction in mortality when decompressive craniectomy was performed within 48 hours of malignant MCA infarction in patients <60 years of age, with an absolute risk reducti mortality of 50% (95% CI, 34–66) at 12 months.[280] These findings were noted despite differences in the clinical tri in terms of inclusion and exclusion criteria, percent of MCA territory involved, and surgical timing.[287,288] At 12 mon moderate disability (ability to walk) or better (mRS score 2 or 3) was achieved in 43% (22 of 51) of the total surgic group and 55% (22 of 40) of survivors compared with 21% (9 of 42; *P*=0.045) of the total nonsurgical group and 7 (9 of 12; *P*=0.318) of the nonsurgical survivors. At 12 months, independence (mRS score 2) was achieved in 14% of 51) of the total surgical group and 18% (7 of 40) of survivors compared with 2% (1 of 42) of the total nonsurgic group and 8% (1 of 12) of the nonsurgical survivors.[280,287–290]

3. In patients >60 years of age who deteriorate neurologically within 48 hours from brain swelling associated with unilateral MCA infarctions despite medical therapy, decompressive craniectomy with dural expansion may be considered.	**IIb**	**B-R**	R B
There is evidence that patients >60 years of age can have a reduction in mortality of ≈50% (76% in the nonsurgical group versus 42% in the surgical group in DESTINY [Decompressive Surgery for the Treatment of Malignant Infarction of the Middle Cerebral Artery] II) when decompressive craniectomy for malignant MCA infarction is performed within 48 hours of stroke onset.[287,288,291–295] However, functional outcomes in elderly patients seem to be worse than those in patients <60 years of age. At 12 months, moderate disability (able to walk; mRS score 3) was achieved in 6% (3 of 47) of the total surgical group and 11% (3 of 27) of survivors compared with 5% (3 of 22) of the total nonsurgical group and 20% (3 of 15) of the nonsurgical survivors. At 12 months, independence (mRS score ≤2) was not achieved by any survivors in either group.			S S

5.1.3. Surgical Management-Supratentorial Infarction	COR	LOE
1. Although the optimal trigger for decompressive craniectomy is unknown, it is reasonable to use a decrease in level of consciousness attributed to brain swelling as selection criteria.	IIa	A

Occhio a crisi e stato di male non convulsivo

Nessun sintomo

1 Invalidità non significativa malgrado la presenza di sintomi; in grado di svolgere i compiti e le attività usuali

2 Invalidità lieve; non in grado di svolgere tutte le attività precedenti, ma capace di badare autonomamente a sé stesso

3 Invalidità moderata; necessita di aiuto ma può deambulare senza assistenza

4 Invalidità moderatamente grave; incapace di deambulare e di badare ai propri bisogni corporali senza assistenza

5 Invalidità grave; allettato, incontinente e bisognoso di costante assistenza infermieristica ed attenzione

6 Deceduto

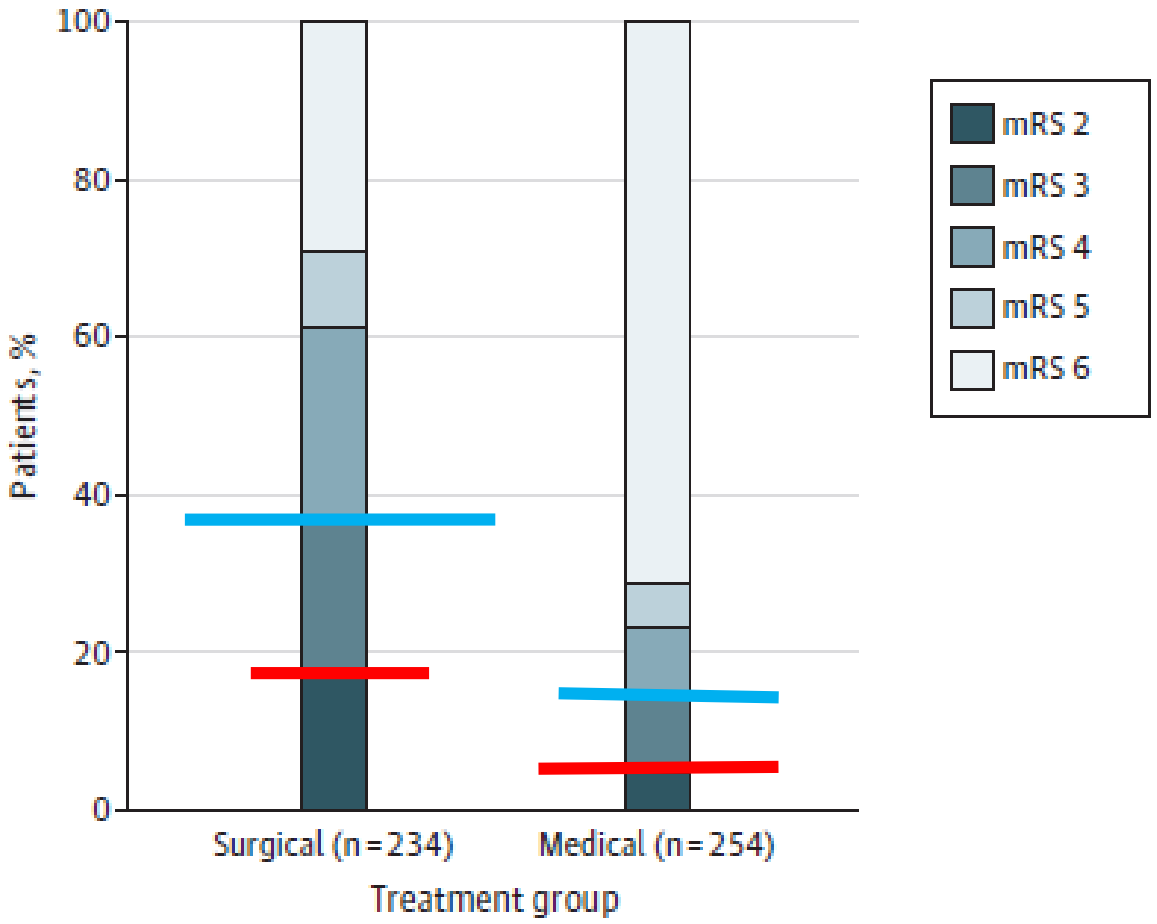
JAMA Neurology | Original Investigation

Surgical Decompression for Space-Occupying Hemispheric Infarction
A Systematic Review and Individual Patient Meta-analysis of Randomized Clinical Trials

Hendrik Reinink, MD; Eric Jüttler, MD; Werner Hacke, MD; Jeannette Hofmeijer, MD; Eric Vicaut, MD; Katayoun Vahedi, MD; Janis Slezins, MD; Yingying Su, MD; Linlin Fan, MD; Emre Kumral, MD; Jacoba P. Greving, PhD; Ale Algra, MD; L. Jaap Kappelle, MD; H. Bart van der Worp, MD; Hermann Neugebauer, MD

CONCLUSIONS AND RELEVANCE The results suggest that the benefit of surgical decompression for space-occupying hemispheric infarction is consistent across a wide range of patients. The benefit of surgery after day 2 and in elderly patients remains uncertain.

Figure 1. Scores on the Modified Rankin Scale (mRS) at 1 Year



BMJ Open

Hemicraniectomy versus medical treatment with large MCA infarct: a review and meta-analysis

Paul Alexander,[1] Diane Heels-Ansdell,[2] Reed Siemieniuk,[2,3] Neera Bhatnagar,[4] Yaping Chang,[2] Yutong Fei,[2,5] Yuqing Zhang,[2] Shelley McLeod,[6] Kameshwar Prasad,[7] Gordon Guyatt[2]

CONCLUSION

Although there is a large mortality reduction with hemicraniectomy in patients with SO-MCAi, the disabled life that faces the survivors and the uncertain magnitude of the increase in the likelihood of surviving with small or moderate disability, will require family members/caregivers to seriously consider the values and preferences of the afflicted patient in deciding whether to proceed with surgery.

neurocritical care society Neurocrit Care (2015) 23:292–304
DOI 10.1007/s12028-015-0144-7

REVIEW ARTICLE

Complications Associated with Decompressive Craniectomy: A Systematic Review

David B. Kurland[1] · Ariana Khaladj-Ghom[1] · Jesse A. Stokum[1] · Brianna Carusillo[1] · Jason K. Karimy[1] · Volodymyr Gerzanich[1] · Juan Sahuquillo[4] · J. Marc Simard[1,2,3]

intervention. While DC has received increased attention as a potential therapeutic option in a variety of situations, like any surgical procedure, DC is not without risk. Neurologists and neurosurgeons must be aware of all the potential complications of DC in order to properly advise their patients.

Table 1 Rates of complications in adult patients after DC and cranioplasty

	Overall estimated frequency[c]	Complication type[a]	Estimated frequency[b]	TBI	Ischemic stroke	Hemorrhagic stroke	Others/ unspecified
Complications of DC	13.4 % (2256/16791)	Hemorrhagic complications	12.0 % (586/4848)	11.9 % (414/3443)	20.7 % (130/627)	2.7 % (9/339)	7.5 % (33/439)
		Infectious/inflammatory complications	6.9 % (300/4349)	5.5 % (150/2720)	9.4 % (52/556)	12.6 % (66/522)	5.8 % (32/551)
		CSF disturbances	18.0 % (1370/7594)	18.4 % (1094/5939)	17.1 % (142/828)	17.4 % (50/287)	15.6 % (84/540)
Complications of Cranioplasty	6.4 % (1249/19638)	Hemorrhagic complications	3.6 % (113/3101)	5.4 % (23/426)	4.6 % (13/285)	5.5 % (12/217)	3.0 % (65/2173)
		Infectious/inflammatory complications	6.0 % (565/9359)	7.4 % (172/2318)	5.8 % (34/588)	5.1 % (9/178)	5.6 % (350/6275)
		CSF disturbances	5.4 % (143/2659)	6.3 % (81/1293)	6.0 % (11/182)	6.0 % (11/183)	4.0 % (40/1001)
		Bone Flap resorption/ depression and Cosmetic defects	9.5 % (428/4519)	12.5 % (144/1151)	12.7 % (28/221)	2.9 % (3/102)	8.3 % (253/3045)
			Total estimated patient frequency[d]	12.0 % (2078/17290)	12.5 % (410/3287)	8.8 % (160/1828)	6.1 % (857/14024)

All data reported in this table refer to adult injury

Guideline

EUROPEAN STROKE JOURNAL

European Stroke Organisation (ESO) guidelines on the management of space-occupying brain infarction

European Stroke Journal
2021, Vol. 6(2) XC–CX

DOI: 10.1177/23969873211014112
journals.sagepub.com/home/eso
SAGE

H Bart van der Worp[1], Jeannette Hofmeijer[2,3], Eric Jüttler[4], Avtar Lal[5], Patrik Michel[6], Paola Santalucia[7], Silvia Schönenberger[8], Thorsten Steiner[8,9] and Götz Thomalla[10]

Results

PICO 1: In patients with space-occupying hemispheric infarction aged 18 up to and including 60 years, does surgical decompression initiated within 48 hours of stroke onset as compared to no surgical decompression reduce the risk of death or poor outcome?

Evidence-based recommendation.

In adult patients aged 60 years or younger with space-occupying hemispheric infarction who can be treated within 48 hours of stroke onset we recommend surgical decompression to reduce the risks of death or a poor outcome.

Surgery should only be done after a shared decision process including a careful discussion with the patient or his/her representatives about the risk of survival with substantial disability.

Quality of evidence: **Moderate** ⊕⊕⊕

Strength of recommendation: **Strong** ↑↑

cal decompression differed considerably among studies. In 4 trials,[8,10,11,22] 0% to 12.5% of patients older than 60 years reached a favorable outcome, as opposed to 66% in DEMITUR (Decompressive Surgery for the Treatment of Malignant Infarction of the Middle Cerebral Artery: A Randomized Controlled Trial in a Turkish Population) (eTable 6 in the Supplement). Treatment effects in these patients were fairly consistent, but absolute numbers of patients who reached a favorable outcome were small, especially when DEMITUR was excluded (eFigure 5 in the Supplement).

Conclusions

In this meta-analysis of patients with space-occupying hemispheric infarction, surgical decompression was associated with a substantial increase in the chance of a favorable outcome. This benefit appeared to be independent of the presence of aphasia, stroke severity, age, and the involvement of other vascular territories in addition to that of the MCA. Data on surgical decompression performed later than 48 hours after stroke onset were too limited for reliable conclusions, and the reported proportions of elderly patients who reached a favorable outcome varied widely between studies.

Expert consensus statements.

There is consensus among the group members that in patients with space-occupying hemispheric infarction the benefit of surgical decompression does not depend on the absence or presence of aphasia.

Most group members agree that the benefit of surgical decompression does not depend on the presence of an infarct in the territory of the anterior or posterior cerebral artery in addition to that of the middle cerebral artery.

There is consensus among the group members that additional space-occupying haemorrhagic transformation should not be regarded as a contraindication to surgery.

There is consensus among the group members that in patients with space-occupying hemispheric infarction who will undergo decompressive surgery the diameter of the craniectomy should be at least 12 cm.

Stroke

CLINICAL AND POPULATION SCIENCES

Dosage, Intensity, and Frequency of Language Therapy for Aphasia: A Systematic Review–Based, Individual Participant Data Network Meta-Analysis

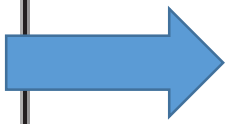
The REhabilitation and recovery of peopLE with Aphasia after StrokE (RELEASE) Collaborators*

CONCLUSIONS: Greatest language recovery was associated with frequent, functionally tailored, receptive-expressive SLT, with prescribed home practice at a greater intensity and duration than reports of usual clinical services internationally. These exploratory findings suggest critical therapeutic ranges, informing hypothesis-testing trials and tailoring of clinical services.

Expert consensus statements.

There is consensus among the group members that in patients with space-occupying hemispheric infarction the benefit of surgical decompression does not depend on the absence or presence of aphasia.

Most group members agree that the benefit of surgical decompression does not depend on the presence of an infarct in the territory of the anterior or posterior cerebral artery in addition to that of the middle cerebral artery.



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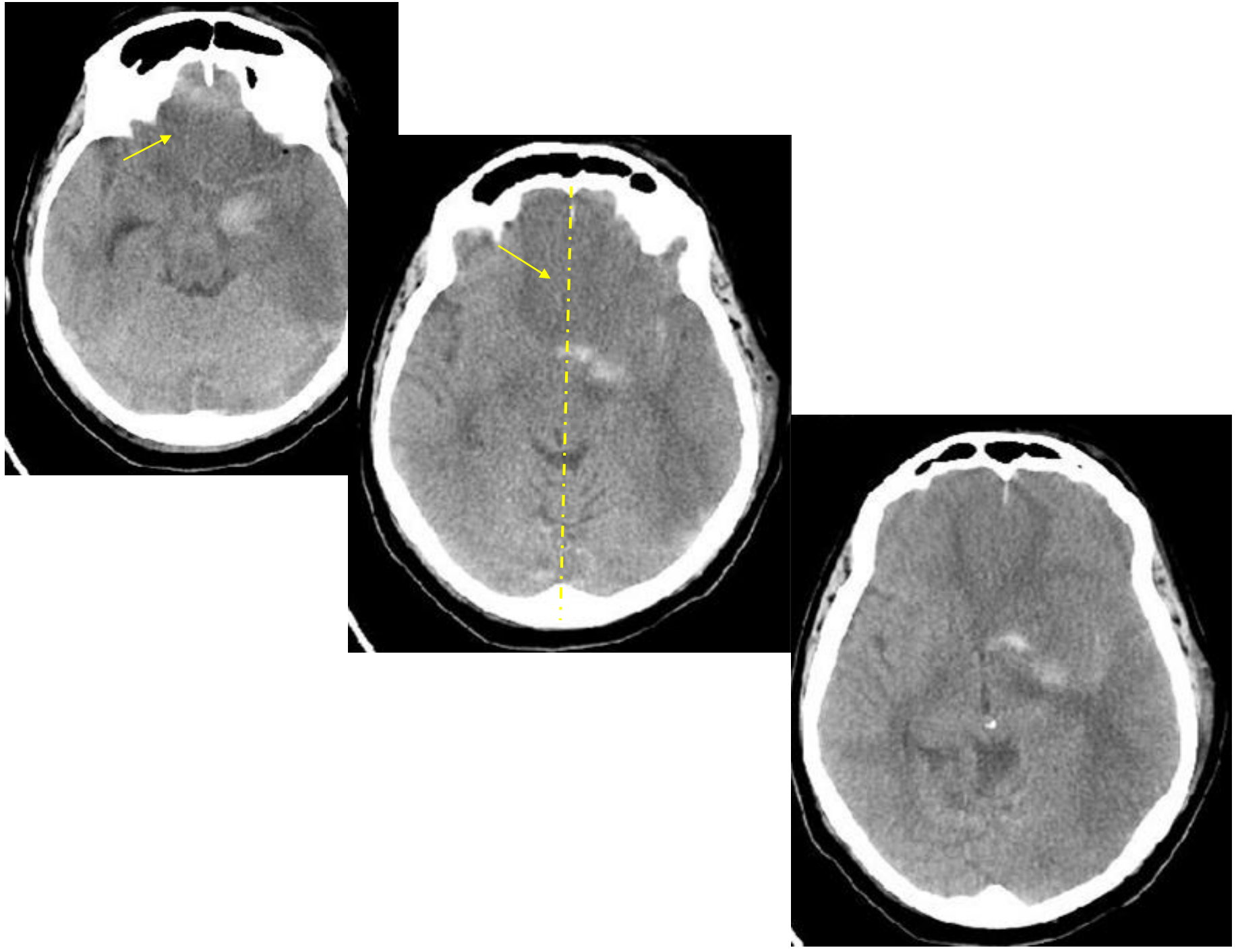


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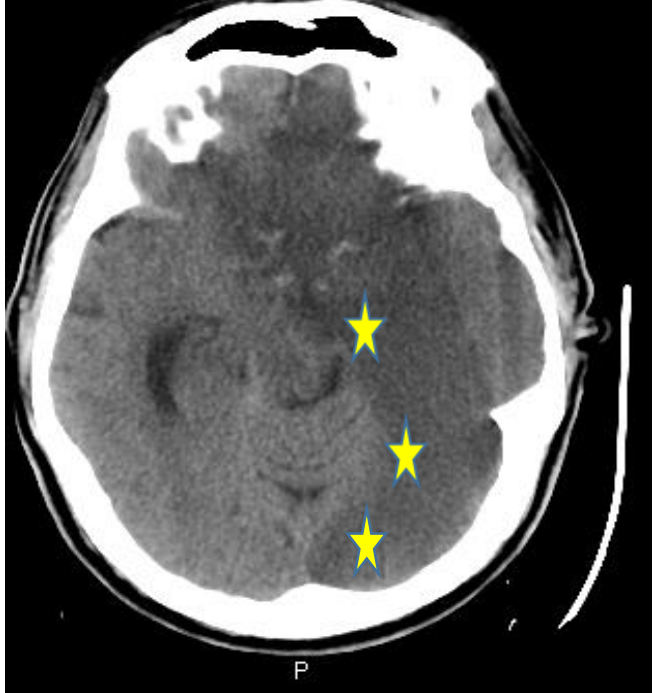
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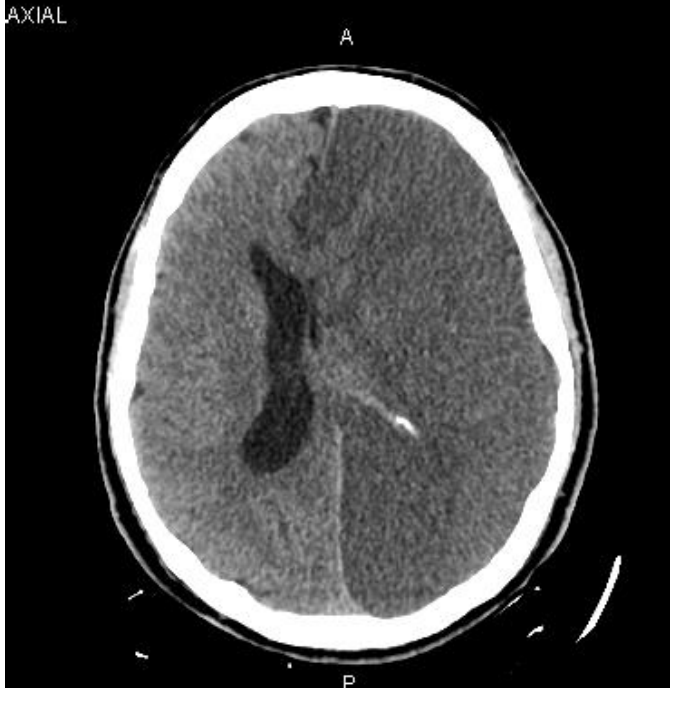
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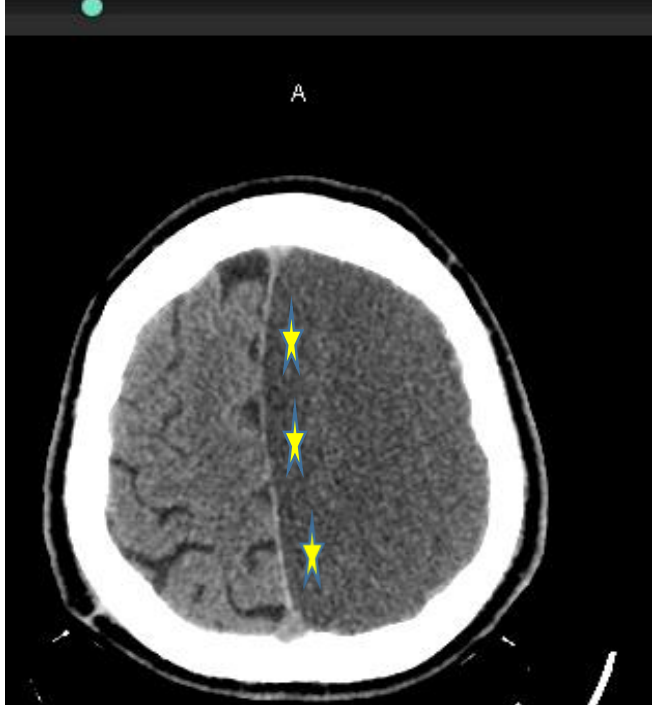
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Acta Neurochir (2018) 160:83–89
DOI 10.1007/s00701-017-3329-3

ORIGINAL ARTICLE - NEUROSURGICAL TECHNIQUES

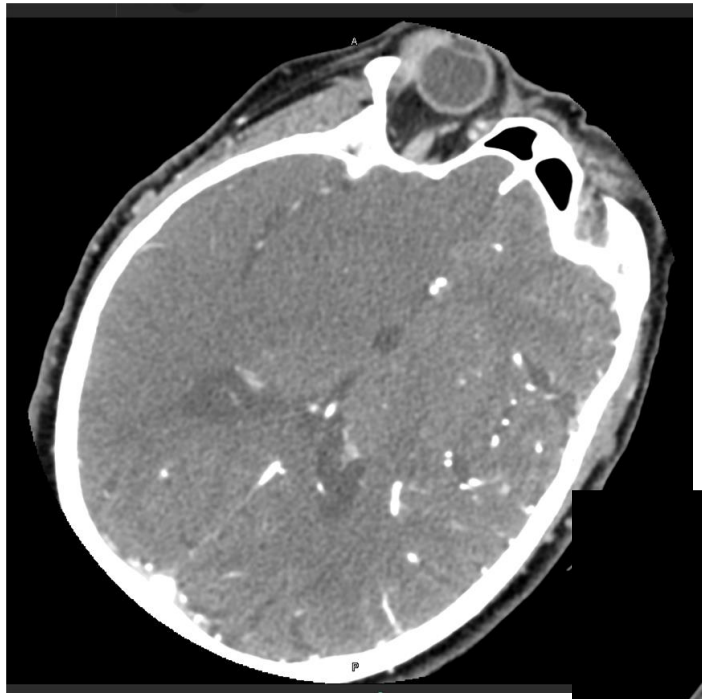
Decompressive hemicraniectomy for malignant middle cerebral artery infarction including patients with additional involvement of the anterior and/or posterior cerebral artery territory—outcome analysis and definition of prognostic factors

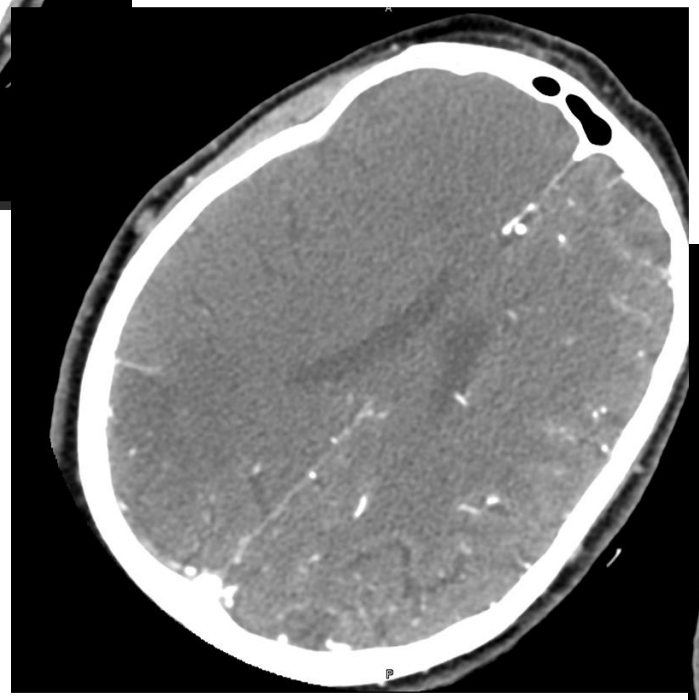
Sven Kürten[1] · Christopher Munoz[1] · Kerim Beseoglu[1] · Igor Fischer[2] · Jason Perrin[3] · Hans-Jakob Steiger[1]

Received: 28 March 2017 / Accepted: 8 September 2017 / Published online: 30 September 2017

Conclusions Intensified postoperative management including possible secondary decompression with necrosectomy may further reduce case fatality rate of patients with large hemispheric infarction. Age above 60 years and severely reduced level of consciousness are the most significant factors heralding unfavorable recovery. Patients suffering infarctions exceeding the MCA territory have a comparable chance of favorable recovery as patients with isolated MCA infarction.

Tc cranio : 2 passaggio

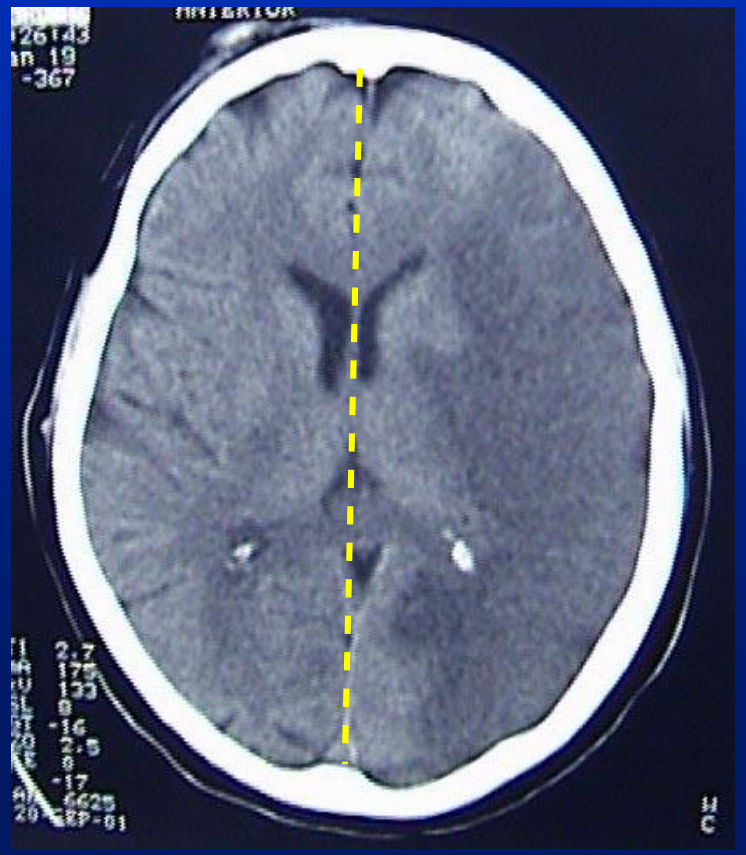




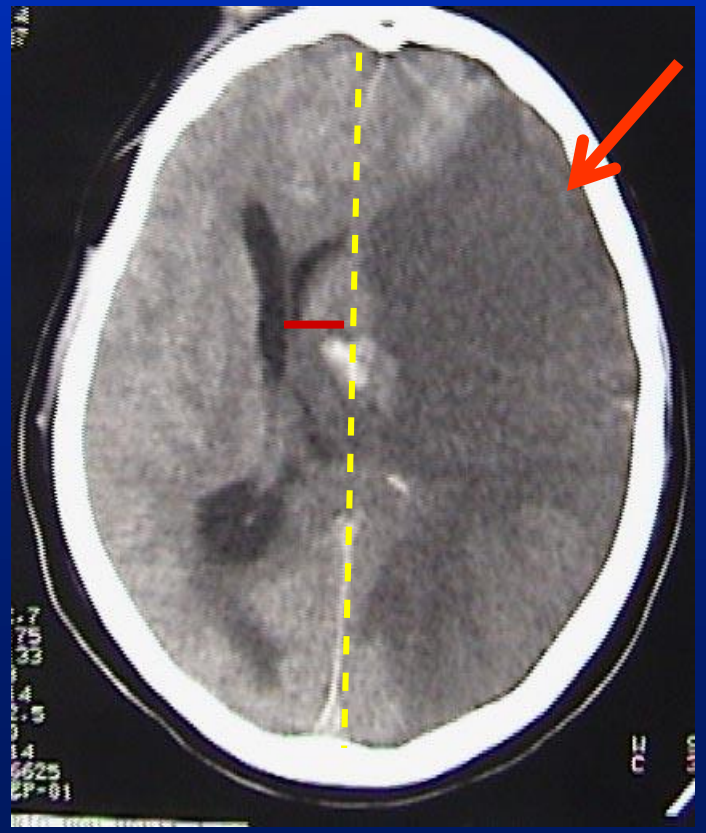
IPERTENSIONE ENDOCRANICA

Infarto maligno della cerebrale media

24 ore



72 ore



ORIGINAL RESEARCH

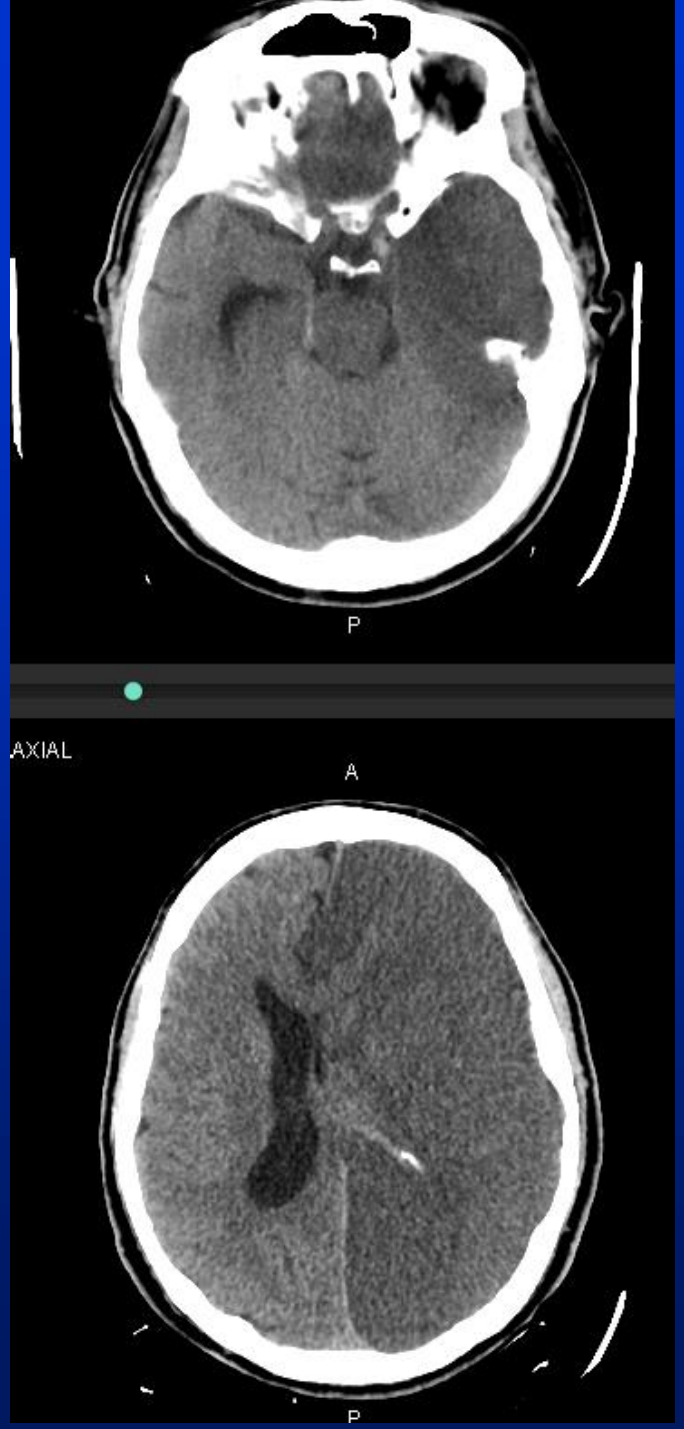
Predictors of outcome in 1-month survivors of large middle cerebral artery infarcts treated by decompressive hemicraniectomy

Barbara Casolla,[1] Maeva Kyheng,[2] Gregory Kuchcinski,[3] Jean-Paul Lejeune,[4] Riyad Hanafi,[3] Marie Bodenant,[5] Didier Leys ,[1] Julien Labreuche,[2] Etienne Allart,[6] Merce Jourdain,[7] Charlotte Cordonnier,[1] Hilde Henon[1]

Conclusion In patients with LMCA infarcts treated by DH, stroke characteristics (infarct volume before DH, midline shift after DH and early DH) predict 30-day mortality, while patients' characteristics (age and excessive alcohol intake) predict 1-year outcome survivors.

Table 3 Unadjusted comparison of survivors with good (modified Rankin scale score 0–3) and poor (modified Rankin scale score 4–6) outcomes

	Survivors with good outcome n=99	Survivors with poor outcome n=77	P values
Demographic characteristic			
Male sex	56/99 (56.6)	51/77 (66.2)	0.19
Age (years), mean (SD)	47.5 (9.8)	53 (8.4)	**<0.001**
Medical history			
Arterial hypertension	26/99 (26.3)	32/77 (41.6)	**0.03**
Diabetes mellitus	9/99 (9.1)	11/77 (14.3)	0.28
Smoking	57/99 (57.6)	46/77 (59.7)	0.77
Dyslipidaemia	30/99 (30.3)	22/77 (28.6)	0.80
Heavy alcohol intake	9/99 (9.1)	24/77 (31.2)	**<0.001**
Atrial fibrillation	5/99 (5.1)	13/77 (16.9)	**0.01**
Ischaemic heart disease	10/99 (10.1)	15/77 (19.5)	0.08
Previous stroke or TIA	11/99 (11.1)	8/77 (10.4)	0.88
Stroke clinical characteristics			
NIHSS score, median (IQR)	20 (18–23)	21 (18–23)	0.23
Wake-up stroke	37/98 (37.8)	34/77 (44.2)	0.39
Delay onset to DH, hours, median (IQR)	25 (16 to 34)	22 (14 to 29)	0.045
Stroke neuroradiological characteristics			
Infarct volume (mL), median (IQR)	175 (148 to 230)	199 (172 to 232)	**0.04**
Left hemisphere	54/99 (54.5)	41/77 (53.2)	0.86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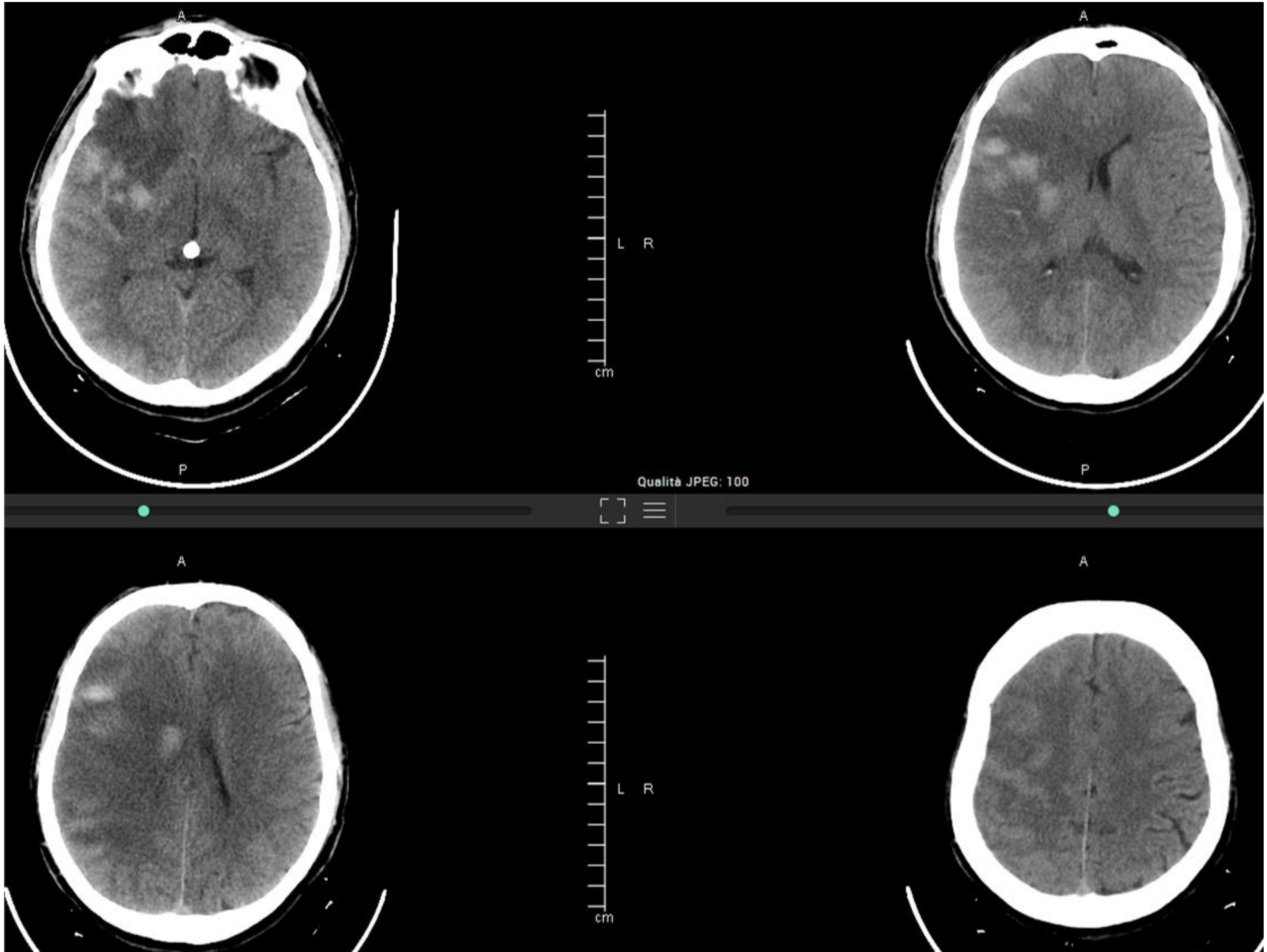
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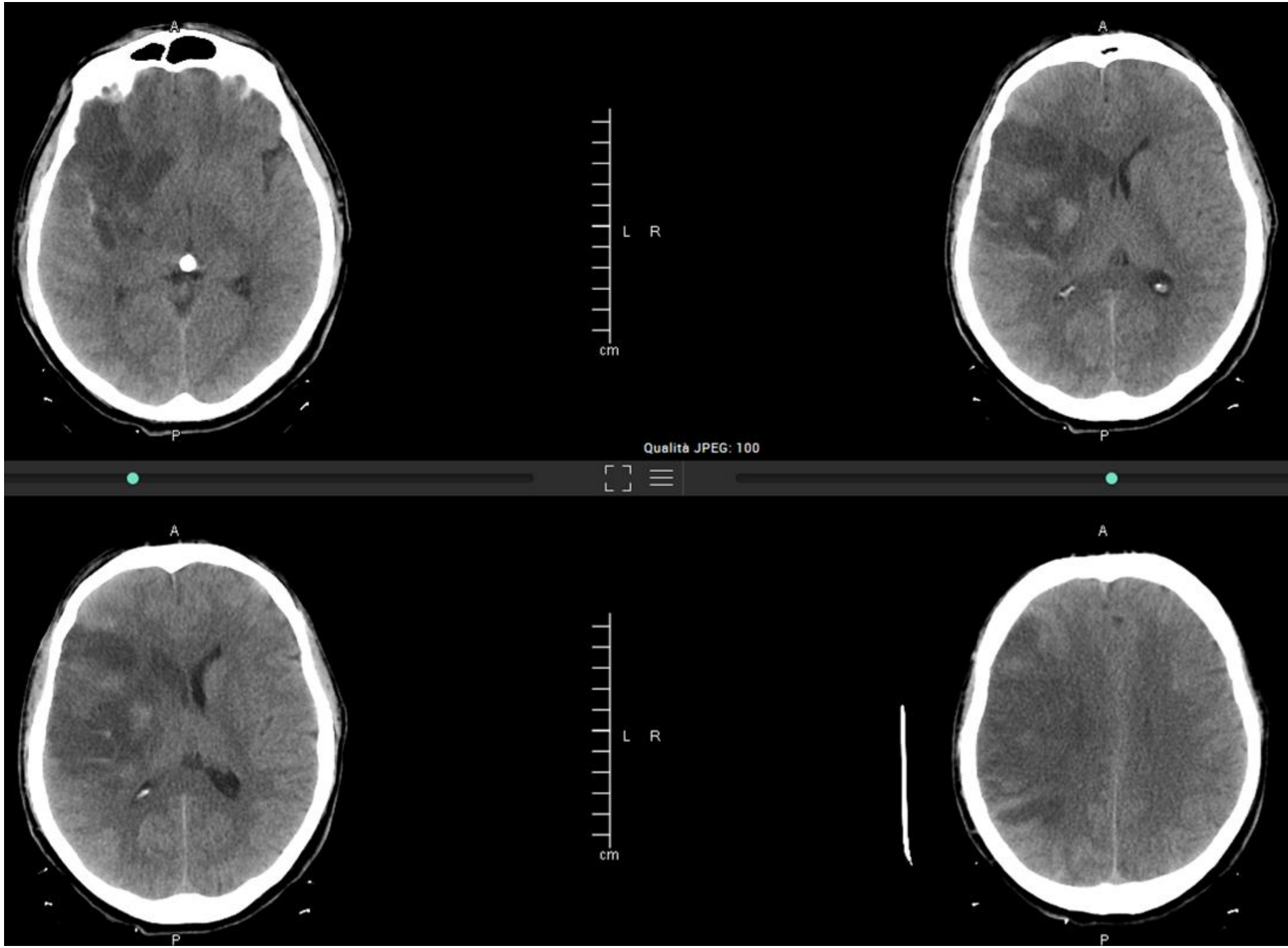
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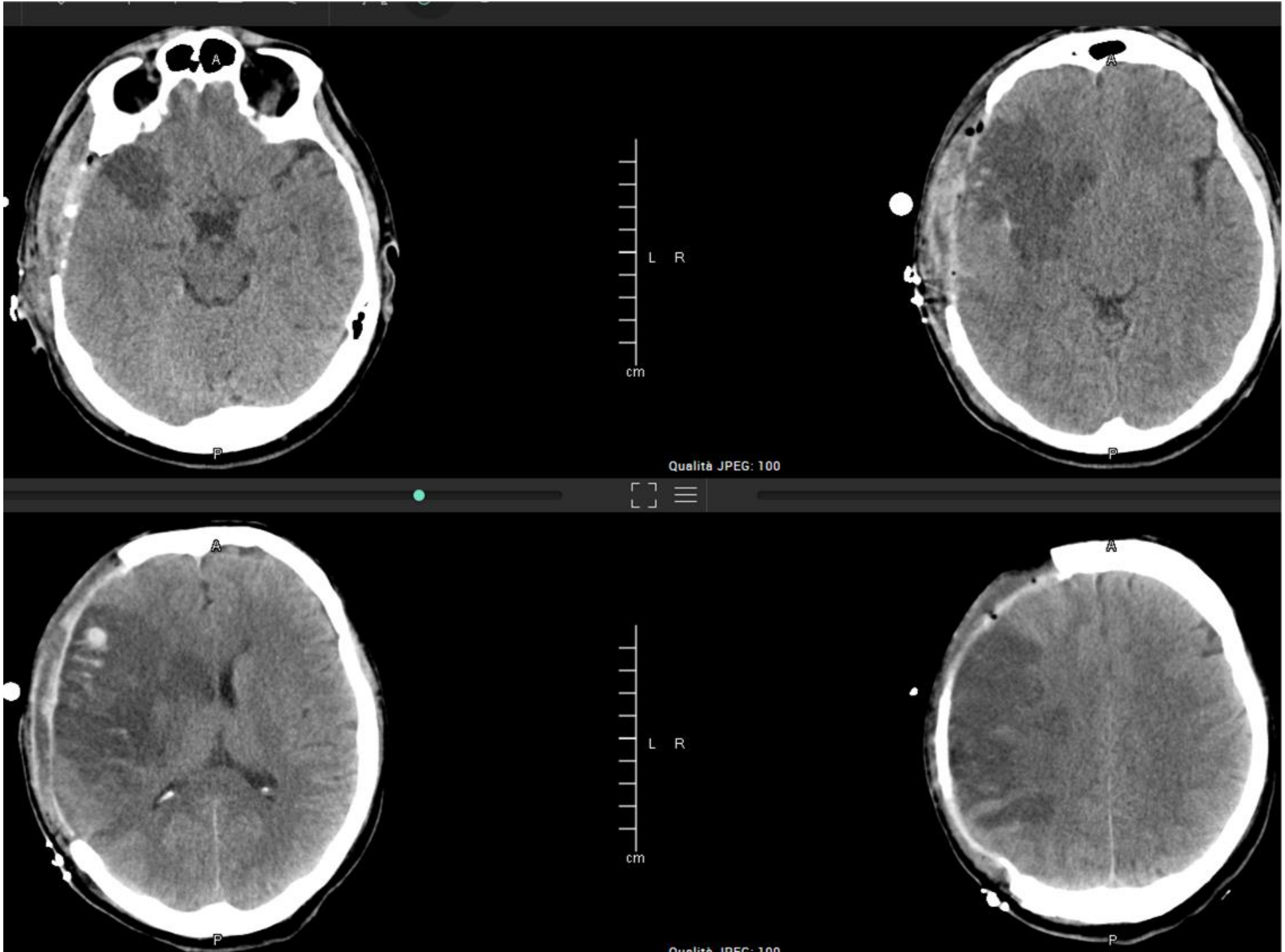
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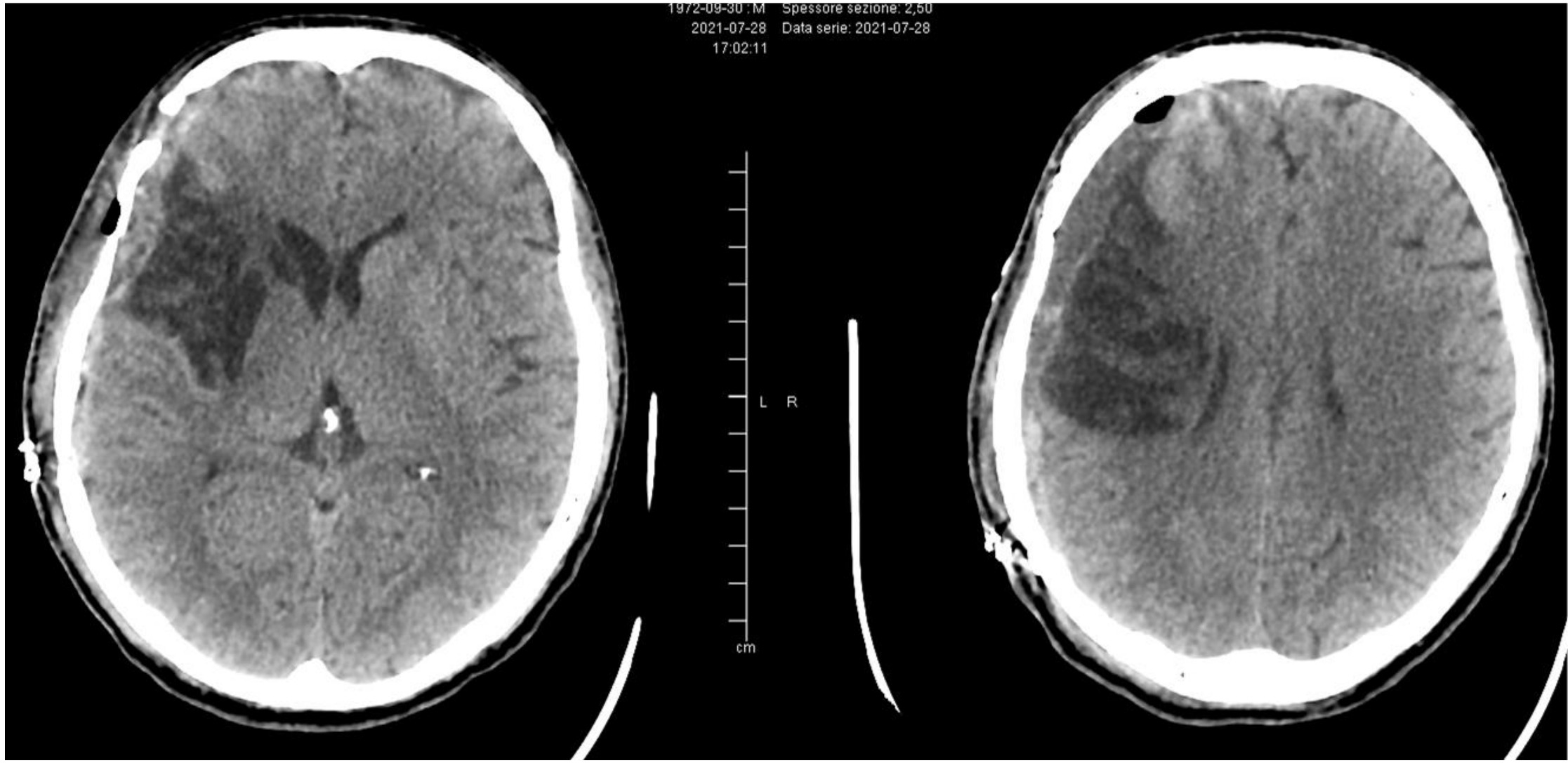
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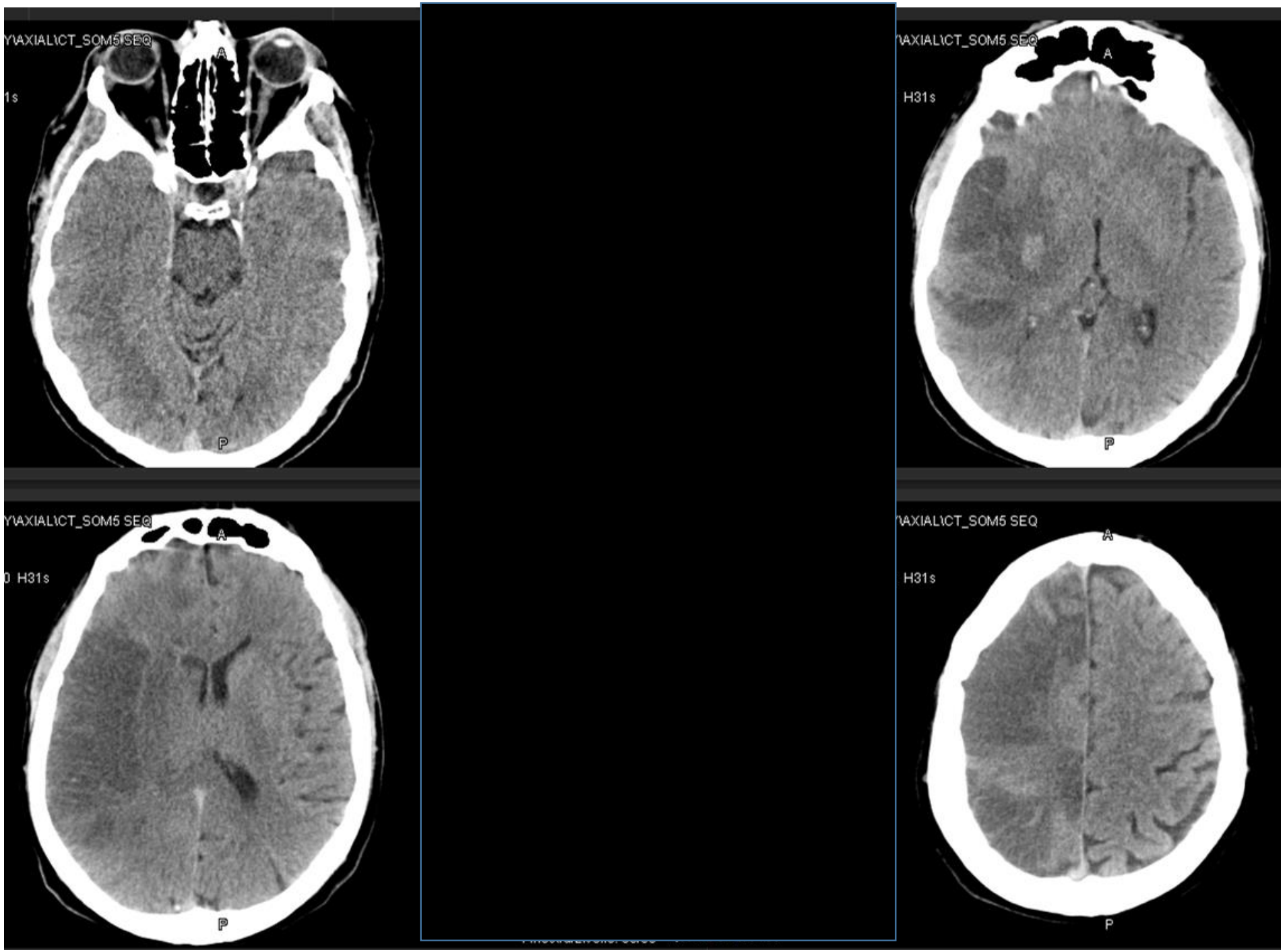
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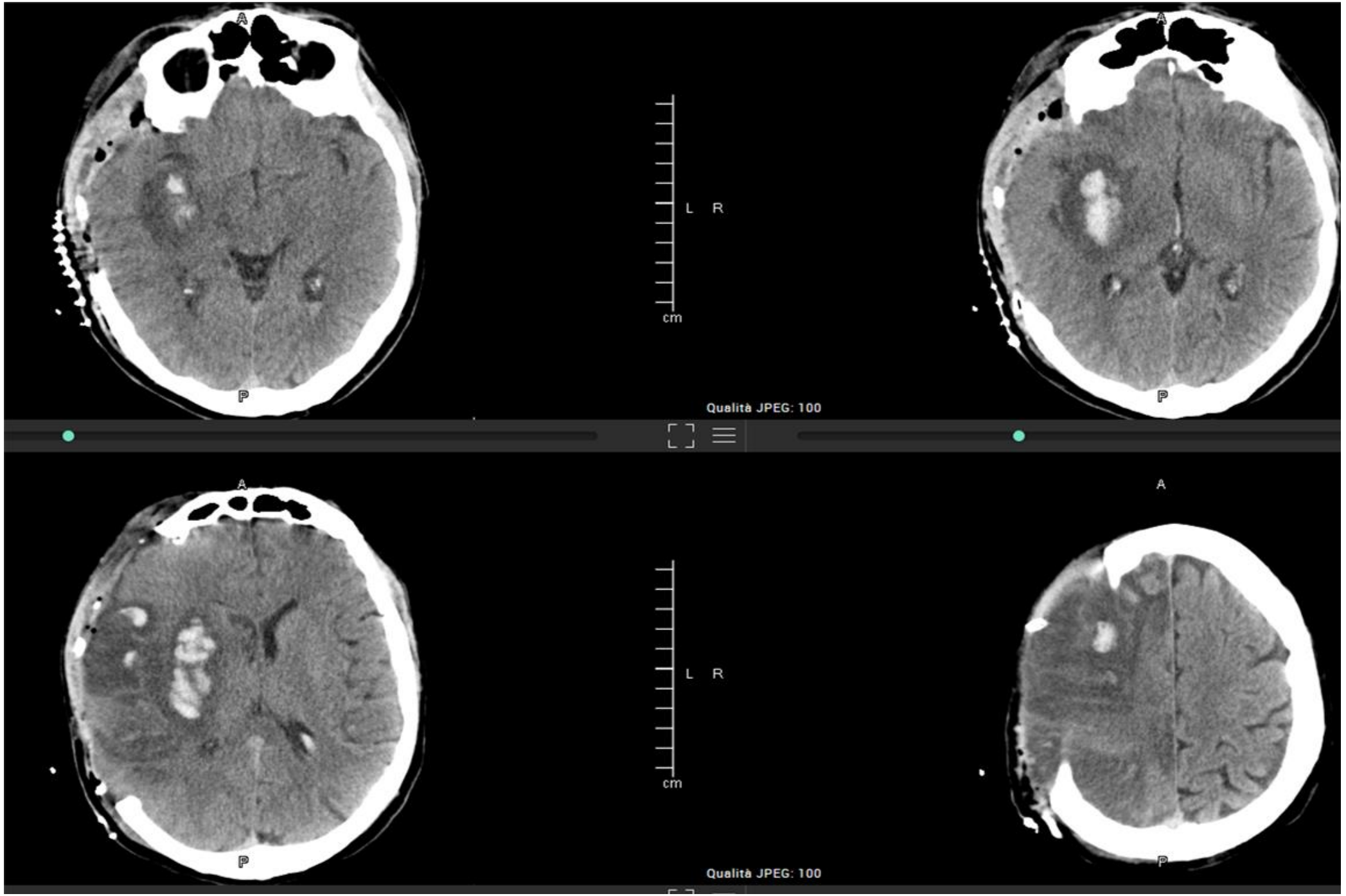
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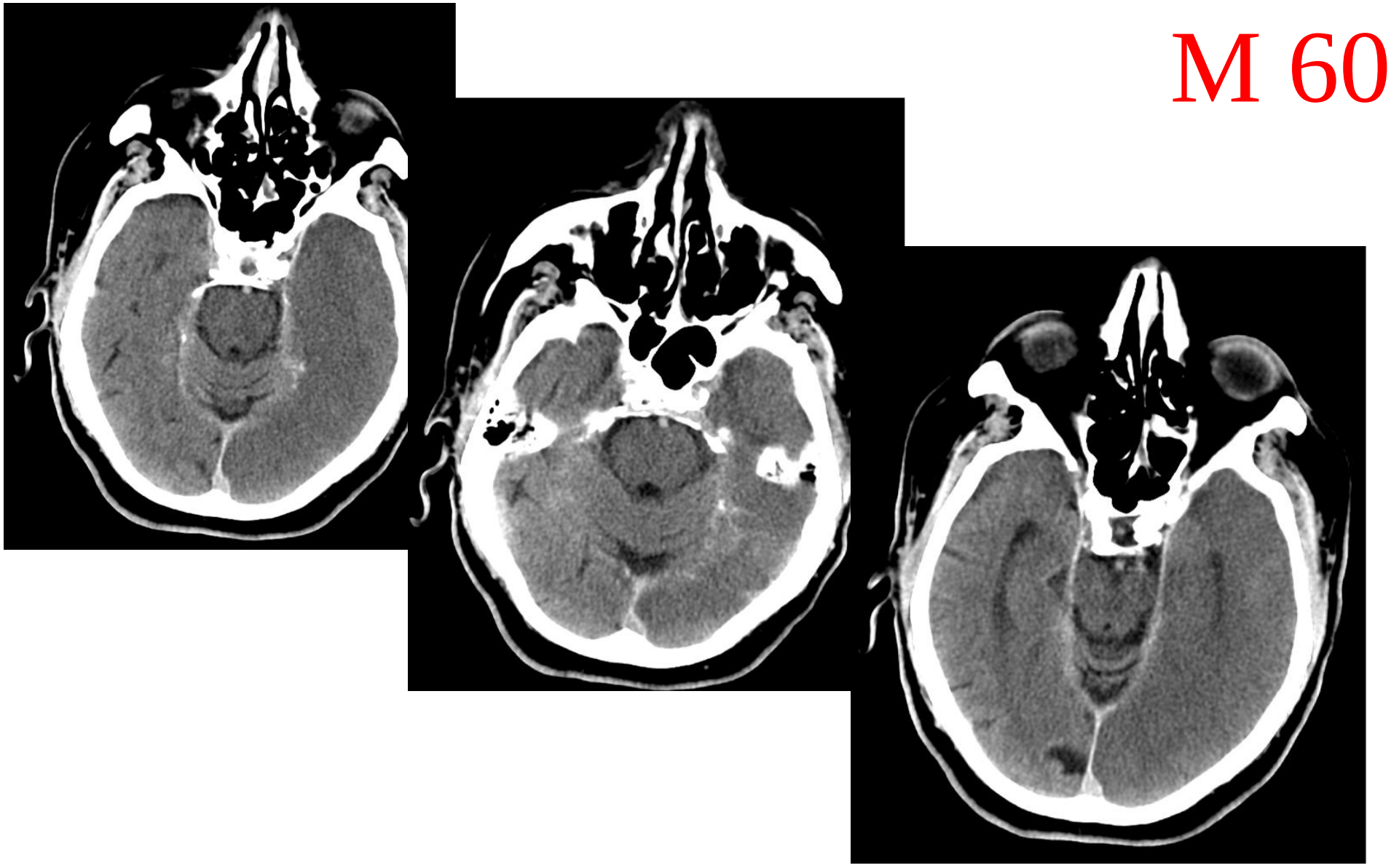

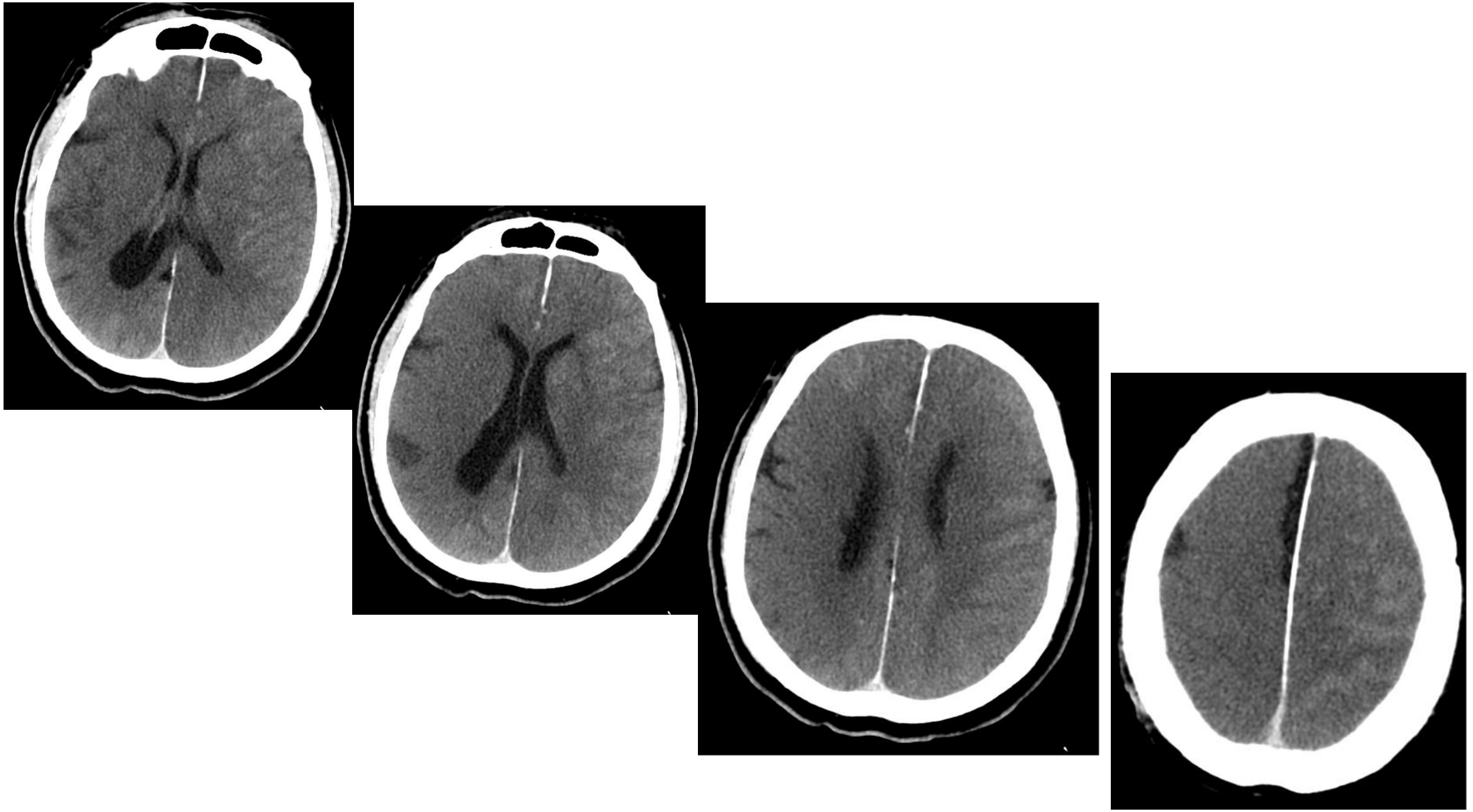

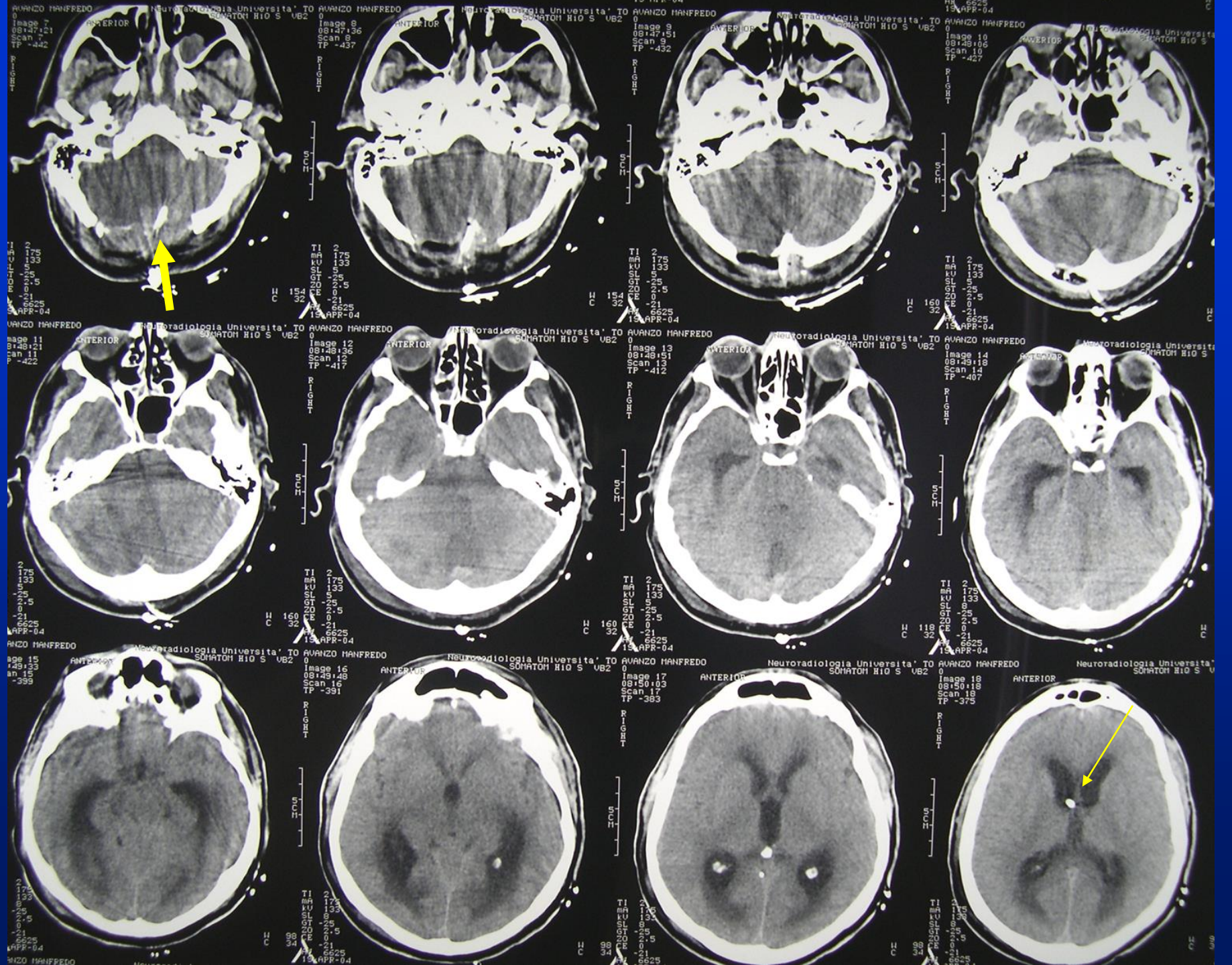
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PICO 2: In patients with space-occupying hemispheric infarction aged 18 up to and including 60 years, does surgical decompression initiated later than 48 hours of stroke onset as compared to no surgical decompression reduce the risk of death or poor outcome?

Expert consensus statement

There is consensus among the module working group members that surgical decompression should also be considered later than 48 hours after stroke onset if based on clinical grounds death due to herniation appears likely.

Evidence-based recommendation

In adult patients aged 60 years or younger with space-occupying hemispheric infarction who cannot be treated within 48 hours, there is continued uncertainty about the benefit and risks of the use of surgical decompression as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below.

Quality of evidence: Low ⊕⊕

Strength of recommendation: –

Antonello da Messina

San Girolamo nello studio

PICO 3: In patients with space-occupying hemispheric infarction aged 61 years or older, does surgical decompression initiated within 48 hours of stroke onset as compared to no surgical decompression reduce the risk of death or poor outcome?

Eta> 61 anni

Five RCTs included adult patients up to and including 80 years: Zhao et al., Slezins et al., Hemicraniectomy And Durotomy Upon Deterioration From Infarction Related Swelling (HeADDFIRST), Hemicraniectomy for Malignant Middle cerebral Infarction (HeMMI), and Decompressive surgery for the treatment of Malignant Infarction of the middle cerebral artery: a randomised, controlled trial in a Turkish population (DEMITUR).[7,8,10–12] The Decompressive Surgery for the Treatment of malignant infarction of the Middle Cerebral Artery II (DESTINY II) trial exclusively included patients > 60 years of age.[9]

Evidence-based recommendation

In patients aged 61 years or older with space-occupying infarction who can be treated within 48 hours of stroke onset we suggest considering surgical decompression to reduce the risk of death. Surgery should only be done after a shared decision process including a careful discussion with the patient or his/her representatives about the risk of survival with substantial disability.

Quality of evidence: Low ⊕⊕

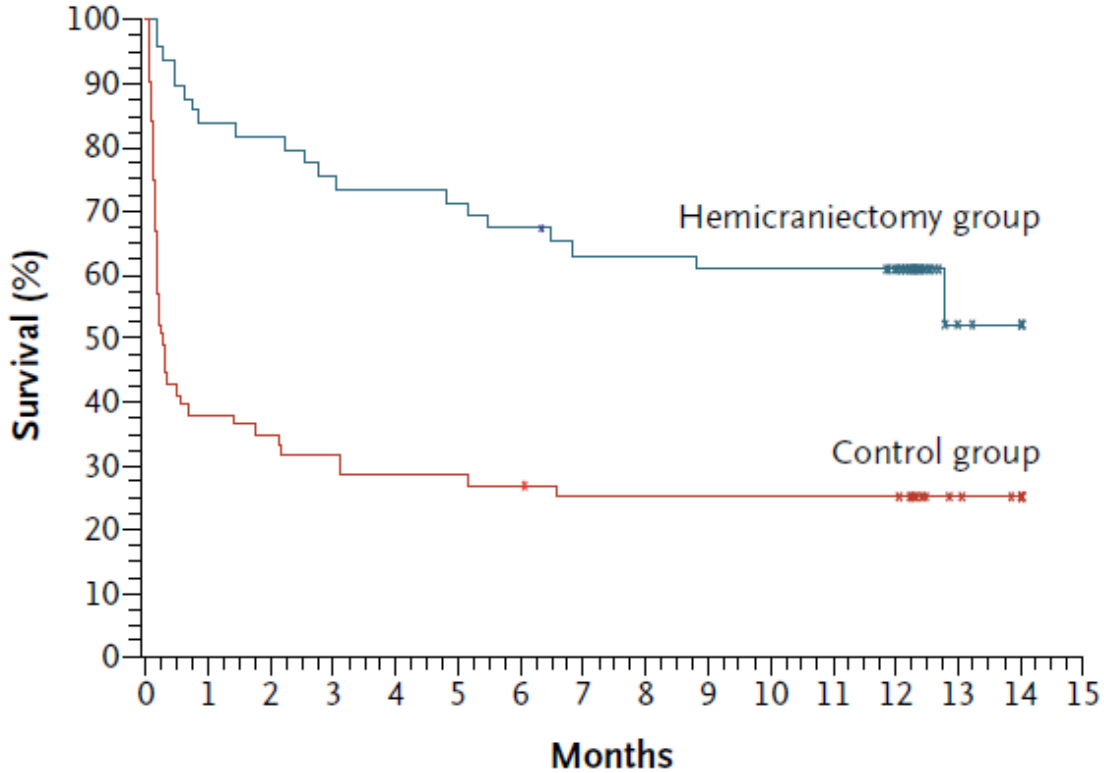
Strength of recommendation: Weak ↑?

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 20, 2014 VOL. 370 NO. 12

Hemicraniectomy in Older Patients with Extensive Middle-Cerebral-Artery Stroke

Eric Jüttler, M.D., Ph.D., Andreas Unterberg, M.D., Ph.D., Johannes Woitzik, M.D., Ph.D., Julian Bösel, M.D., Hemasse Amiri, M.D., Oliver W. Sakowitz, M.D., Ph.D., Matthias Gondan, Ph.D., Petra Schiller, Ph.D., Ronald Limprecht, Steffen Luntz, M.D., Hauke Schneider, M.D., Ph.D., Thomas Pinzer, M.D., Ph.D., Carsten Hobohm, M.D., Jürgen Meixensberger, M.D., Ph.D., and Werner Hacke, M.D., Ph.D., for the DESTINY II Investigators*



No. at risk

Hemicraniectomy	49	41	40	37	36	35	33	30	30	29	29	29	27	5	3
Control	63	24	22	20	18	18	17	15	15	15	15	15	15	7	5

Figure 2. Kaplan–Meier Estimates of Survival in the Hemicraniectomy and Control Groups.

The effect of hemicraniectomy in reducing mortality was clearly due to increased survival rates in the early phase, but it remained stable throughout the whole observation period.

Grave disabilità
mRS 4-6

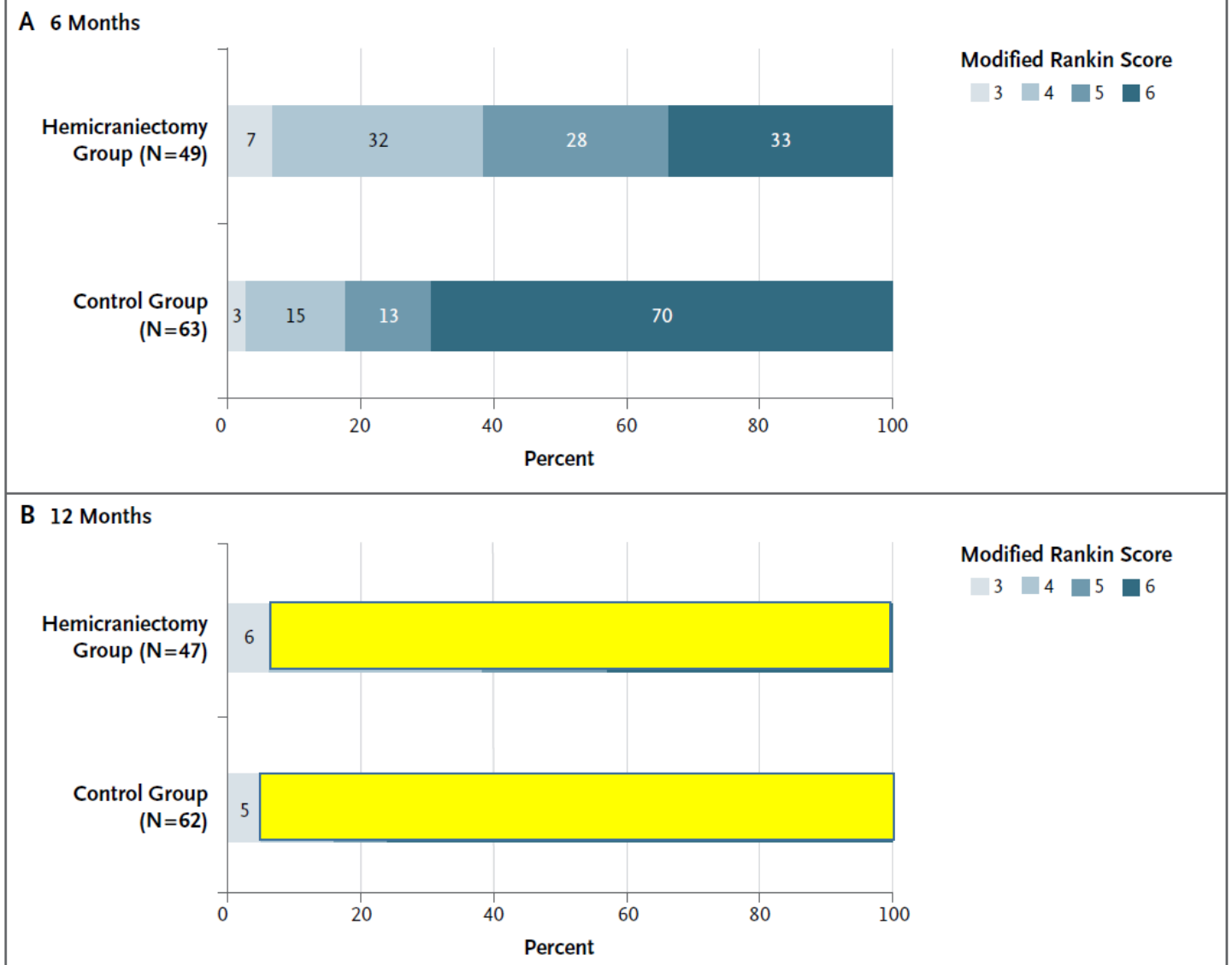
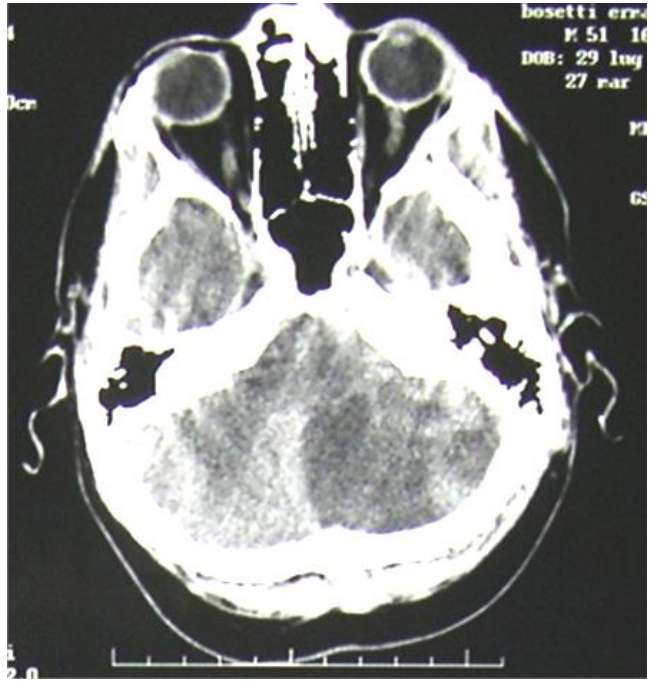


Figure 1. Functional Outcome after Hemicraniectomy and after Conservative Treatment Alone According to the Modified Rankin Score.

The primary end point was survival without severe disability, defined as a score of 0 to 4 on the modified Rankin scale (range, 0 to 6, with 0 indicating no symptoms and 6 indicating death). The results shown are the probability estimates for all patients who underwent randomization (the intention-to-treat population). Panel A shows the bias-corrected distribution of scores on the modified Rankin scale at 6 months. Panel B shows the raw distribution of Rankin scores at 12 months.

PICO 4: In patients with space-occupying cerebellar infarction, does surgical decompression as compared to no surgical decompression reduce the risk of death or a poor outcome?

Analysis of current evidence. The literature search did not identify any RCT comparing surgical decompression with no surgical decompression in patients with space-occupying cerebellar infarction.



Evidence-based recommendation

In patients with space-occupying cerebellar infarction, there is continued uncertainty about the benefit and risks of surgical decompression as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below.

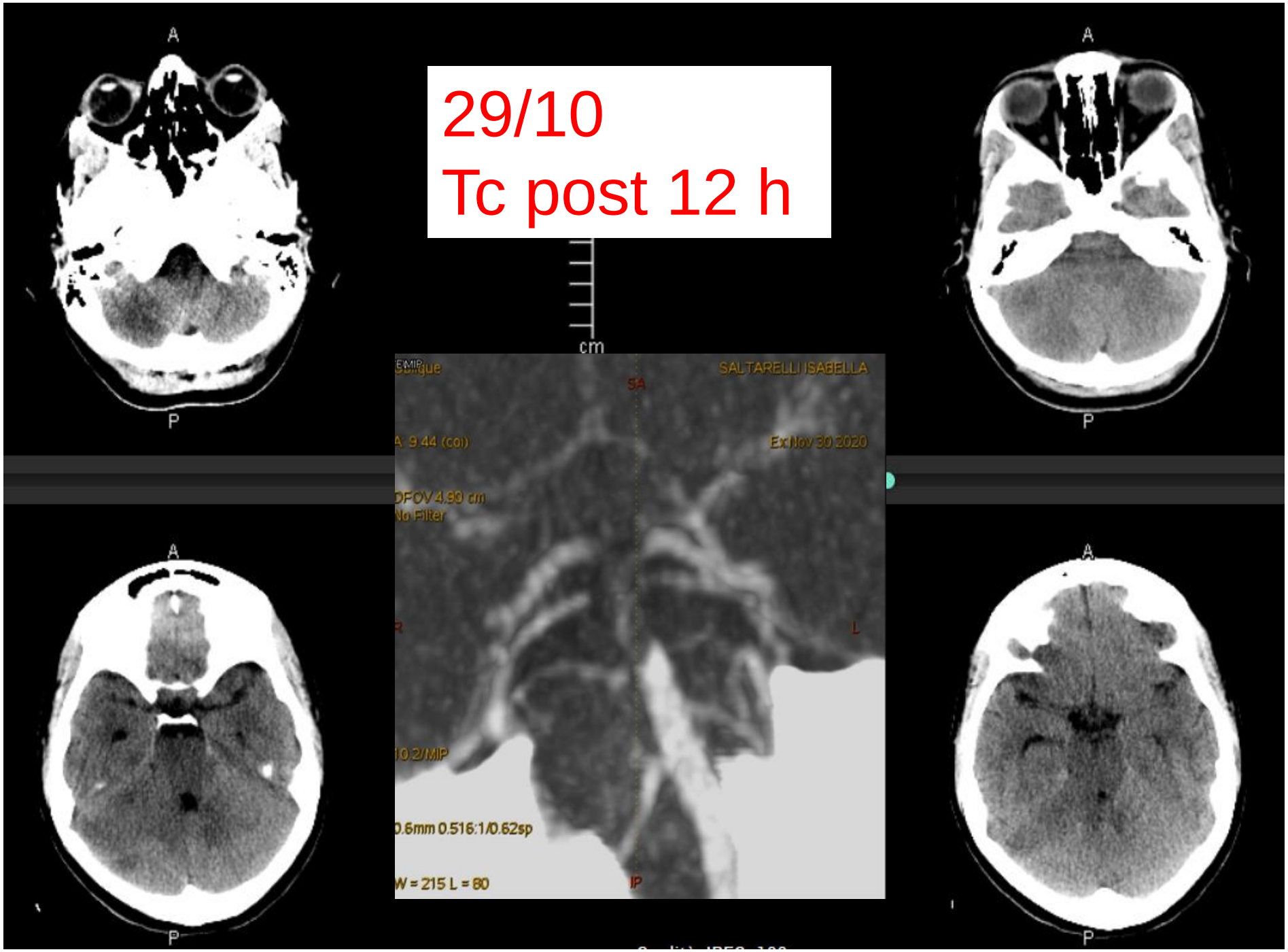
Quality of the evidence: Very low ⊕

Strength of the recommendation: -

Expert consensus statement

All group members suggest considering surgical decompression with or without CSF drainage in selected patients with space-occupying cerebellar infarction, such as in those with a reduced consciousness caused by brainstem compression. The precise selection of patients and the optimal timing of treatment remain uncertain. There is insufficient evidence to support its routine use.

5.1.4. Surgical Management-Cerebellar Infarction	COR	LOE
1. Ventriculostomy is recommended in the treatment of obstructive hydrocephalus after cerebellar infarction. Concomitant or subsequent decompressive craniectomy may or may not be necessary on the basis of factors such as the size of the infarction, neurological condition, degree of brainstem compression, and effectiveness of medical management.	I	C-LD
Ventriculostomy is a well-recognized effective treatment for the management of acute obstructive hydrocephalus and is often effective in isolation in relieving symptoms, even among patients with acute cerebellar infarction.[289,296] Thus, in patients who develop symptoms of obstructive hydrocephalus from cerebellar infarction, emergency ventriculostomy is a reasonable first step in the surgical management paradigm. If cerebrospinal fluid diversion by ventriculostomy fails to improve neurological function, decompressive suboccipital craniectomy should be performed.[289,296,297] Although a risk of upward herniation exists with ventriculostomy alone, it can be minimized with conservative cerebrospinal fluid drainage or subsequent decompression if the cerebellar infarction causes significant swelling and mass effect.[289,296]		
2. Decompressive suboccipital craniectomy with dural expansion should be performed in patients with cerebellar infarction causing neurological deterioration from brainstem compression despite maximal medical therapy. When deemed safe and indicated, obstructive hydrocephalus should be treated concurrently with ventriculostomy.	I	B-NR
The data support decompressive cerebellar craniectomy for the management of acute ischemic cerebellar stroke with mass effect.[289,296,297] This surgery is indicated as a therapeutic intervention in cases of neurological deterioration caused by swelling as a result of cerebellar infarction that cannot be otherwise managed with medical therapy or ventriculostomy in the setting of obstructive hydrocephalus.[289,296]		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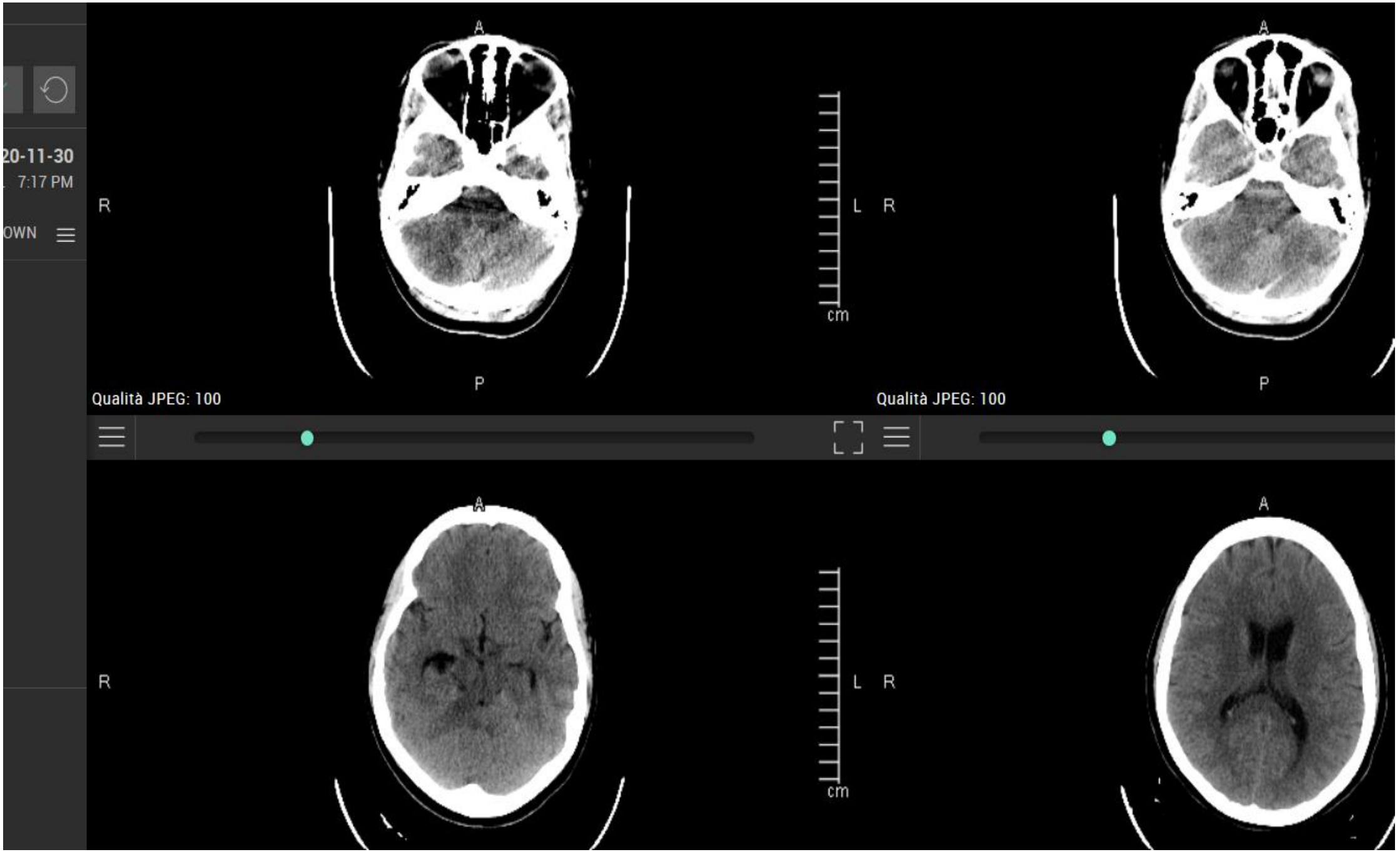
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Decompressive Surgery for Malignant Cerebral Venous Sinus Thrombosis: A Retrospective Case Series from Pakistan and Comparative Literature Review

Emmon Raza, MBBS,* Muhammad Shahzad Shamim, FCPS,†
Muhammad Faisal Wadiwala, FCPS,‡ Bilal Ahmed, MSc,§
and Ayeesha Kamran Kamal, MBBS (Vascular Neurology)||

Discussion

We found that all our patients who underwent surgical decompression for malignant CVST before the development of pupillary areactivity recovered completely. Presence of bilateral fixed and dilated pupils was a significant predictor of death.

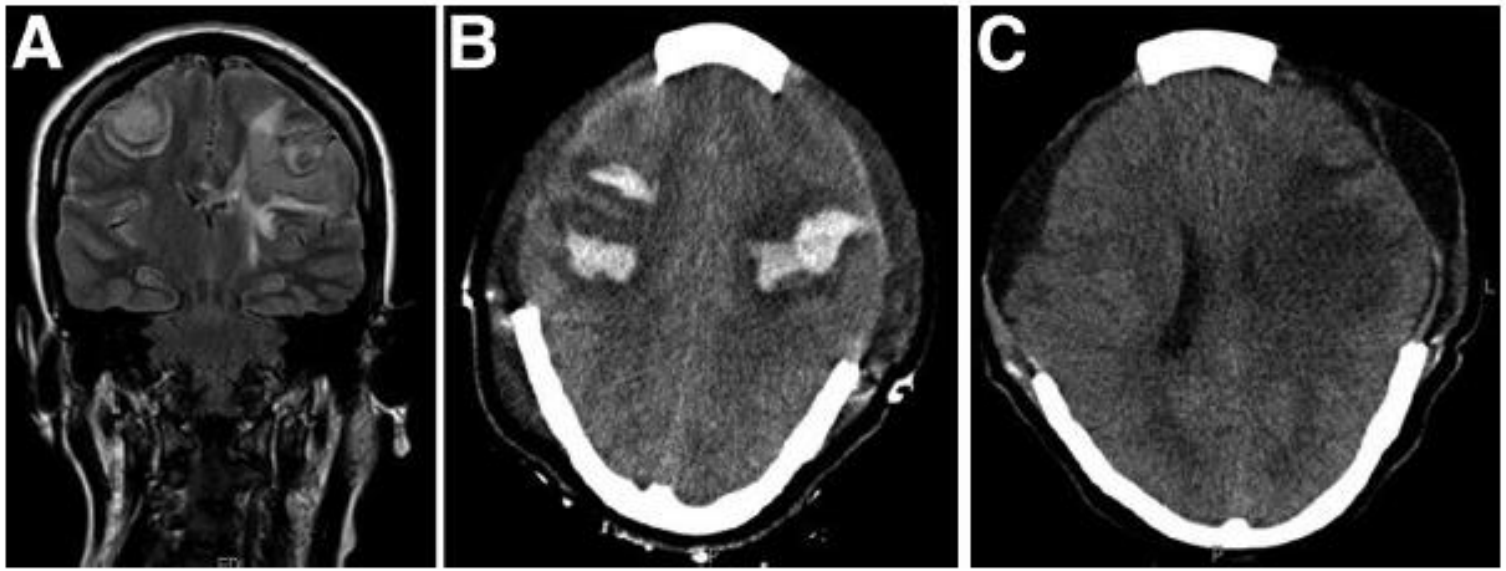

Figure 3. *Young female with postpartum CVST making complete recovery after bilateral decompressive hemicraniectomy. Abbreviation: CVST, cerebral venous sinus thrombosis.*

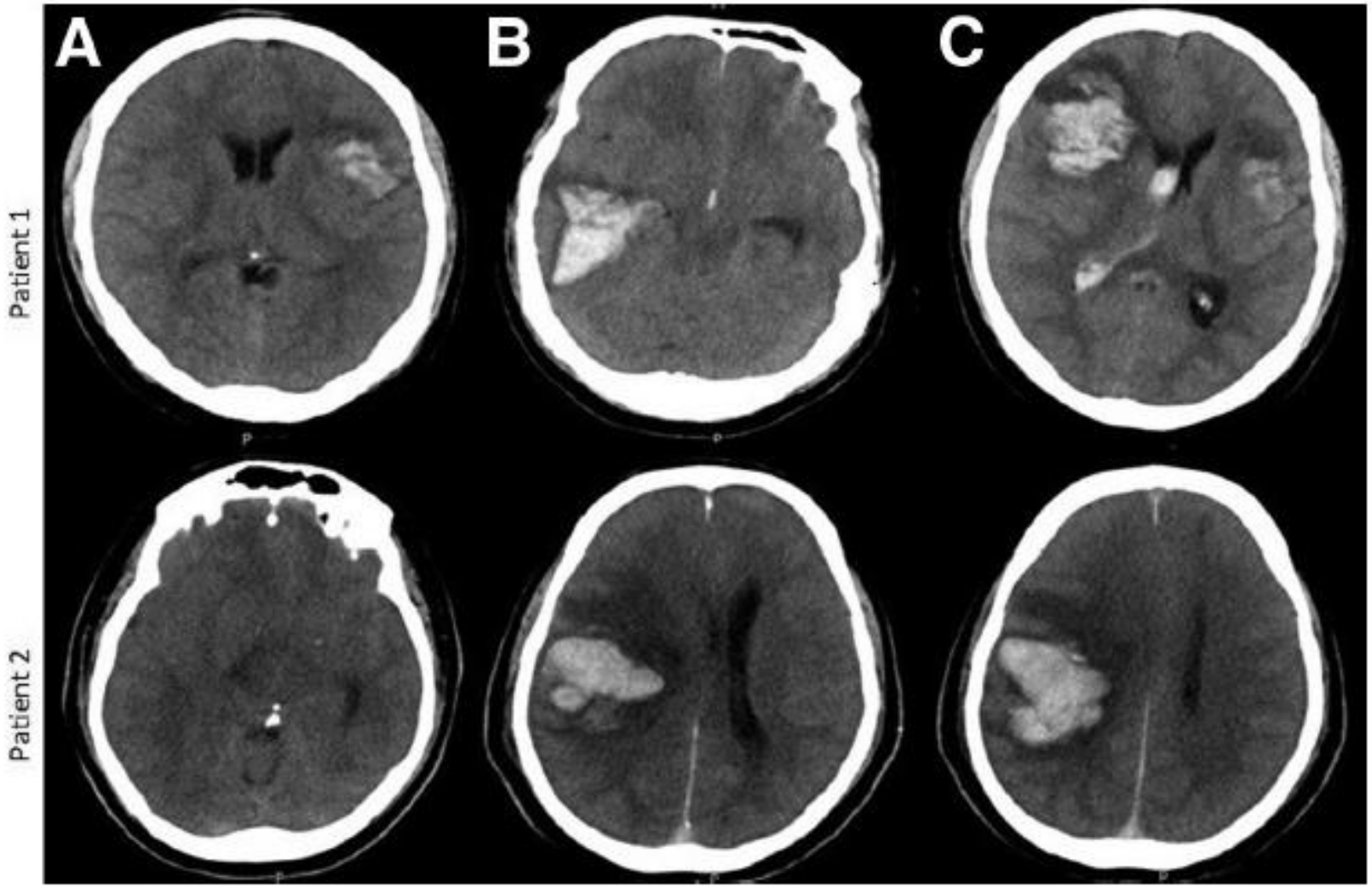

Figure 1. *Serial CT scans of 2 CVST patients who died in the immediate postoperative period. Abbreviations: CT, computed tomography; CVST, cerebral venous sinus thrombosis.*

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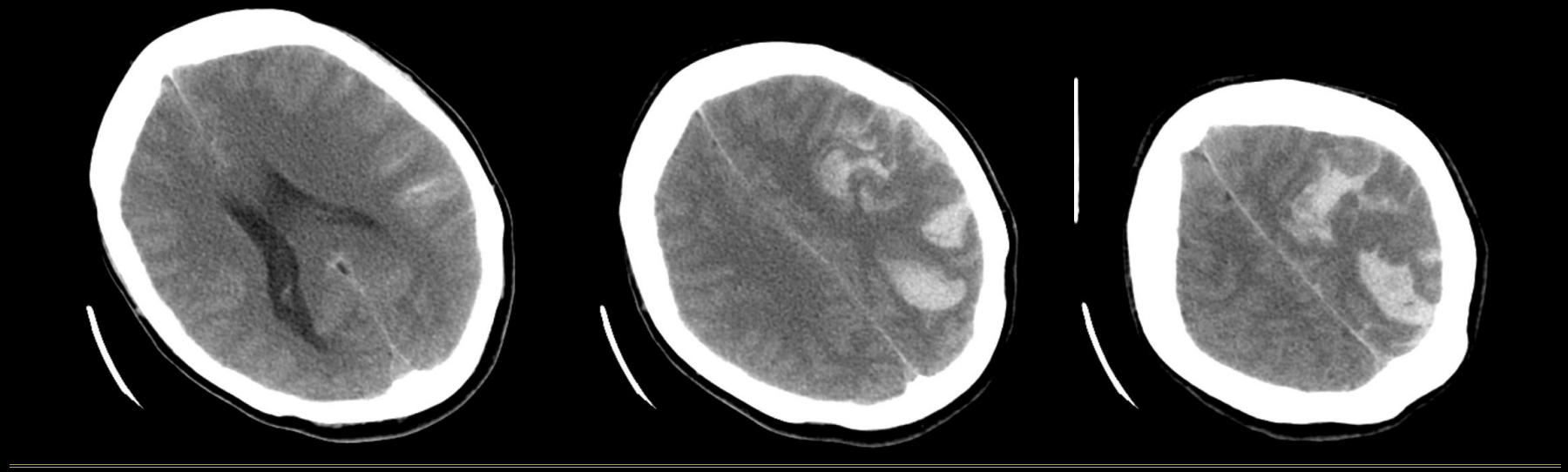

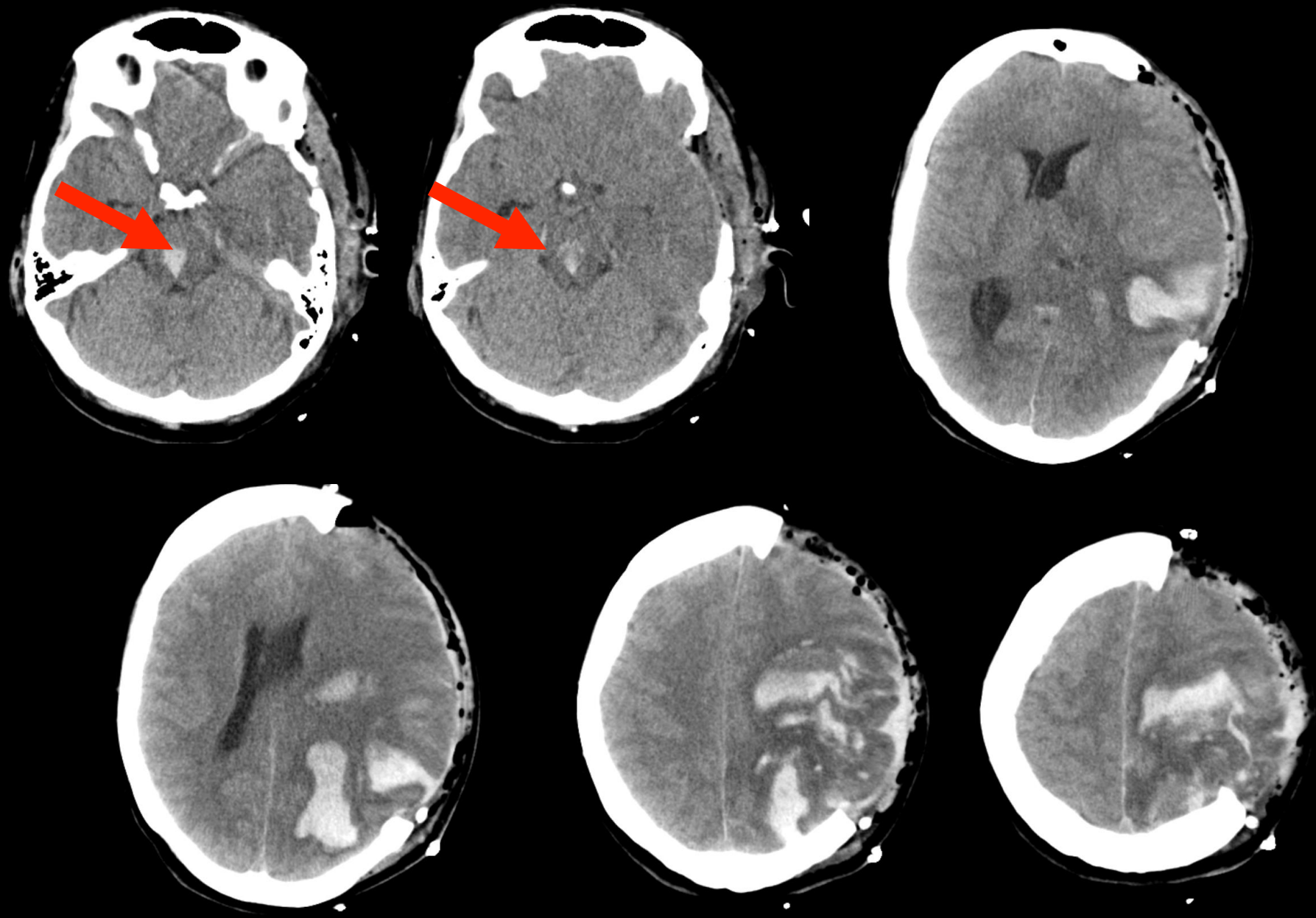

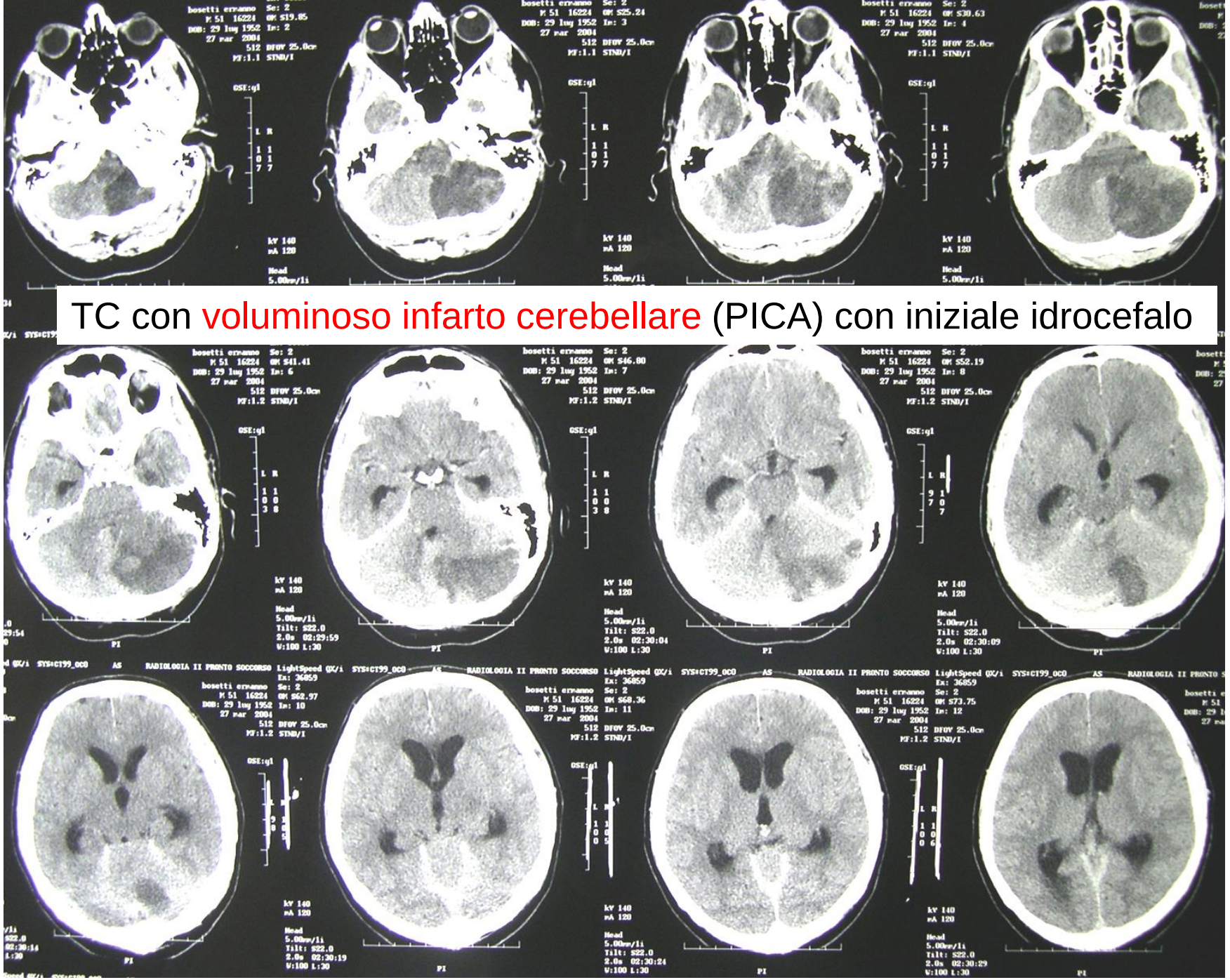

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