

Staff Radiologie

Melissa Grillo

CUSL

22 janvier 2021



Secteur : Neuro
Difficulté : années 4-5
Fréquence : élevée
Importance : élevée
Superviseur : Dr Jamali, Dr Duprez
Mots-clé : rehaussement annulaire,
diffusion, perfusion

Cas clinique

Patiente de 78 ans

Hémiplégie droite avec aphasie et parésie faciale
centrale droite



Quel est le diagnostic?

- Abscès
- Métastase
- Glioblastome
- Lymphome
- Il faut compléter par une IRM

Quel est le diagnostic?

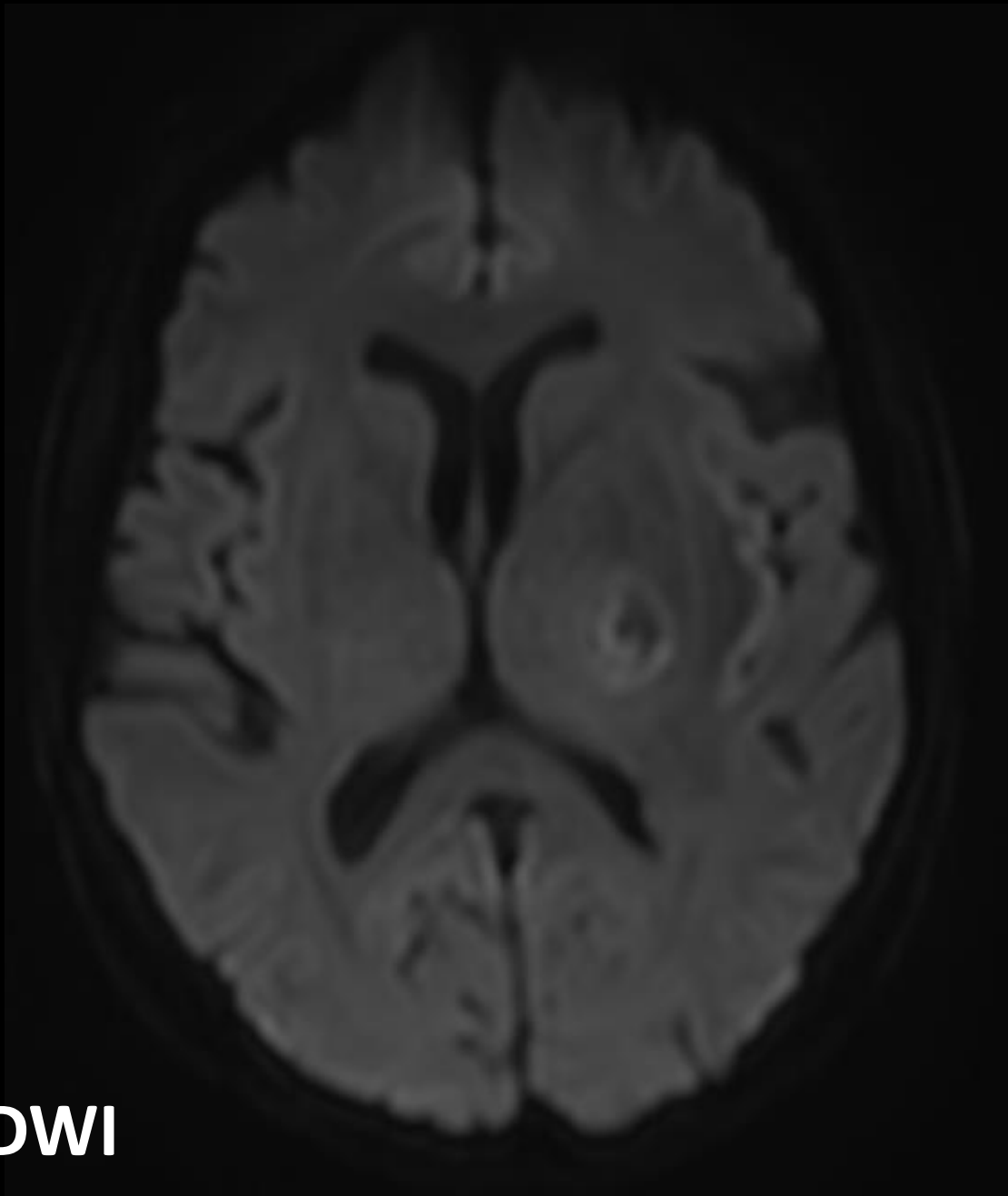
- Abscès
- Métastase
- Glioblastome
- Lymphome
- Il faut compléter par une IRM

Quelle(s) séquence(s) en IRM est la plus discriminante?

- FLAIR
- Diffusion
- T1 gado
- Perfusion
- T2*

Quelle(s) séquence(s) en IRM est la plus discriminante?

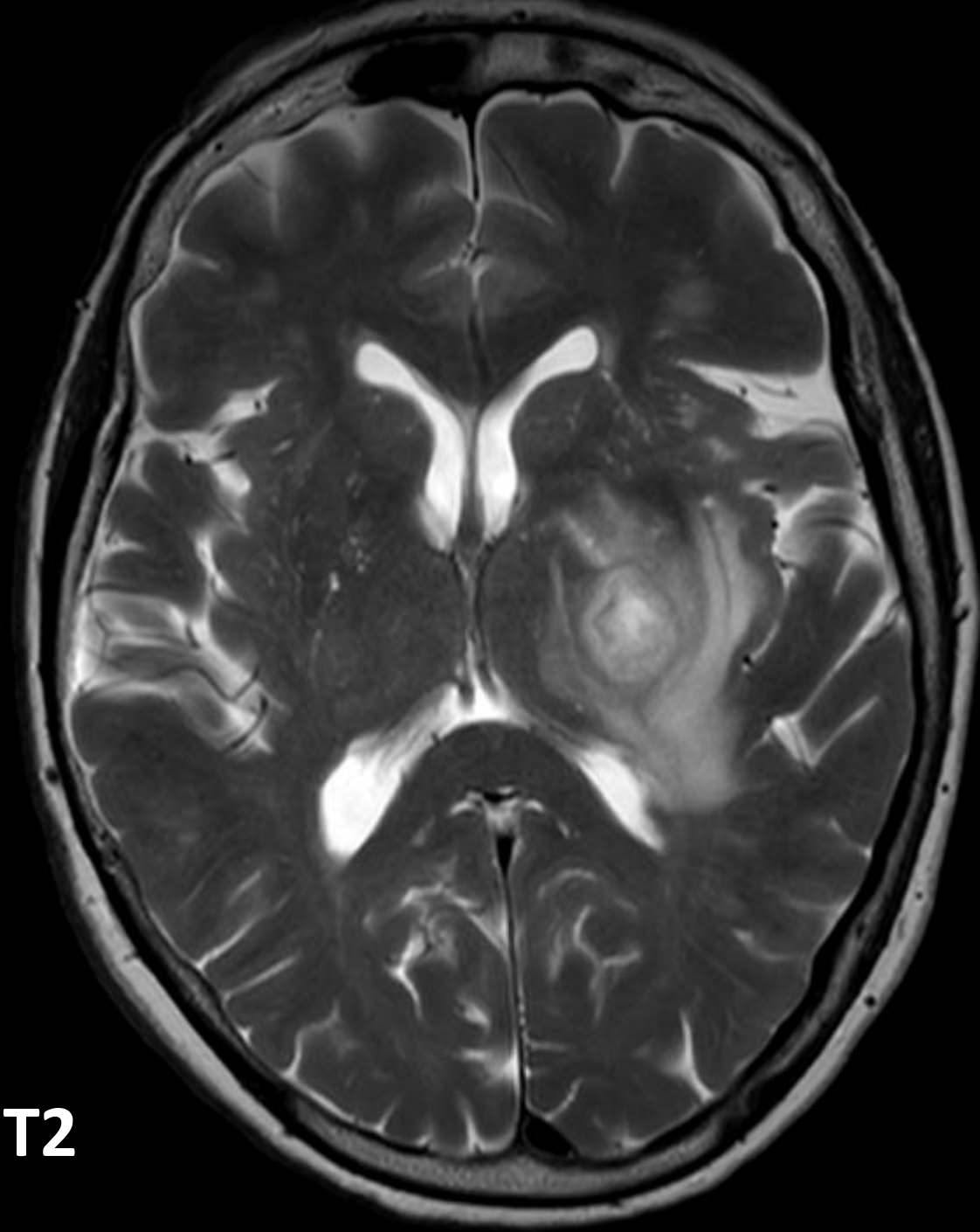
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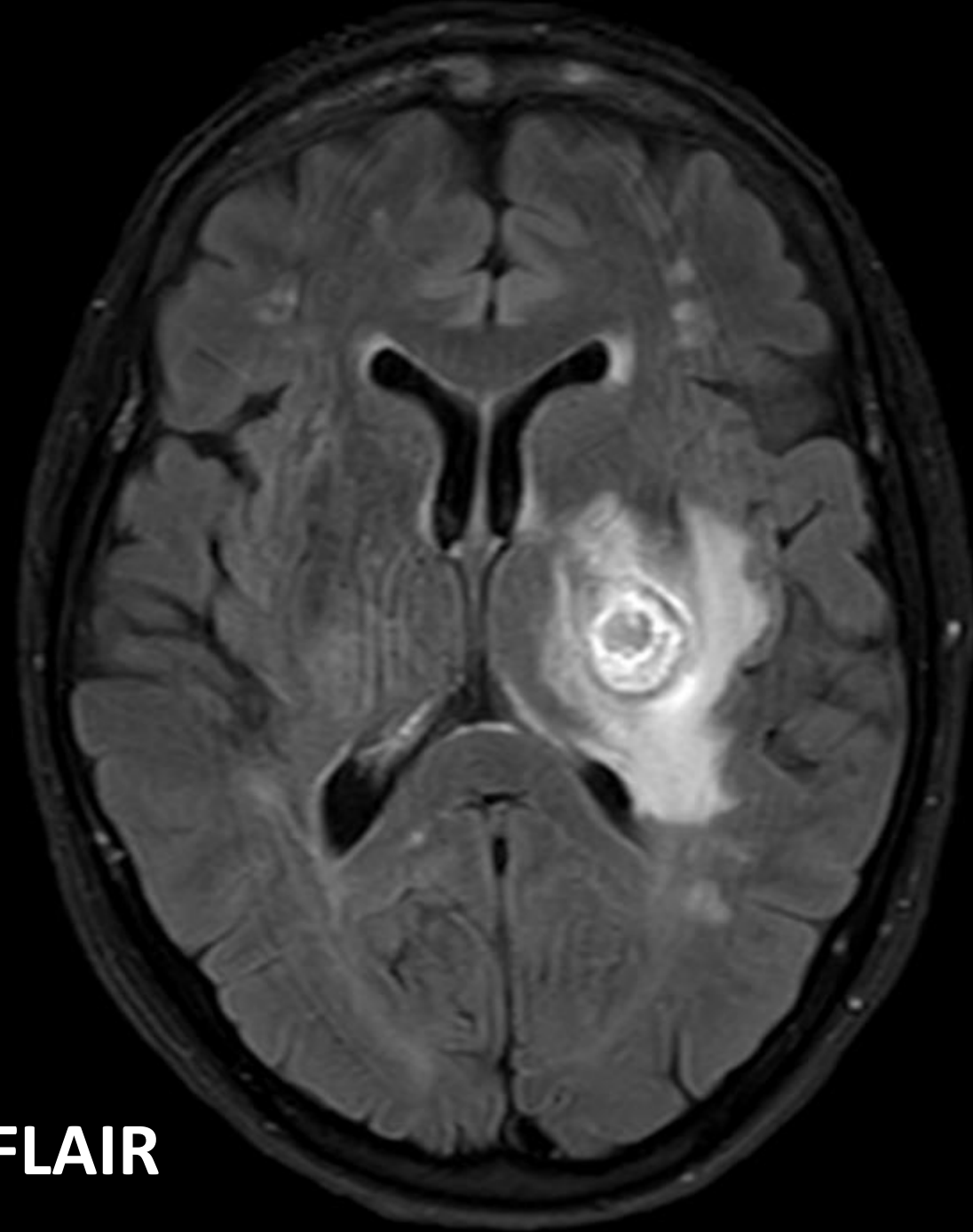
DWI



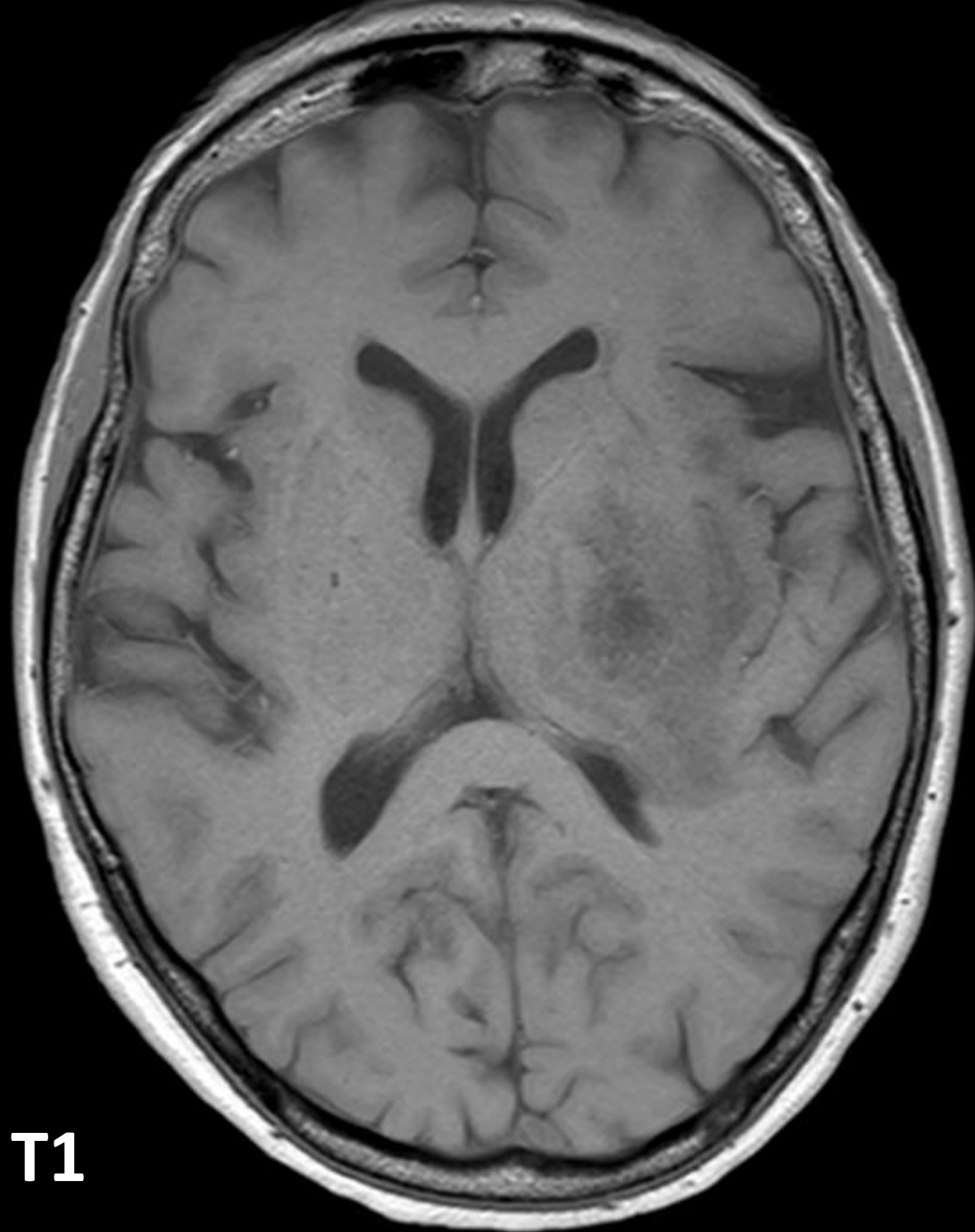
ADC



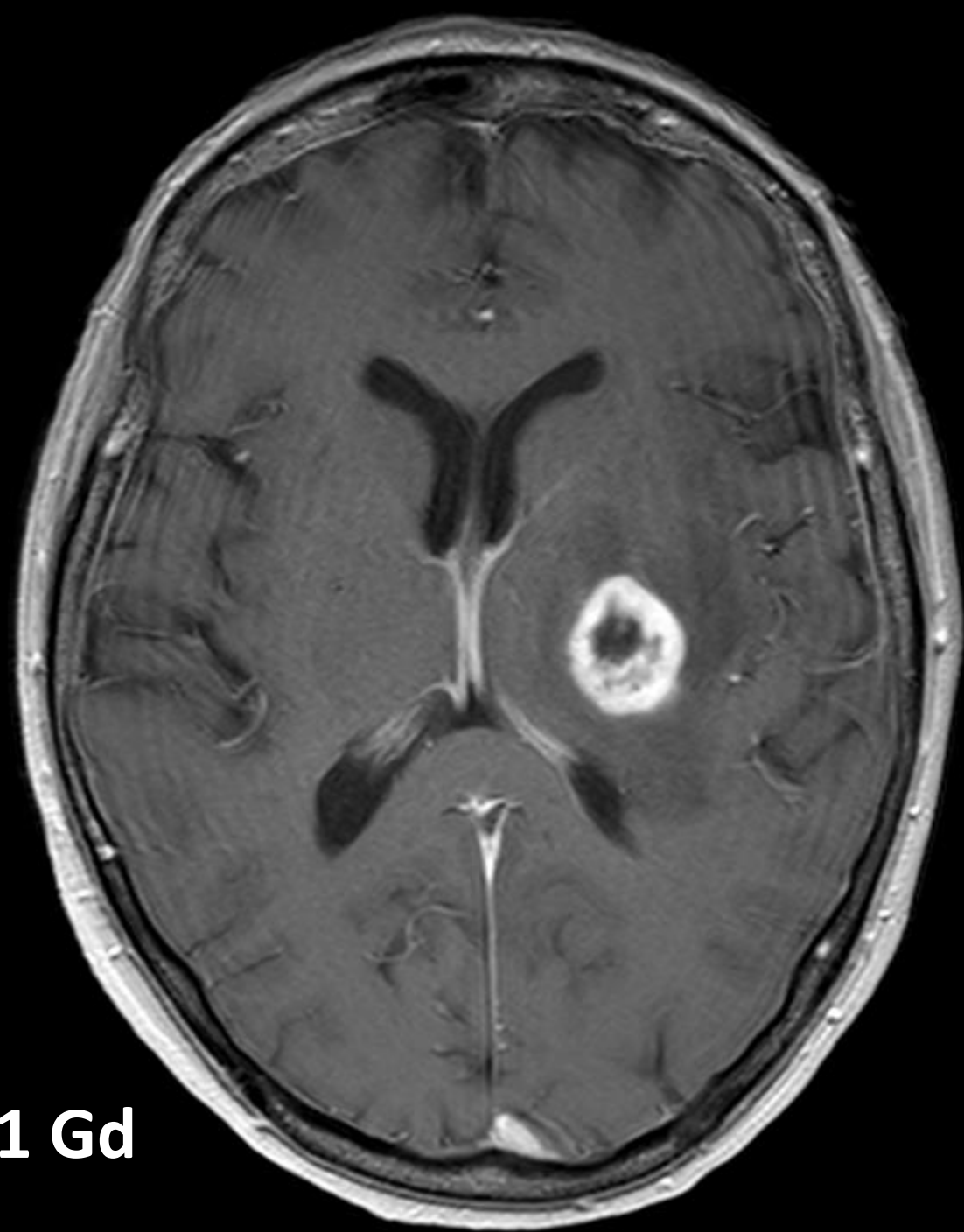
T2



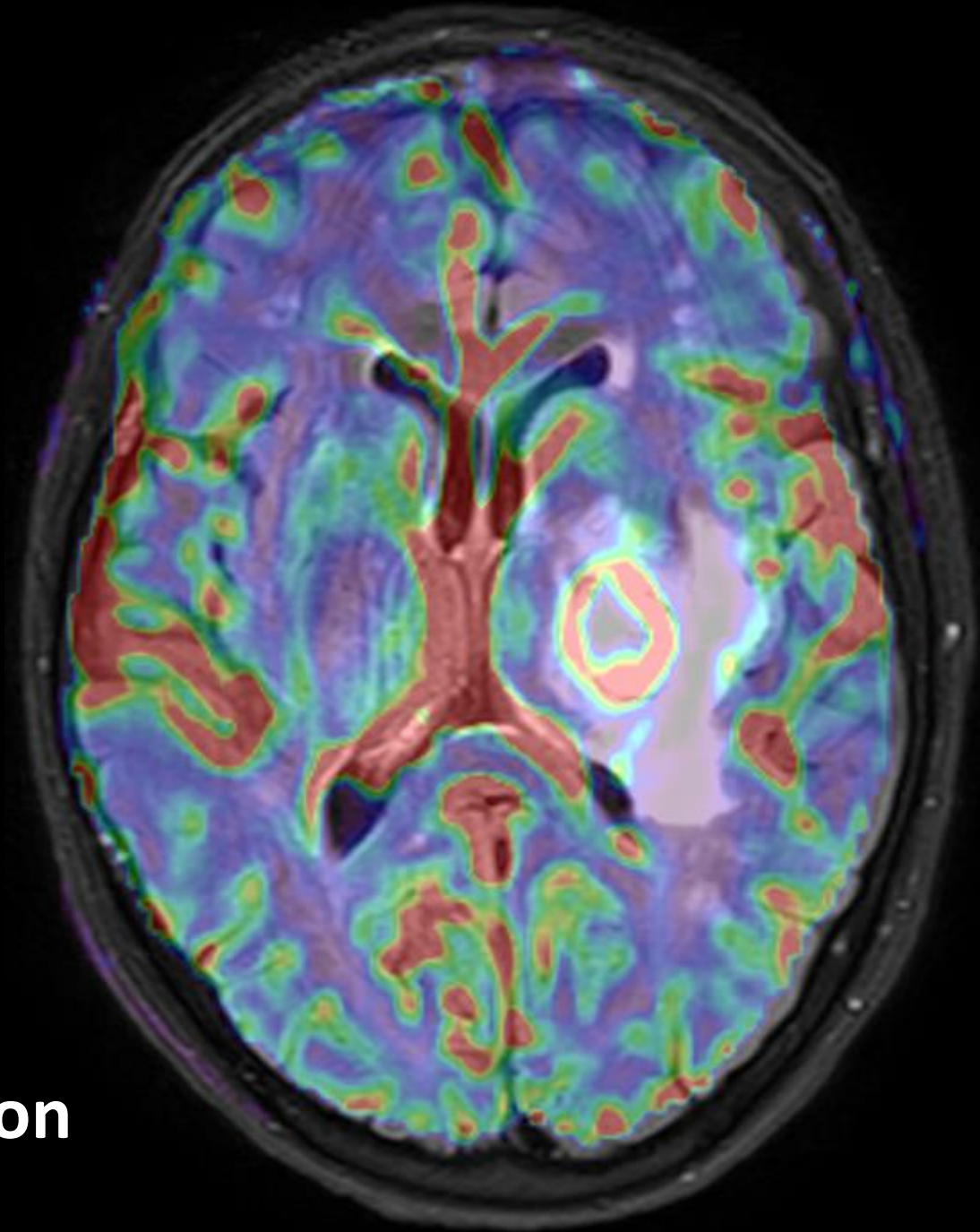
FLAIR



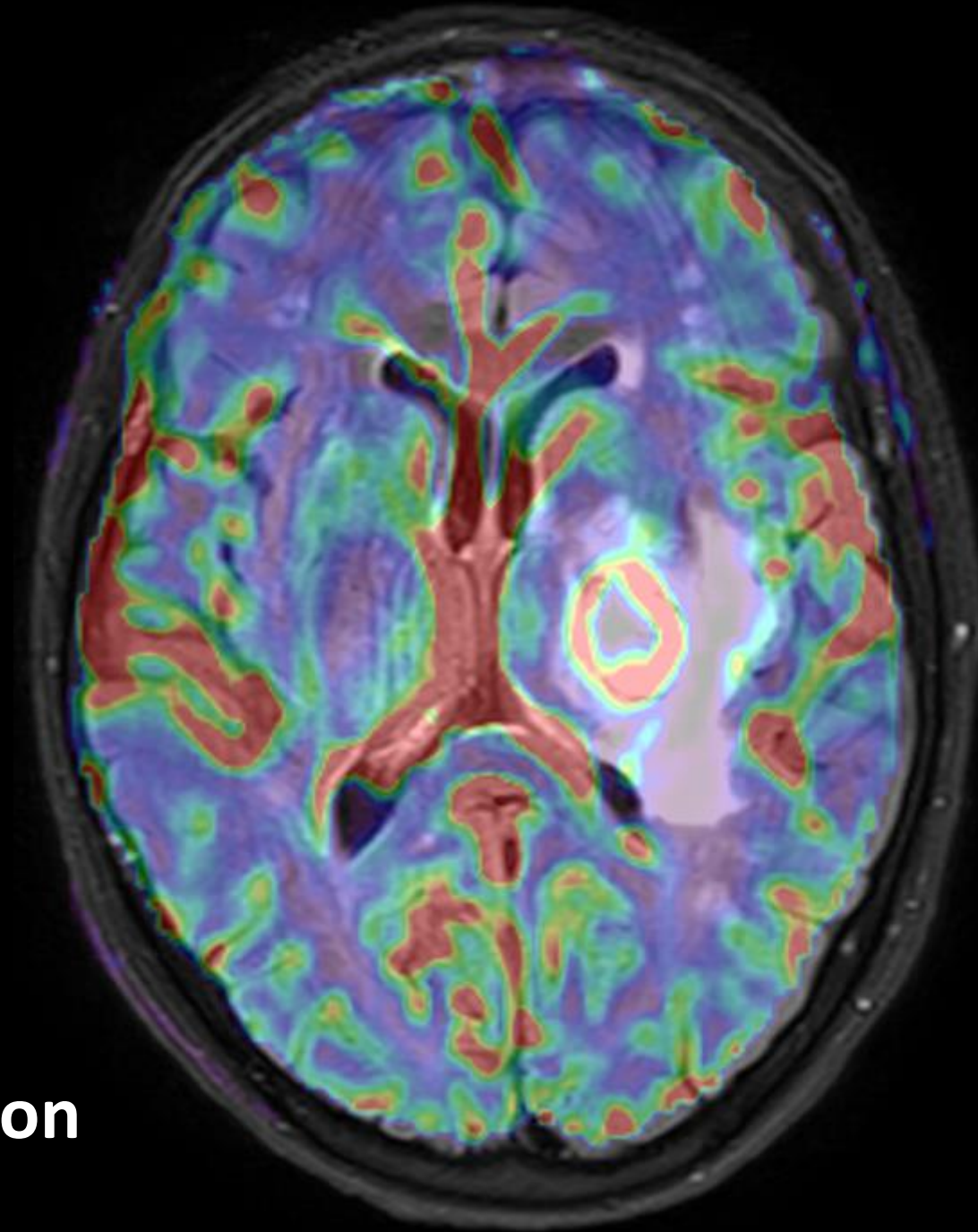
T1



T1 Gd



Perfusion



Perfusion

→ Glioblastome

Prise de contraste annulaire d'une lésion intracérébrale
= signe peu spécifique

→ Principal DD : « DR MAGIC »

« DR MAGIC »

Demyelinating disease

Radiation necrosis

Metastasis

Abscess

Glioblastoma

Infarct (subacute)

Contusion

« DR MAGIC »

~~D~~emyelinating disease

~~R~~adiation necrosis

~~M~~etastasis

~~A~~bscess

~~G~~lioblastoma

~~I~~nfarct (subacute)

~~C~~ontusion

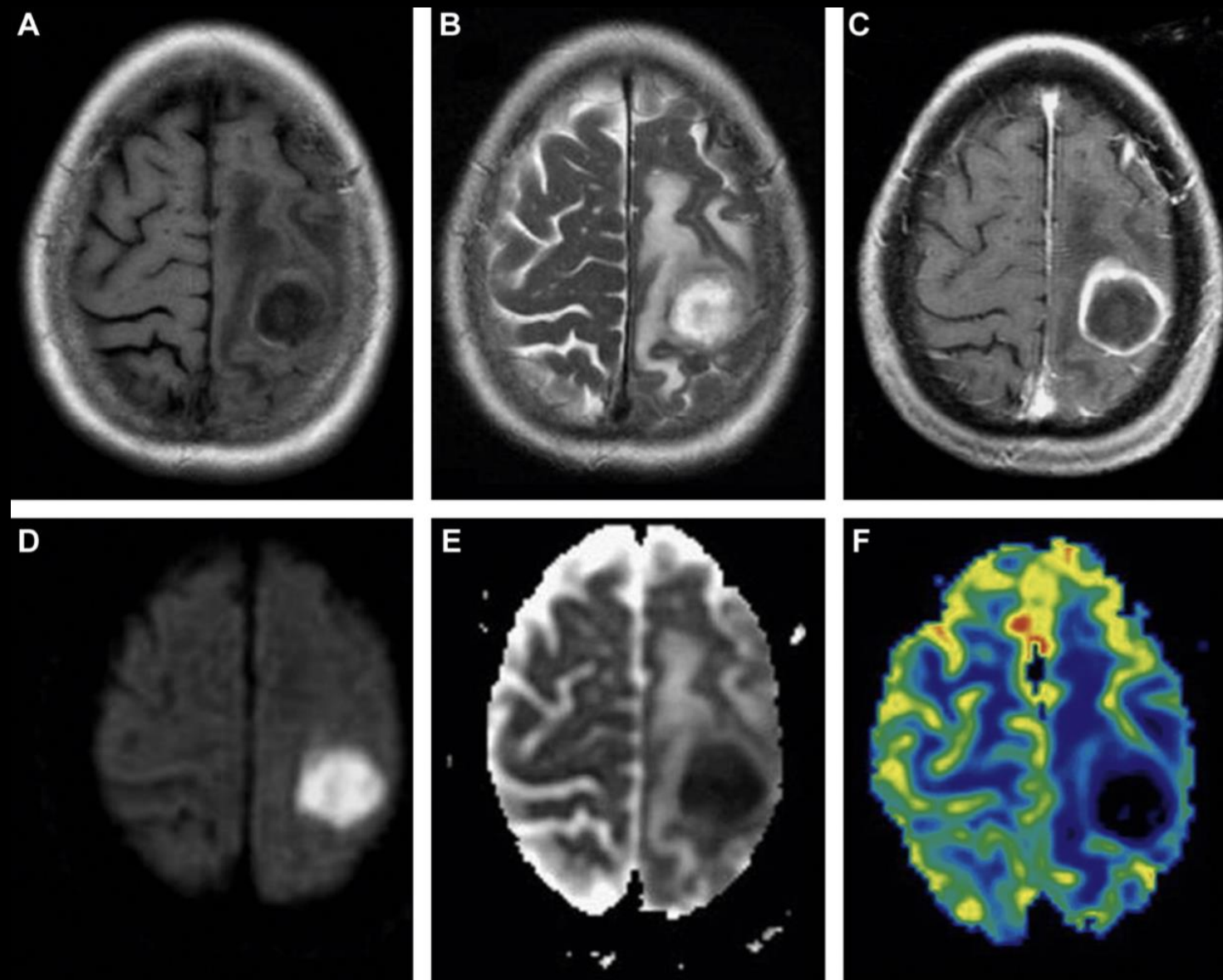
Imagerie

CT peu spécifique

	centre	paroi	oedème
Abcès	hypo dense	fine	intense
Tumeur	hypo dense	Épaisse, nodule	variable

Imagerie

IRM : morphologique et fonctionnelle



Abcès pyogène :

- Centre (pus) : hyperT2/hypoT1, non rehaussé, **restriction diffusion**
- Paroi : hypoT2/**hyperT1**, rehaussement +++ (+- fin/régulier)
- Perfusion : rCBV bas
- Œdème vasogénique : hyperT2/hypoT1

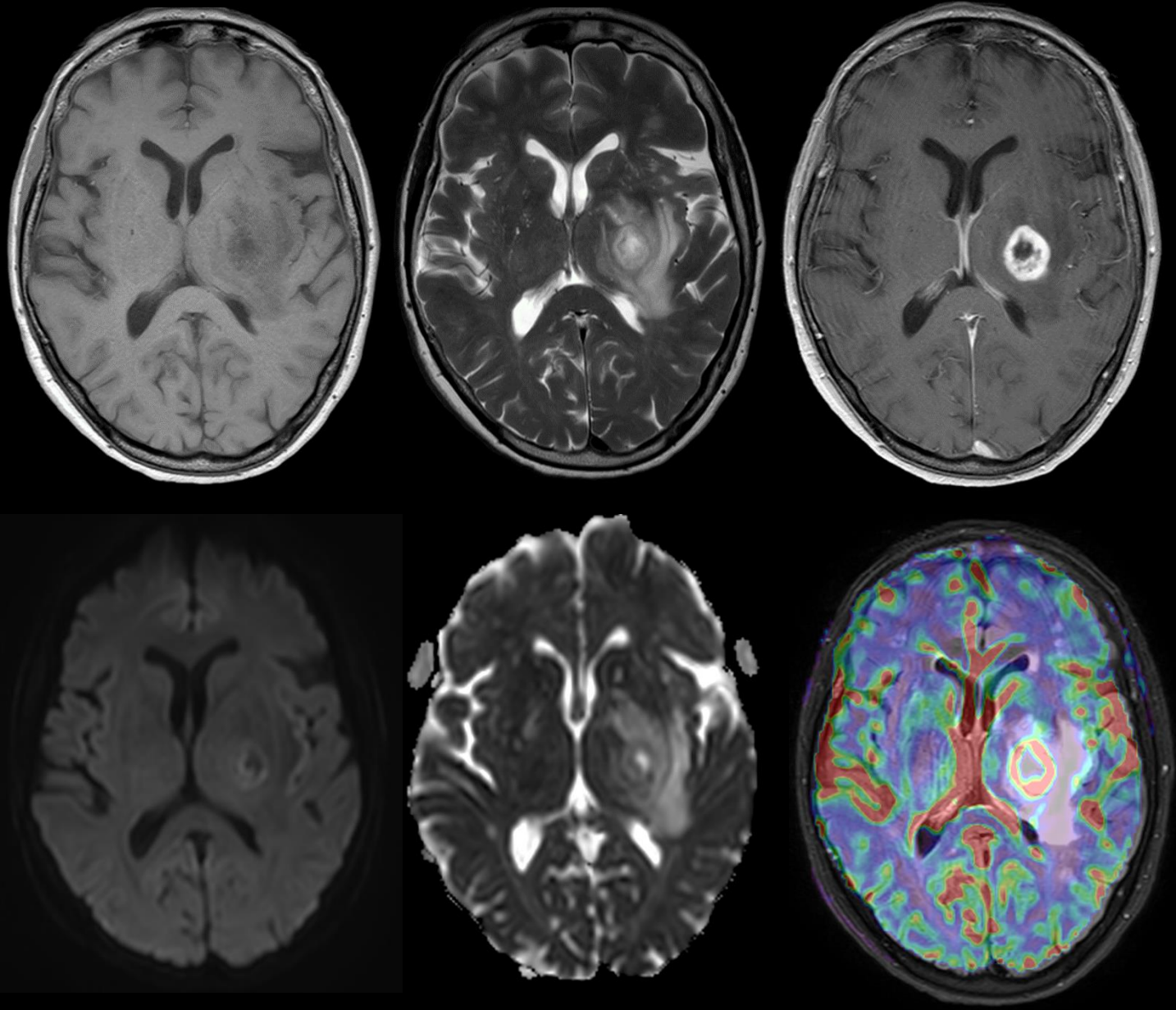
Can diffusion-weighted imaging be used to differentiate brain abscess from other ring-enhancing brain lesions? A meta-analysis

X.-X. Xu^{a,b}, B. Li^b, H.-F. Yang^b, Y. Du^b, Y. Li^b, W.-X. Wang^b, H.-J. Zheng^b, Q.-Y. Gong^{a,*}

^a*Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, China*

^b*Department of Radiology, Affiliated Hospital of North Sichuan Medical College, Nanchong, China*

→ Restriction de la diffusion : Se 95% et Sp 94%



GBM nécrotique :

- Centre : hyperT2/hypoT1, non rehaussé, **PAS de restriction diffusion**
- Paroi : hyperT2/hypo ou isoT1, rehaussement +++ (épais, irrégulier, nodulaire)
- Perfusion : rCBV élevé (portion solide ET œdème de voisinage)

Abcès éliminé... quid tumeurs nécrotiques ?

RESEARCH ARTICLE

Differentiation of glioblastoma multiforme, metastases and primary central nervous system lymphomas using multiparametric perfusion and diffusion MR imaging of a tumor core and a peritumoral zone—
Searching for a practical approach

Małgorzata Neska-Matuszewska*, Joanna Bladowska, Marek Szaśiadek, Anna Zimny

Department of General and Interventional Radiology and Neuroradiology, Wrocław Medical University, Wrocław, Poland

Table 4. Perfusion results of the testing group with the comparison of the suggested and biopsy proven diagnosis.

	Tumor core		Peritumoral zone		Suggested diagnosis	Biopsy results
	mean rCBV	max rCBV	mean rCBV	max rCBV		
T1	0.77	1.42			PCNSL	PCNSL
T2	2.15	3.63	0.48	0.74	metastasis	metastasis
T3	6.42	11.74	0.45	0.8	metastasis	metastasis
T4	4.33	9.1	0.5	0.79	metastasis	metastasis
T5	2.92	4.82	0.49	0.78	metastasis	metastasis
T6	2.86	4.31	0.38	0.57	metastasis	metastasis
T7	2.75	5.09	0.52	0.75	metastasis	metastasis
T8	8.66	11.78	0.58	0.83	metastasis	metastasis
T9	4.25	7.92	0.78	0.9	metastasis	metastasis
T10	2.33	4.9	0.54	0.73	metastasis	metastasis
T11	8.43	11.89	0.68	0.93	metastasis	metastasis
T12*	3.4	5.02	0.73	0.8*	metastasis	GBM
T13	1.72	3.53	1.01	2.48	GBM	GBM
T14	2.77	7.01	0.75	1.84	GBM	GBM
T15	2.57	5.76	0.67	1.4	GBM	GBM
T16	1.57	2.73	1.13	2.03	GBM	GBM
T17	2.68	5.15	1.28	2.81	GBM	GBM
T18	6.44	16.75	1.27	2.6	GBM	GBM

* misdiagnosed tumor; GBM, glioblastoma multiforme; max, maximum; PCNSL, primary CNS lymphoma; rCBV, relative cerebral blood volume; T, tumor.

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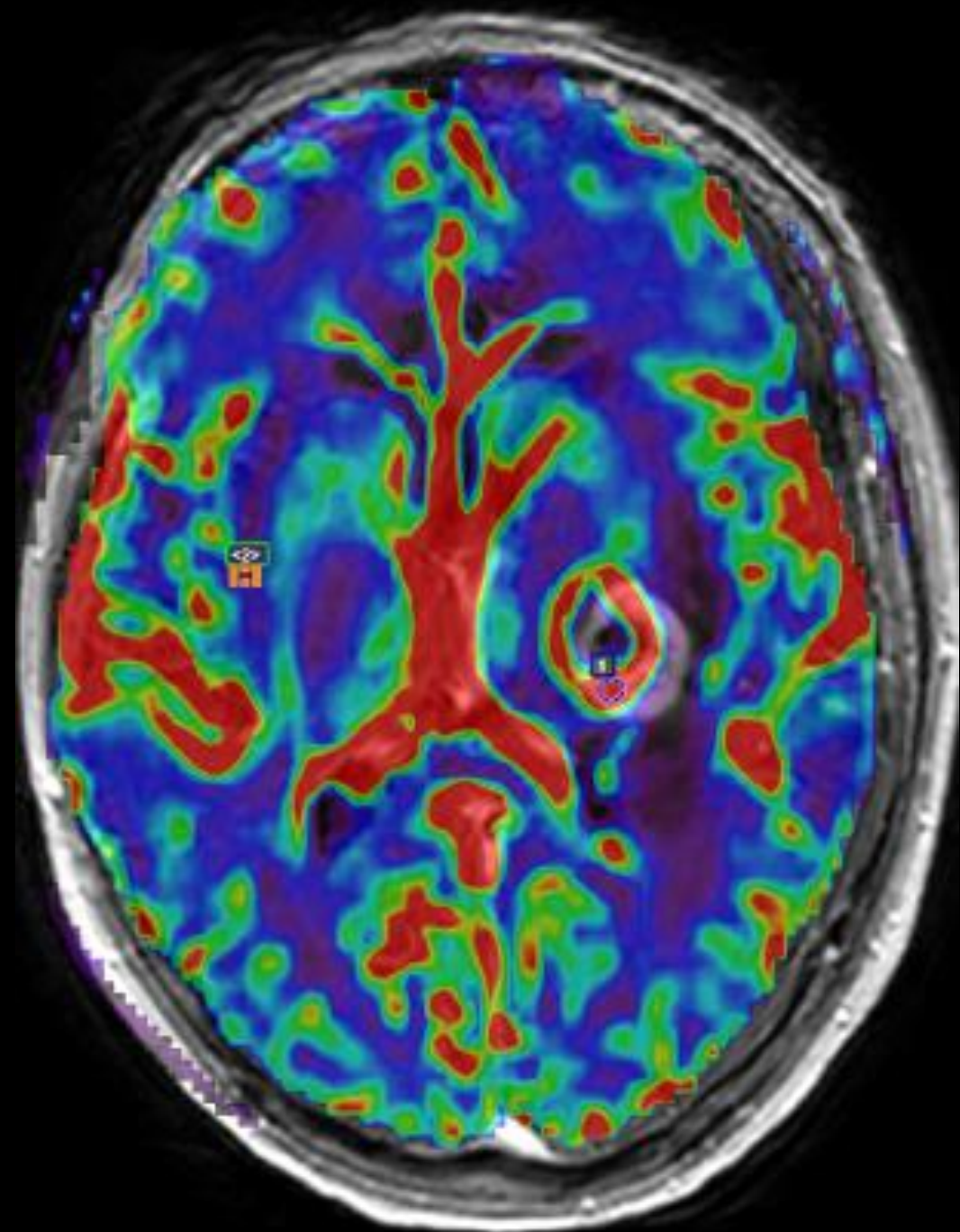
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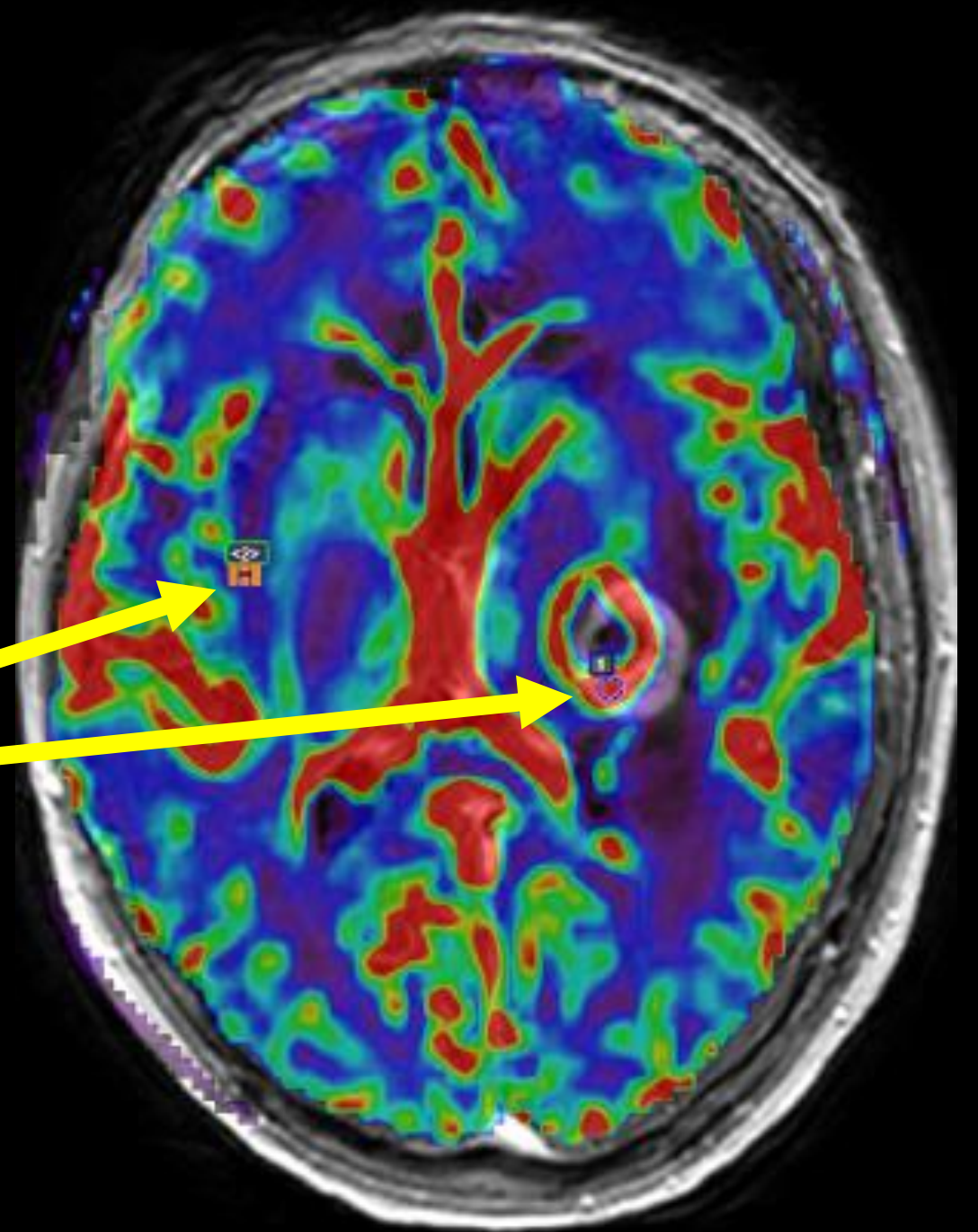
→ Perfusion

	Métastase	GBM
Portion charnue	rCBV majoré +	rCBV majoré +++++
Œdème péri-lésionnel	rCBV diminué	rCBV majoré +

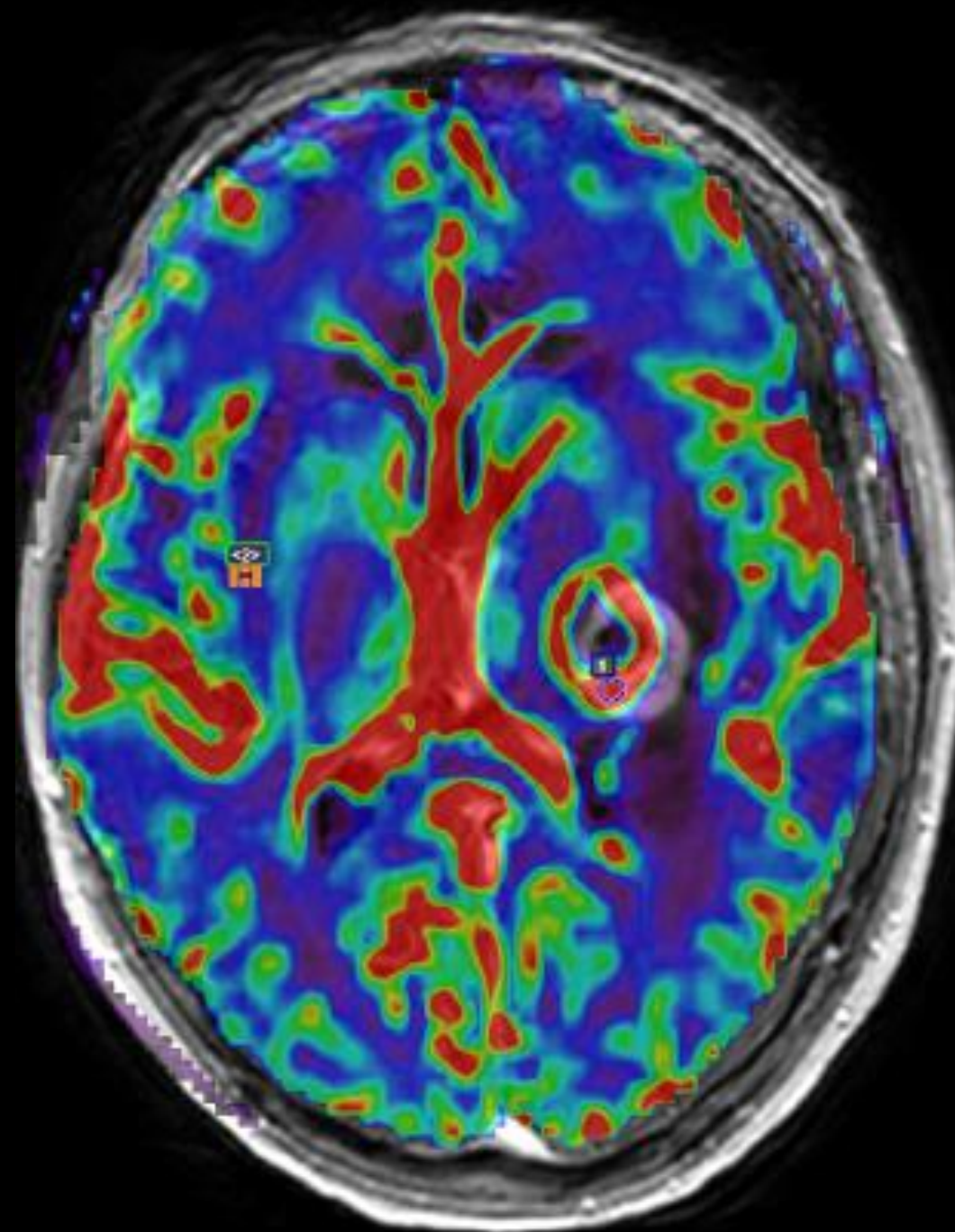
Séries	1	<2>
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TAKE HOME MESSAGES

- **Diffusion** (centre de la lésion)
 - DD abcès pyogène et tumeurs nécrotiques

- **Perfusion** (paroi et œdème périphérique)
 - DD GBM et métastases

Sources

Muccio, C. et al. *Magnetic resonance features of pyogenic brain abscesses and differential diagnosis using morphological and functional imaging studies: A pictorial essay*. Journal of Neuroradiology (2014) 41, 153-167.

Xu, X-X. et al. *Can diffusion-weighted imaging be used to differentiate brain abscess from other ring-enhancing brain lesions? A meta-analysis*. Clinical Radiology 69 (2014), 909-915.

Neska-Matuszewska, M. et al. *Differentiation of glioblastoma multiforme, metastases and primary central nervous system lymphomas using multiparametric perfusion and diffusion MR imaging of a tumor core and a peritumoral zone – Searching for a practical approach*. PLoS ONE 13 (1): e0191341. <https://doi.org/10.1371/journal.pone.0191341>

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