

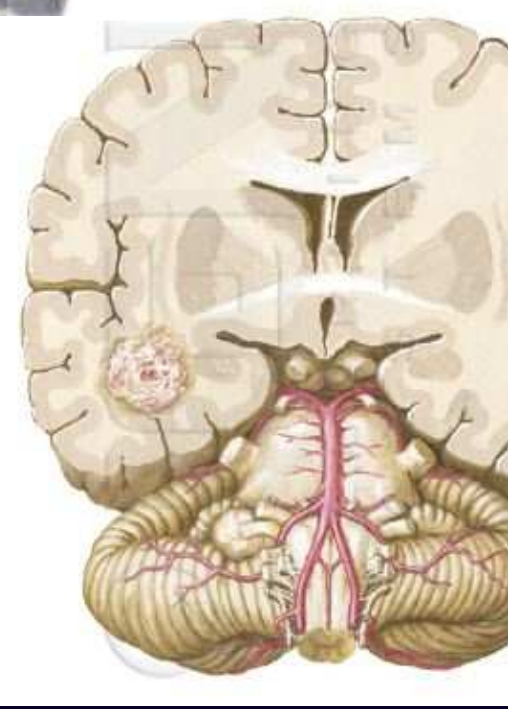
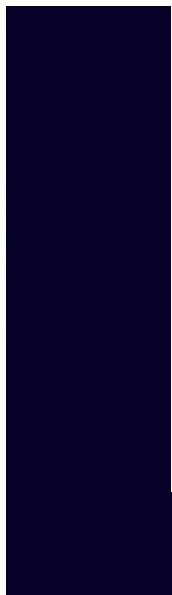
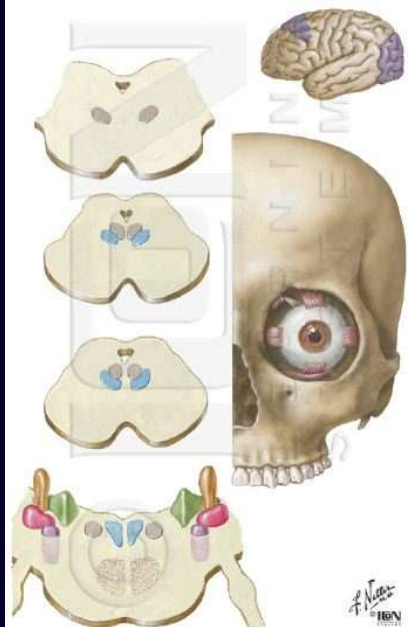


27 Ottobre 2012

L'equilibrio "fragile" nel paziente anziano

**Il ruolo della diagnostica per
immagini**

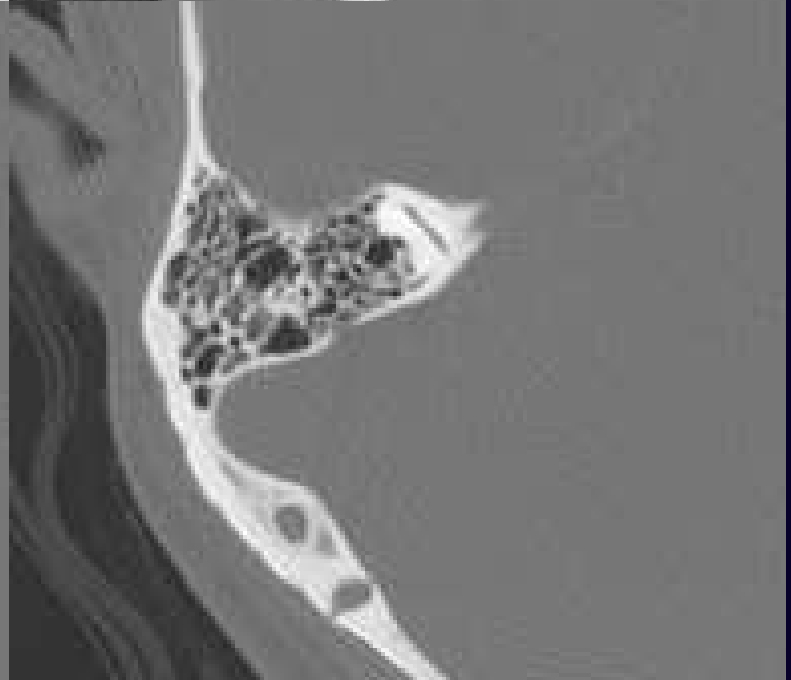
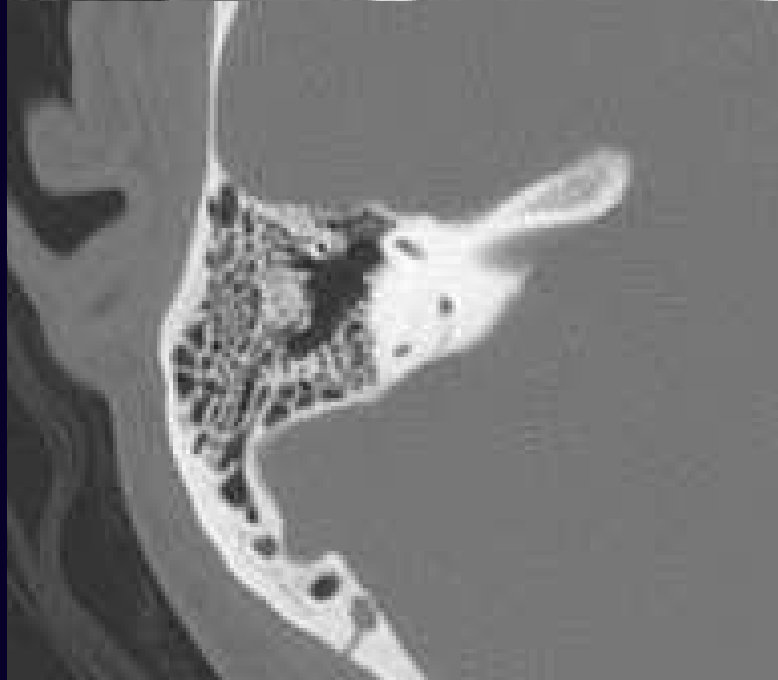
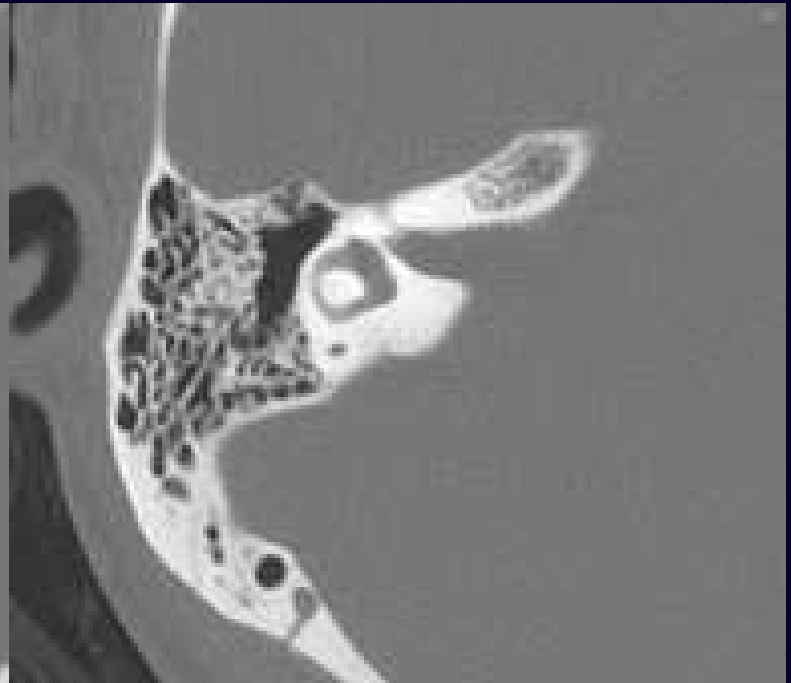
Stefano Ceruti
S. C. di Neuroradiologia
Arcispedale S. Anna - Ferrara



- Rocche petrose (OM – OI - CUI)
- Fossa cranica posteriore (cisterna APC – tronco encefalico – cervelletto)
- Cervello
- Orbite e vie oculomotrici
- Rachide cervicale – muscoli posturali del collo
- Circolo vertebro - basilare

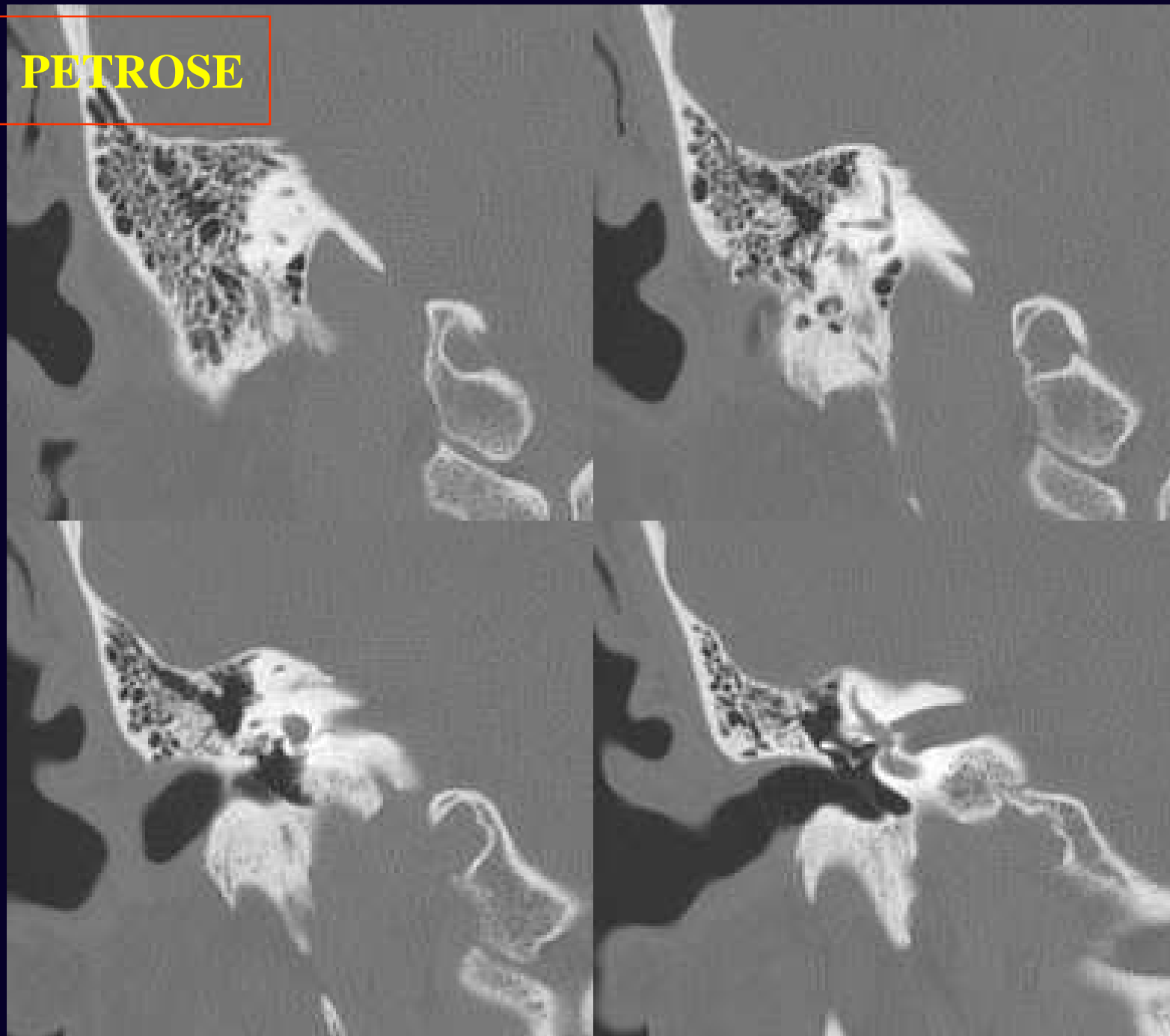
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TC



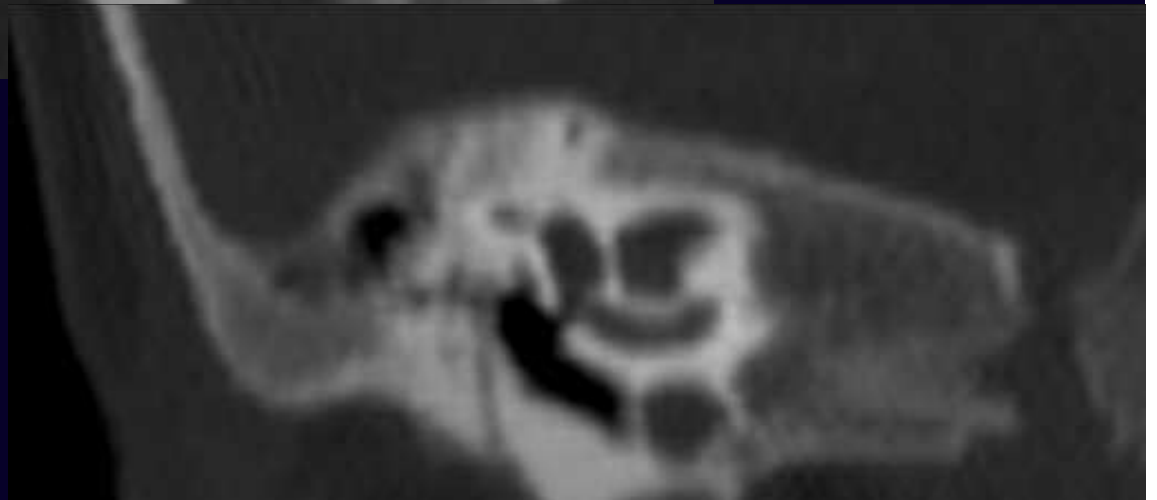
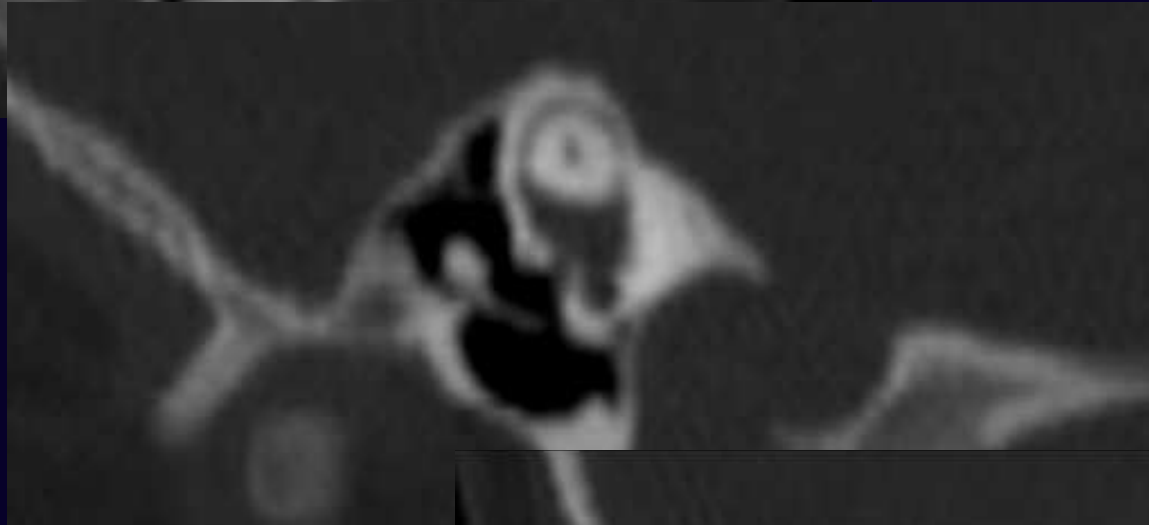
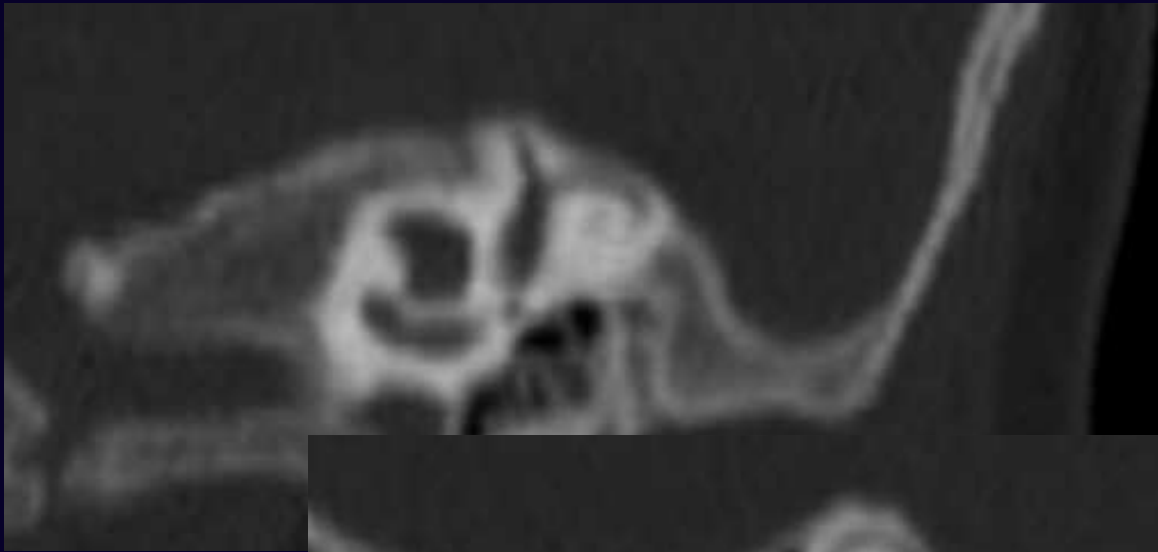
ROCCHIE PETROSE

TC



ROCCE PETROSE

TC



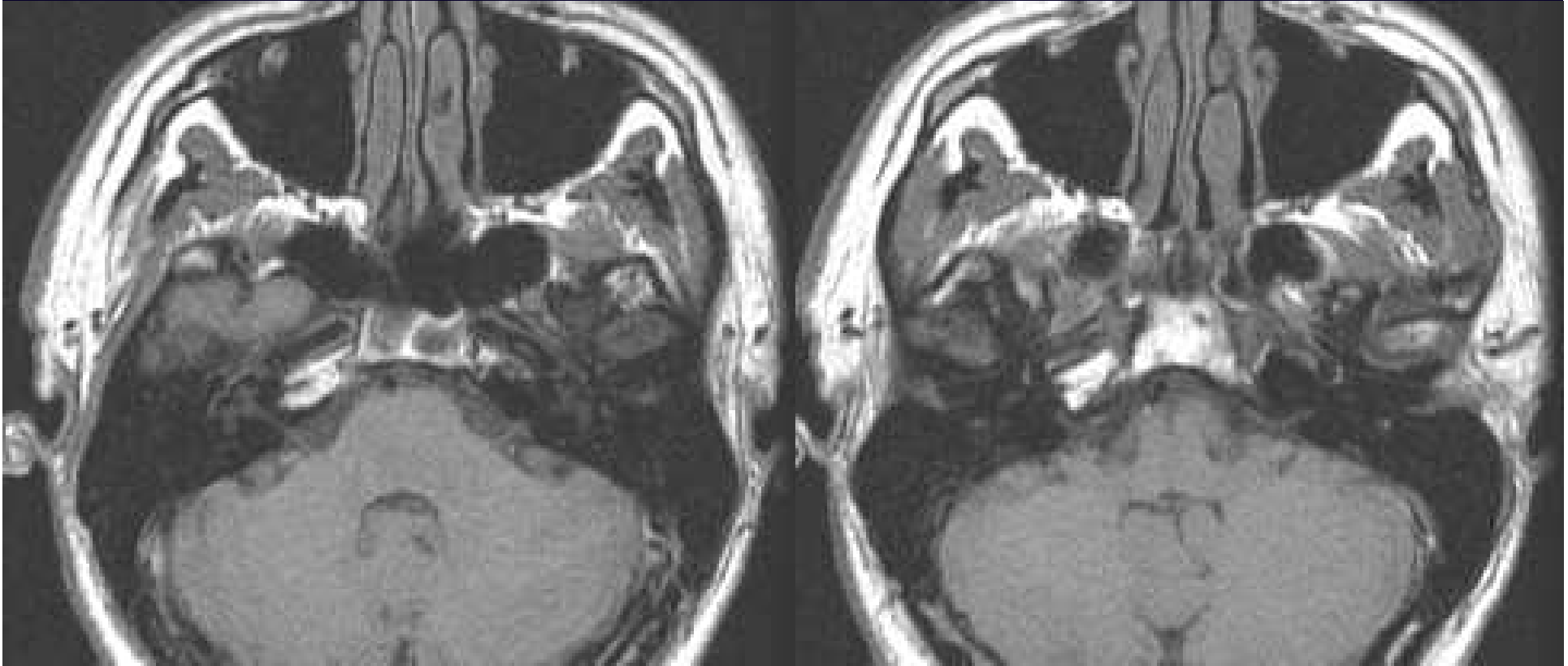
ROCCE PETROSE

RM



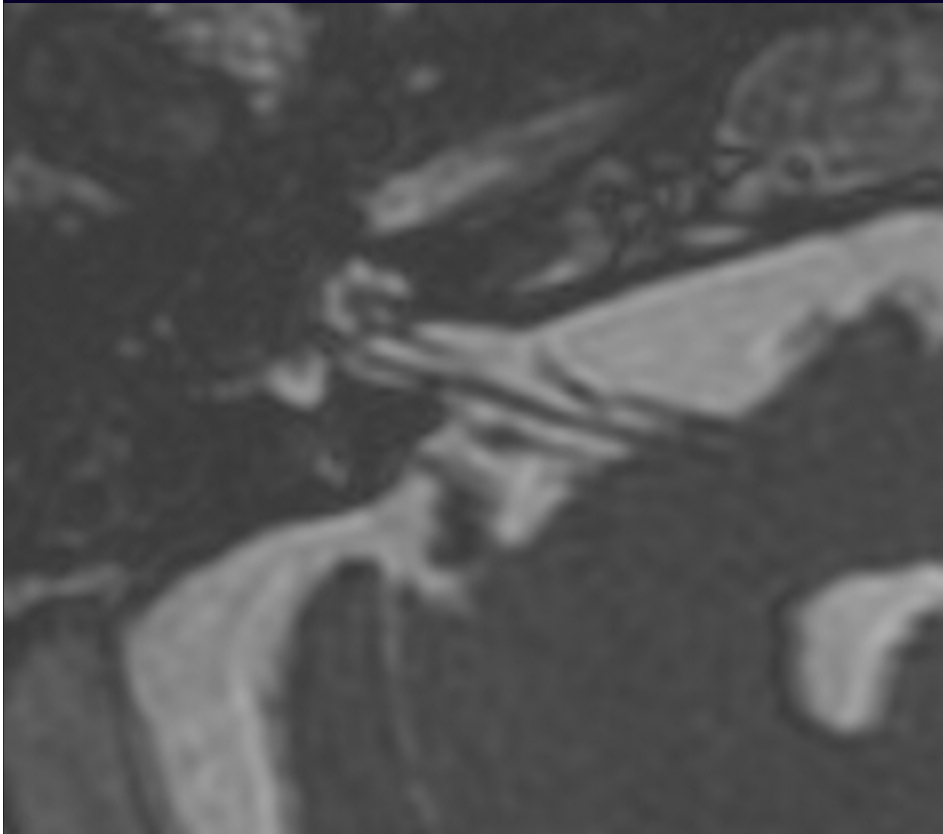
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RM

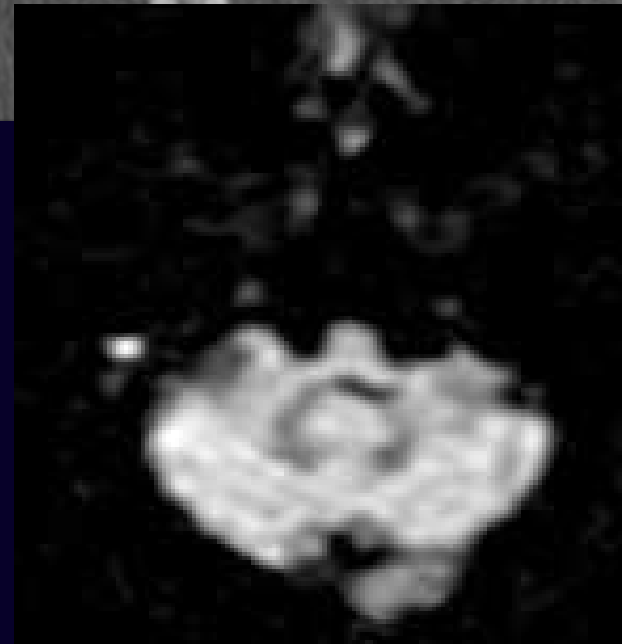
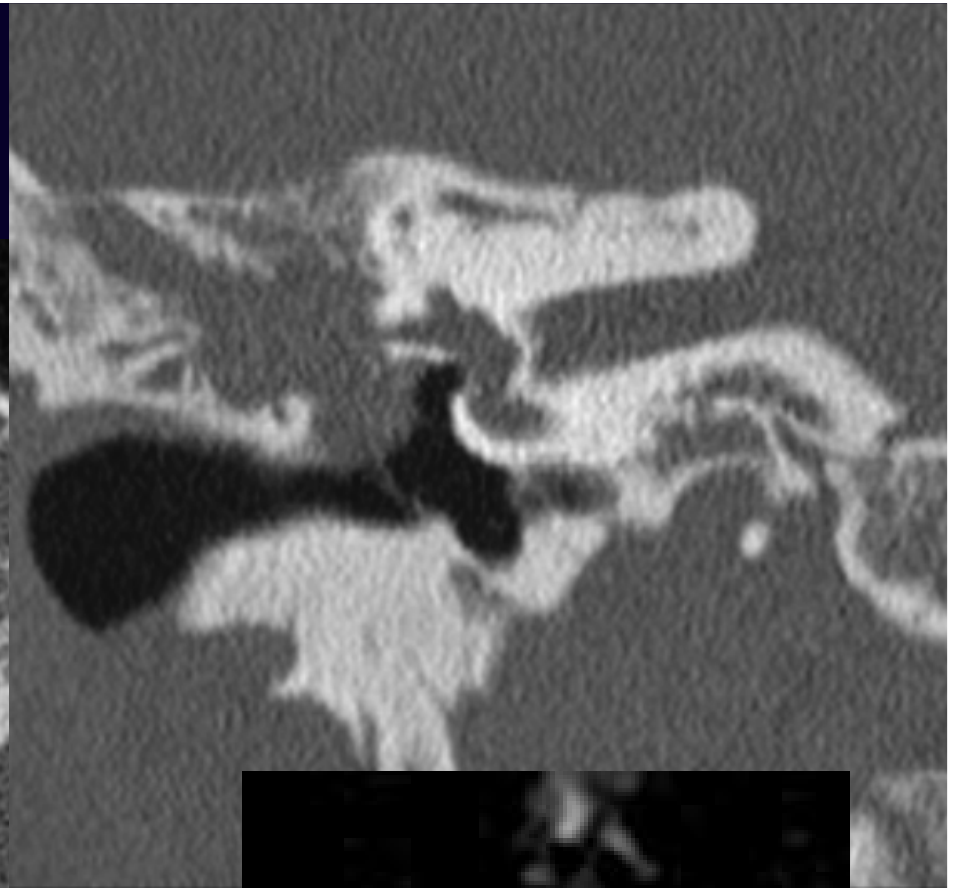
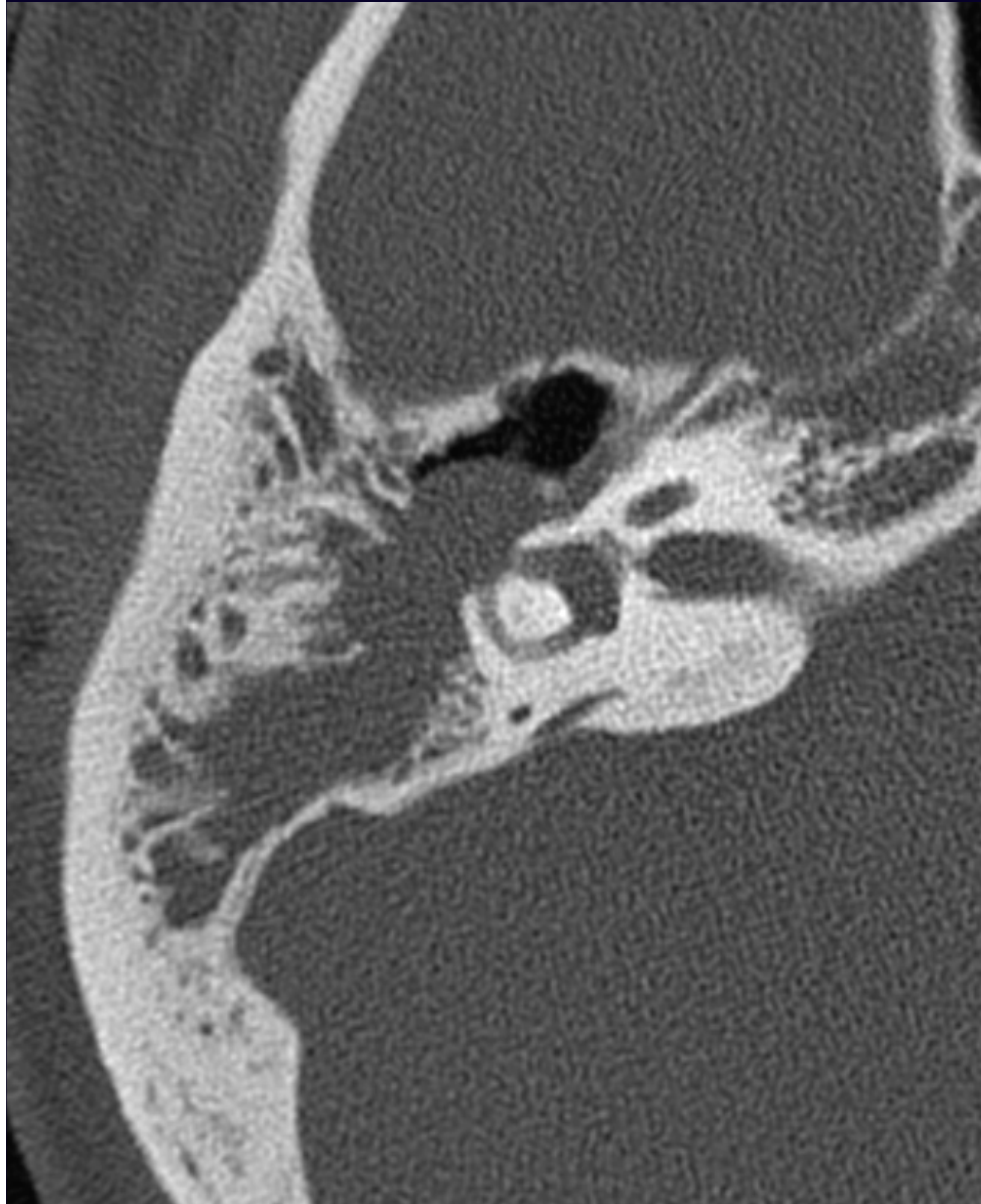


ROCCHÉ PETROSE

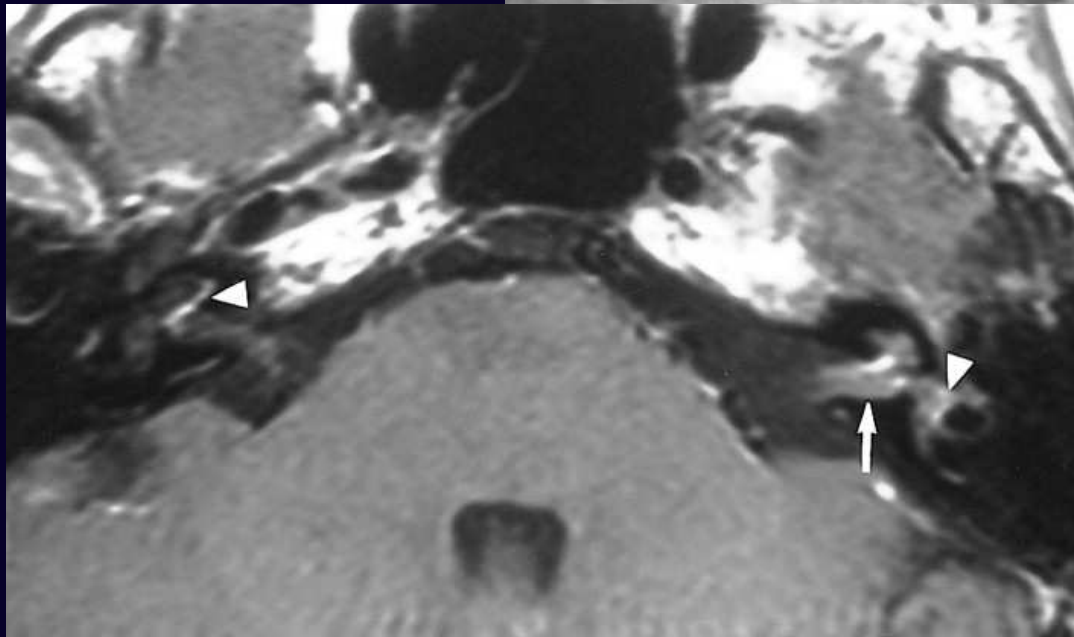
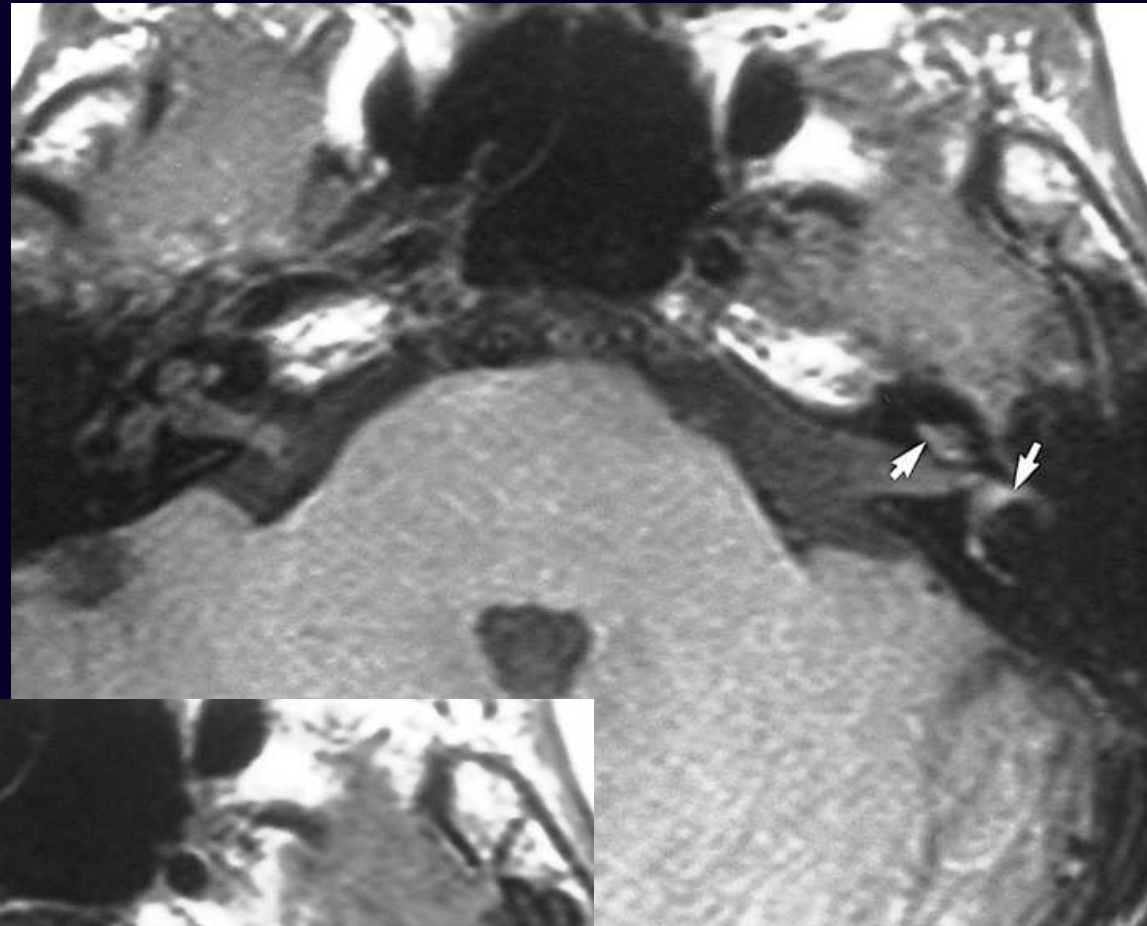
RM



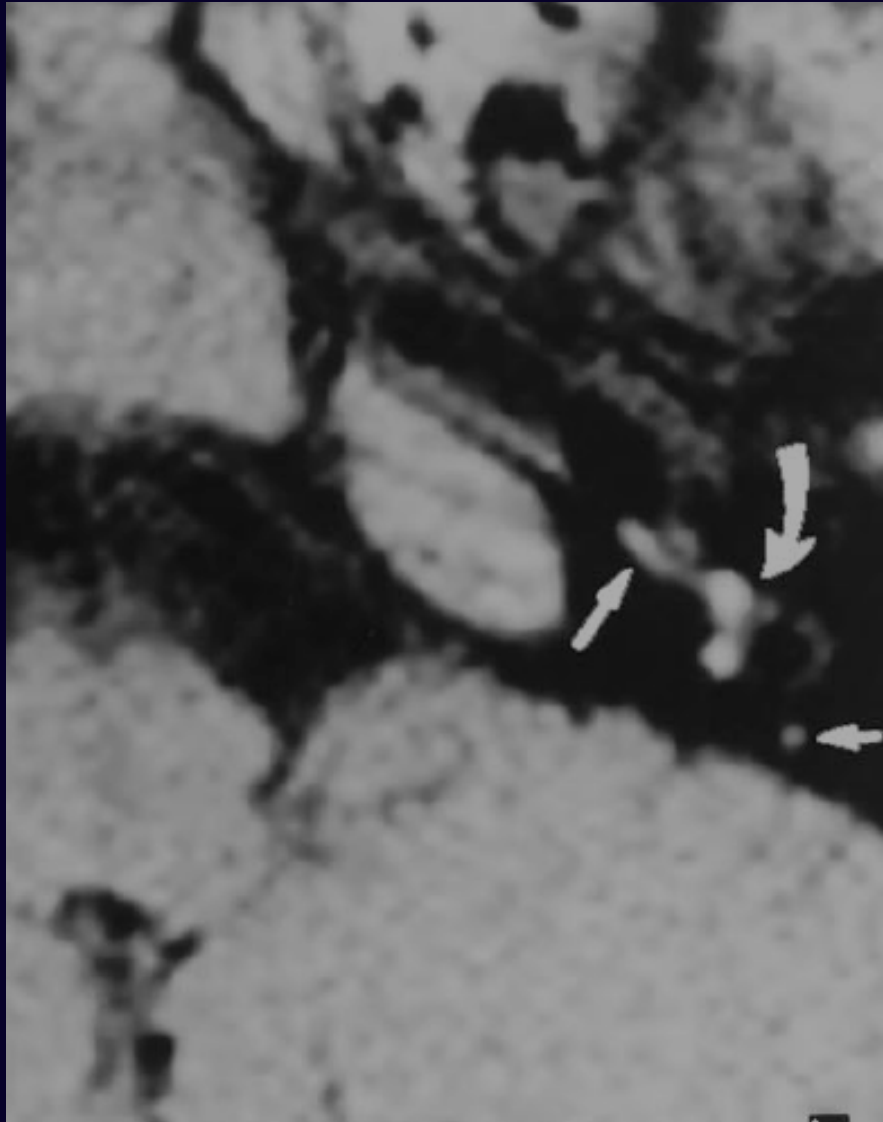
**colesteatoma
fistola CSL**



labirintite

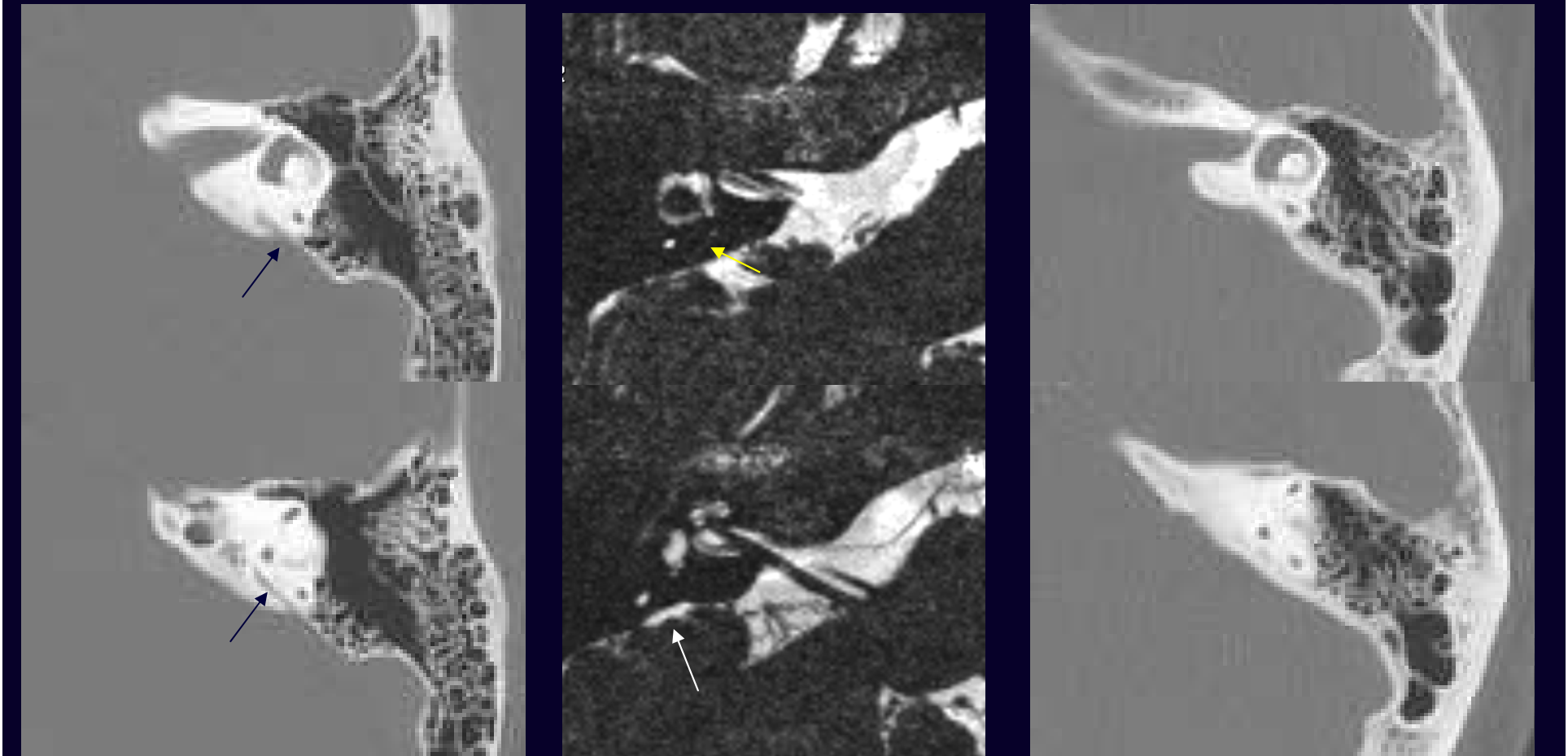


**emorragia
labirintica**



malattia di Menière

- **stenosi bilaterale dotto endolinfatico (TC 27%, RM 64% - pz. non affetti: TC 3,5%, RM 39%)**
- **RM: < dotto endolinf. durante la crisi**
- **< distanza tra CSP e bordo rocca petrosa (bilat.)**
- **RM: normale intensità di segnale strutture labirintiche**



malattia di Menière

- visualizzazione dell'idrope endolinfatica mediante iniezione i.t. o i.v. di MDC
- utilizzo di RM 3T - sequenze 3D-FLAIR - 4 h dopo iniezi. i.v. o 24 h dopo iniezi. i.t.
- casistiche di pochi pz. - mancano correlazioni clinico-patologiche EB

Nakashima T, Naganawa S, Teranishi M, et al. [Endolymphatic hydrops revealed by intravenous gadolinium injection in patients with Meniere's disease](#). Acta Otolaryngol 2010;130:338–43.

Naganawa S, Yamazaki M, Kawai H, et al. [Imaging of endolymphatic and perilymphatic fluid after intravenous administration of single-dose gadodiamide](#). Magn Reson Med Sci. 2012;11(2):145-50.

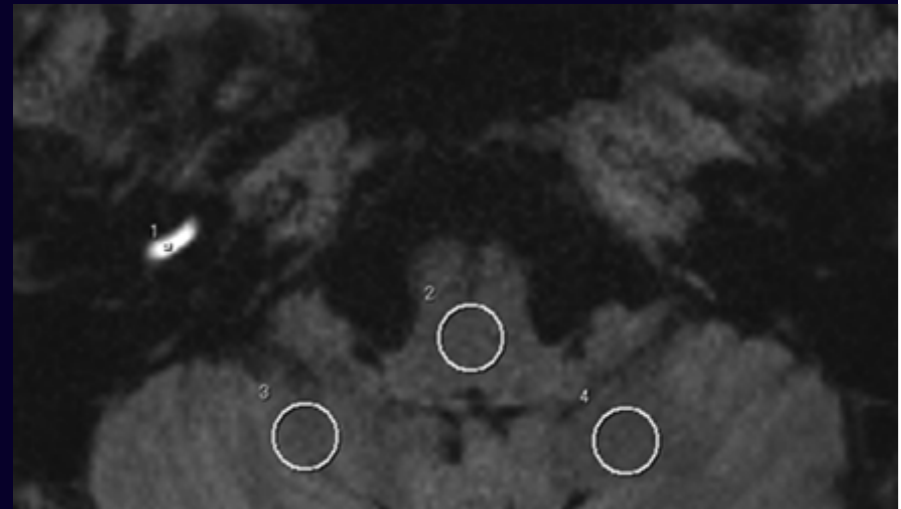
M. Yamazaki, S. Naganawa, M. Tagaya, et al. [Comparison of contrast effect on the cochlear perilymph after intratympanic and intravenous gadolinium injection](#). AJNR 2012;33:773–78.

Fiorino F, Pizzini FB, Beltramello A, et al. [Reliability of MRI performed after intratympanic administration of gadolinium in the identification of endolymphatic hydrops in patients with Menière's disease](#). Otol Neurotol 2011;32:472Y7.

Gürkov R, Flatz W, Louza J, et al. [In vivo visualized endolymphatic hydrops and inner ear functions in patients with electrocochleographically confirmed Ménière's disease](#). Otol Neurotol 2012;33:1040-1045.

Syed I, Aldren C. [Meniere's disease: an evidence based approach to assessment and management](#). Int J Clin Pract 2012;66:166–170.

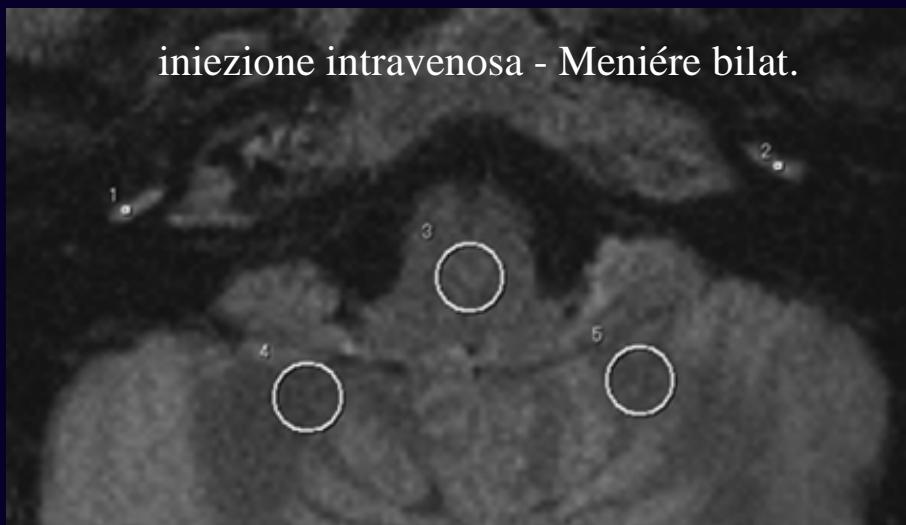
iniezione intratimpanica dx - quadro normale



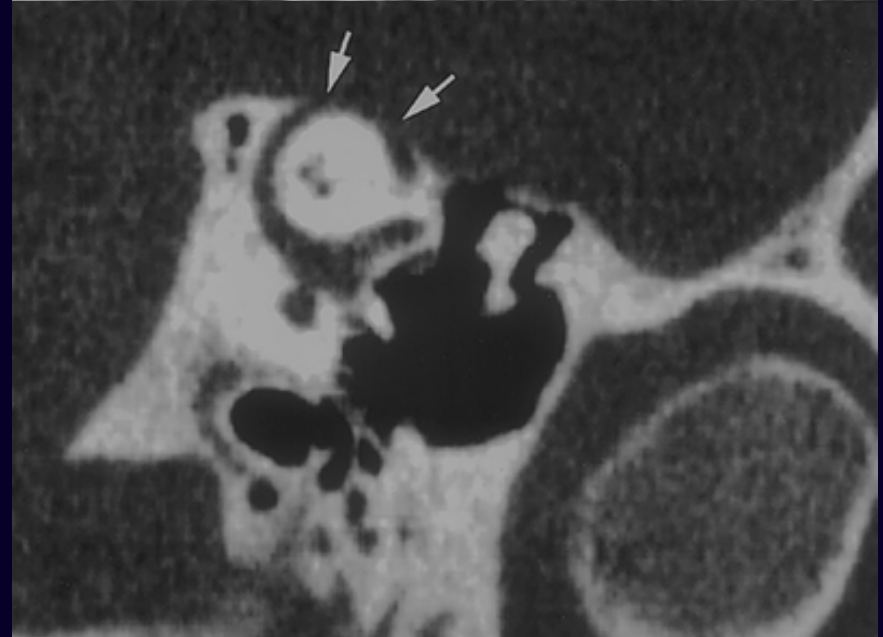
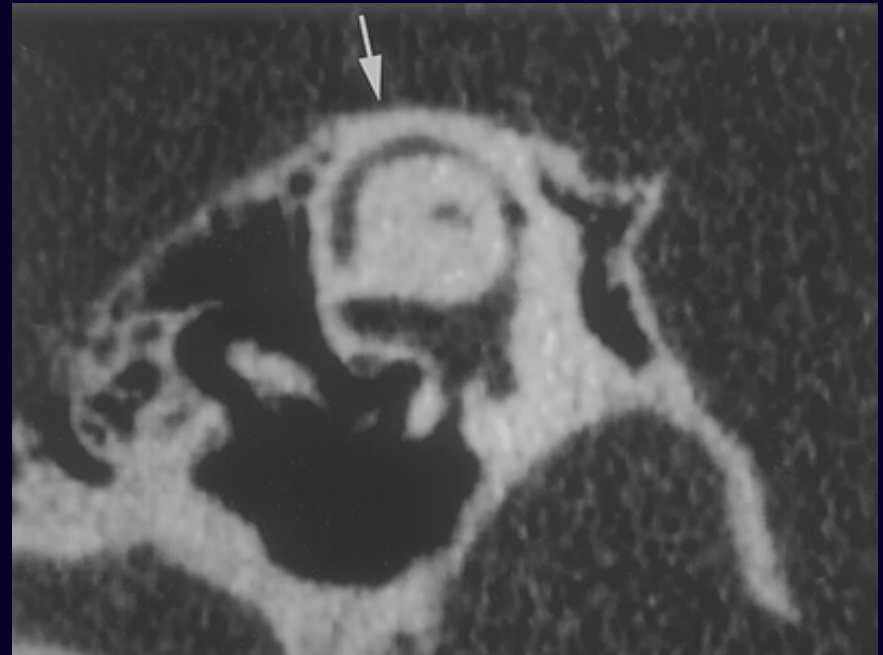
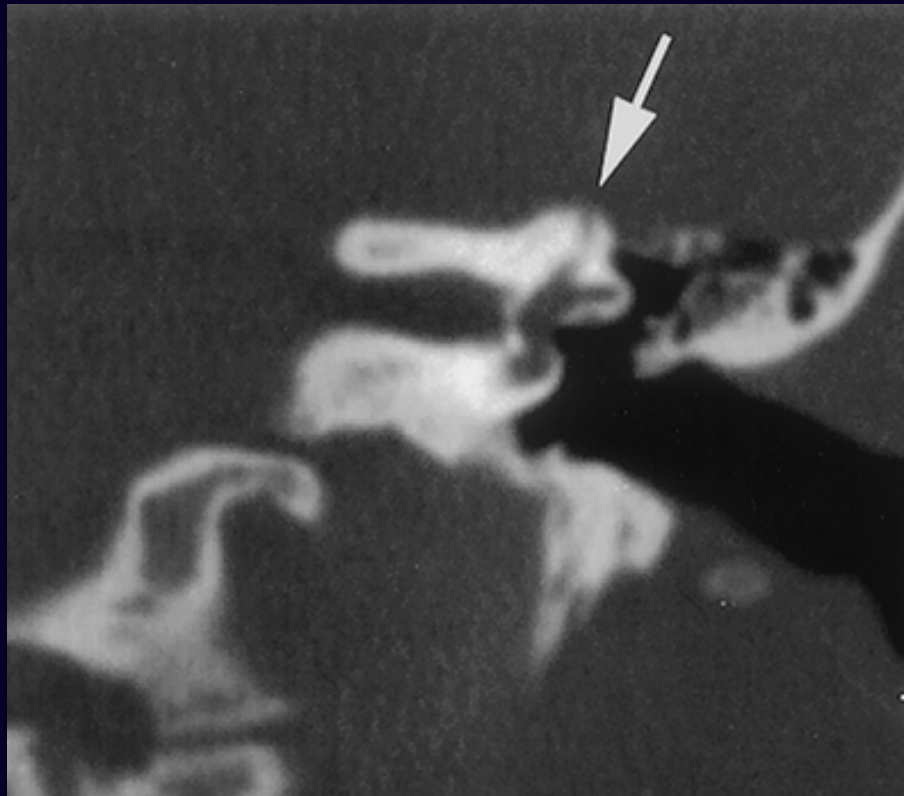
iniezione intratimpanica dx - Menière dx



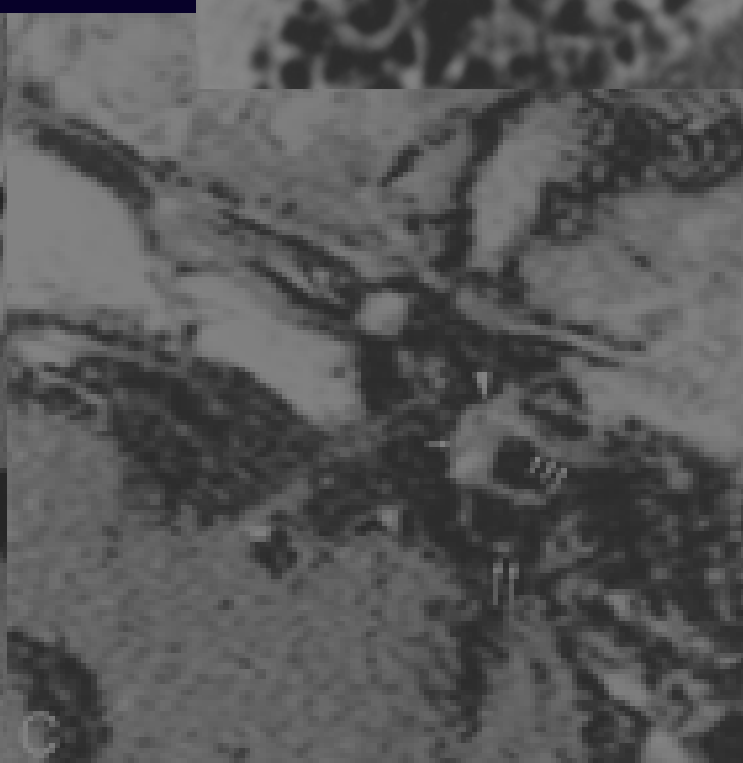
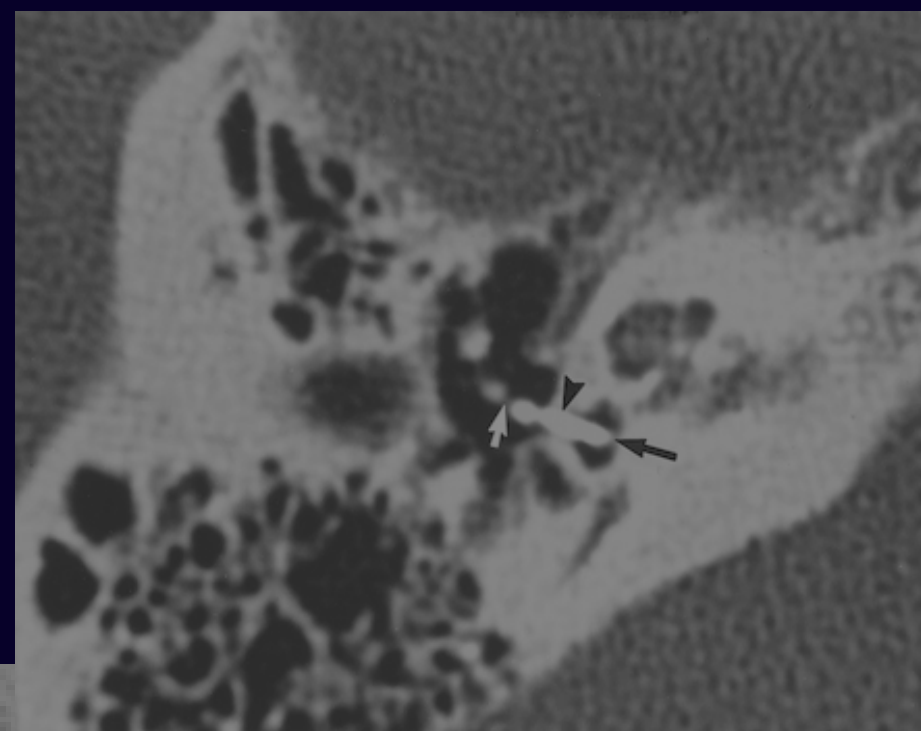
**malattia di
Menière**



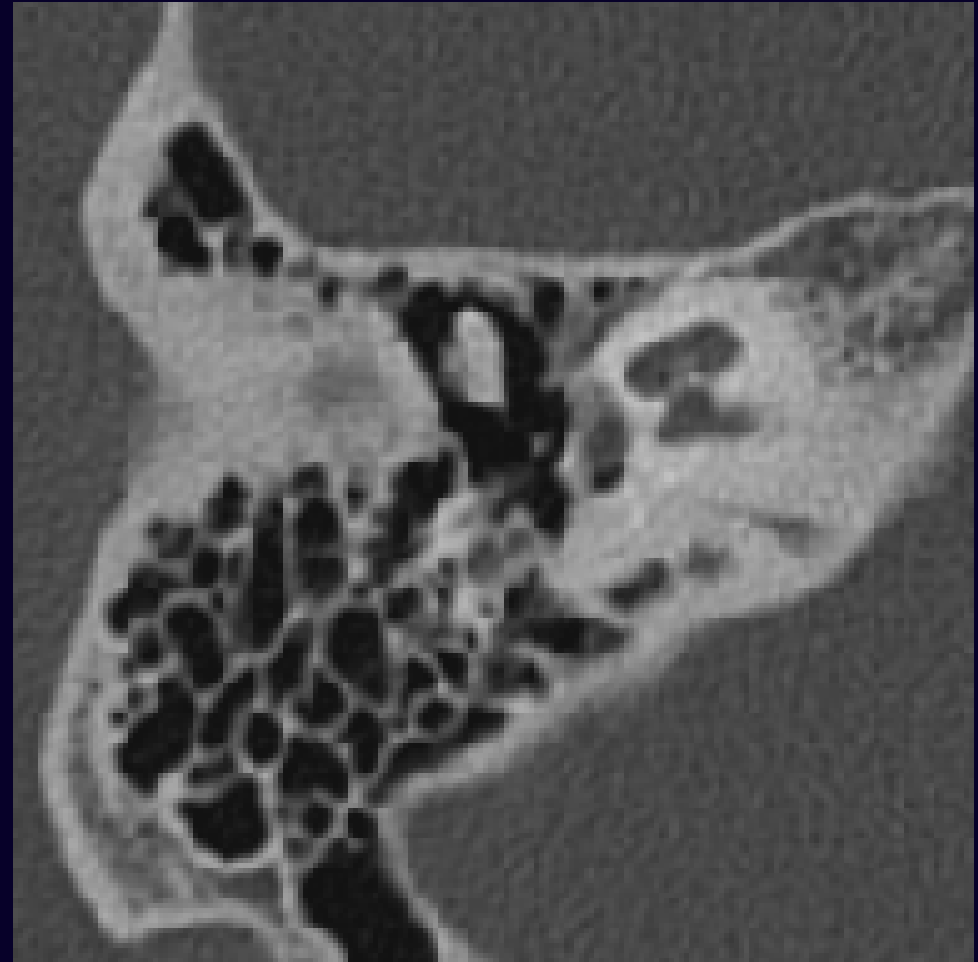
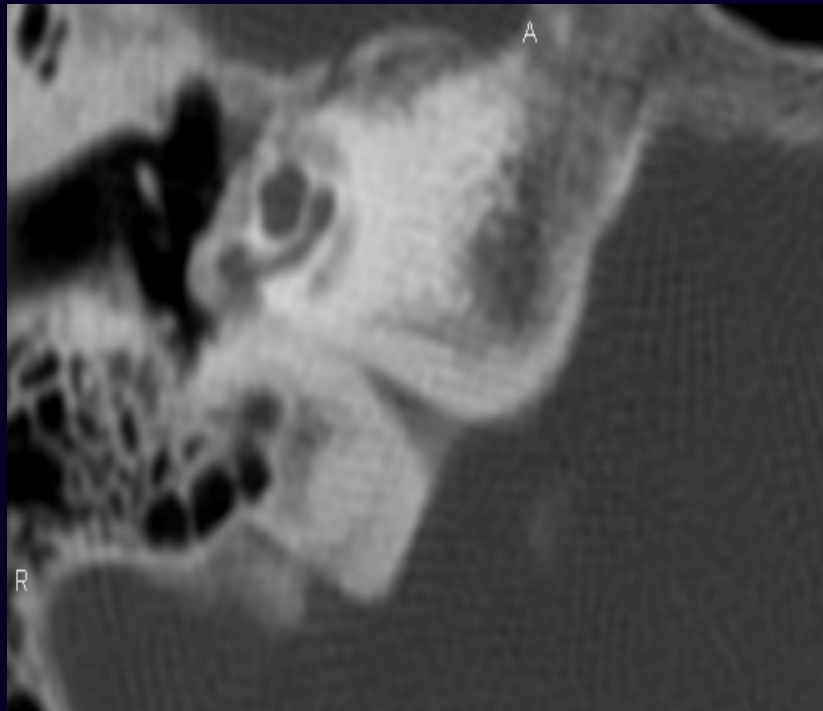
deiscenza CSS



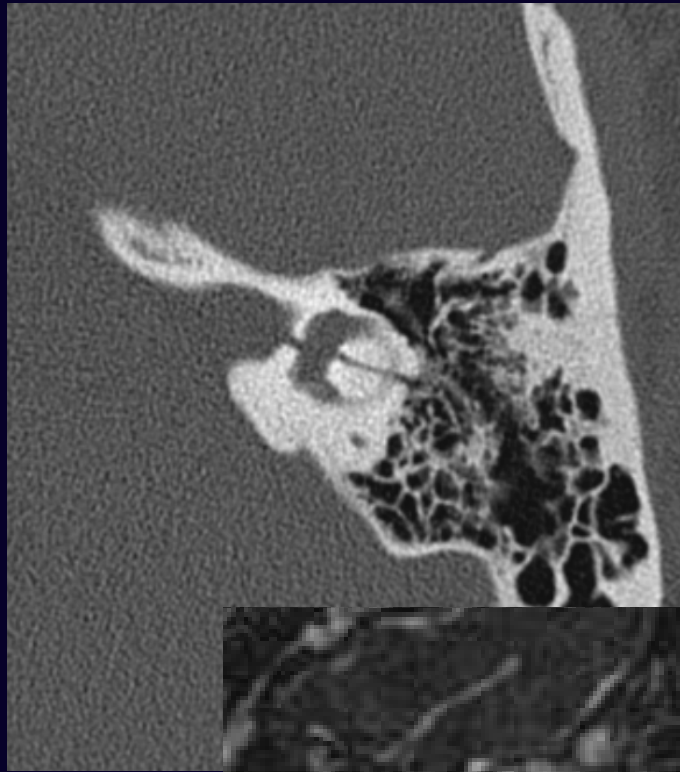
**disinserzione
protesi stapediale**



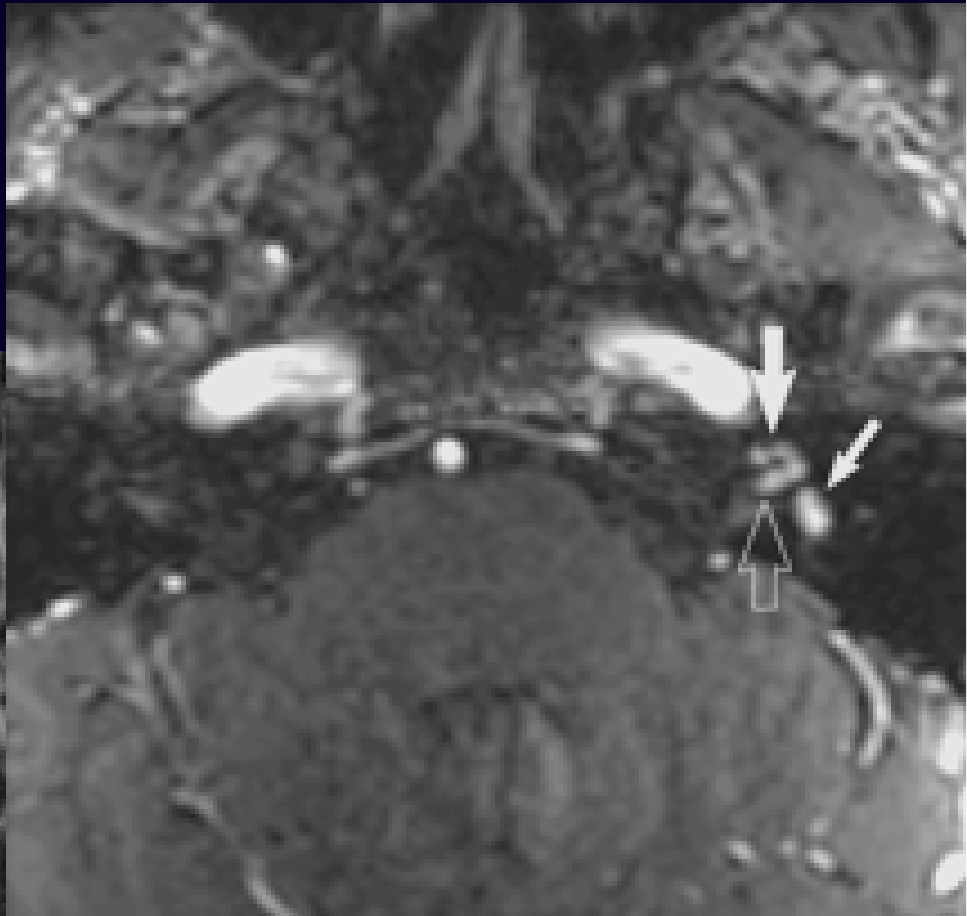
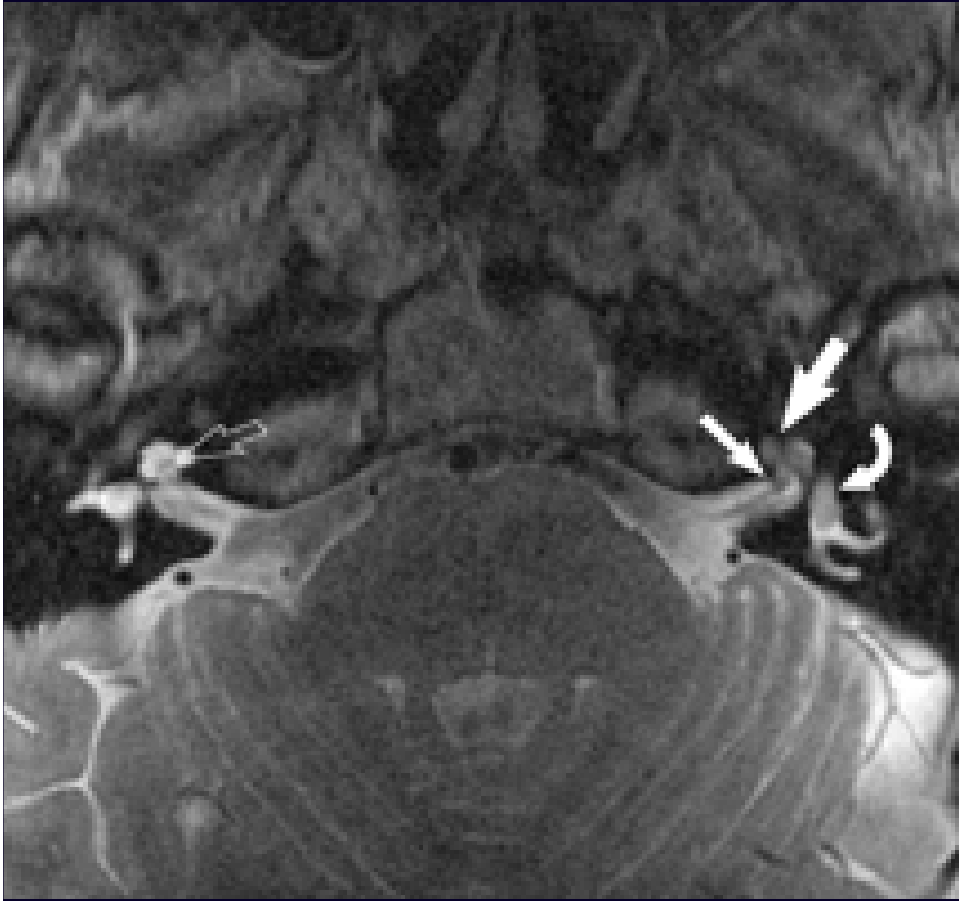
otosclerosi



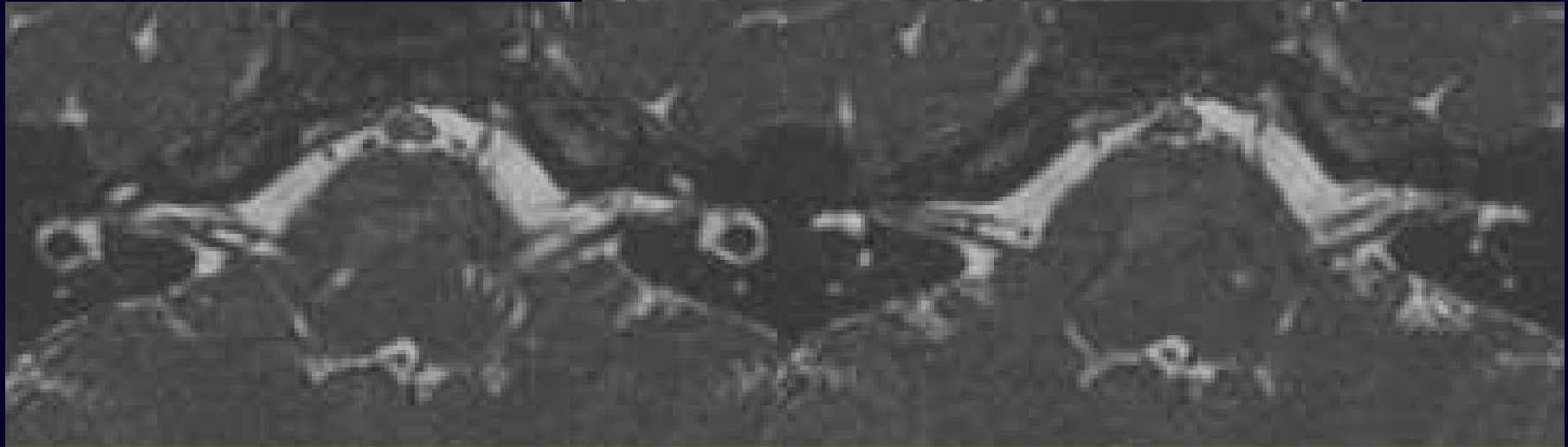
trauma



**neurinoma
intralabirintico**



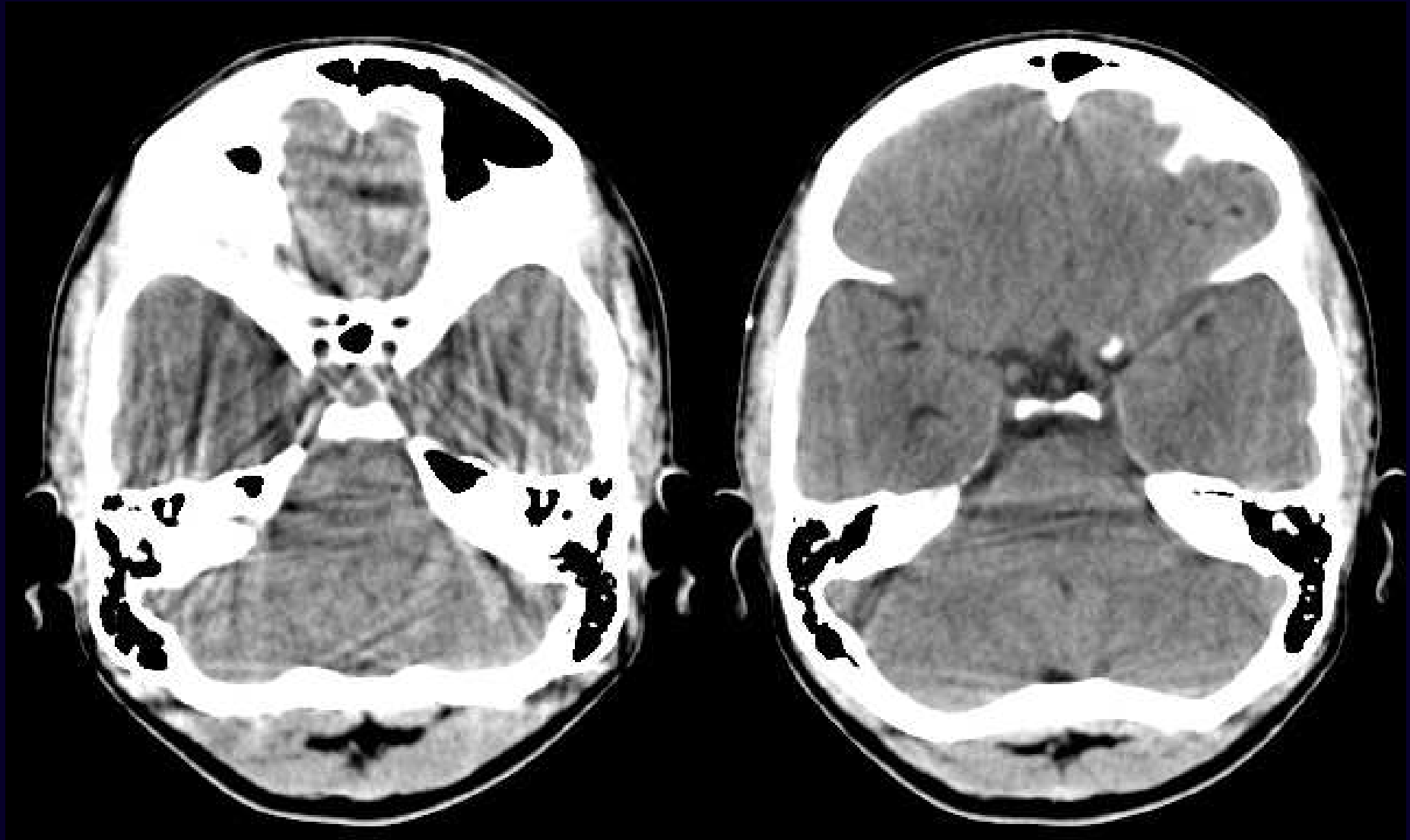
vascular loop (AICA)



- **12,3% in pazienti asintomatici – nessuna correlazione con sintomatologia uditiva o vestibolare**
(Reisser C, Schuknecht HF. The anterior inferior cerebellar artery in the internal auditory canal. Laryngoscope 1991;101:761-6)
- **associato ad acufeni pulsanti o ipoacusia con frequenza significativa**
 - Nowe V, De Ridder D, et al. Does the location of a vascular loop in the cerebello-pontine angle explain pulsatile and non-pulsatile tinnitus? Eur Radiol 2004; 14:2282-9).
 - McDermott AL, Dutt SN, Irving RM, Pahor AL, Chavda SV. **Related Articles.** Anterior inferior cerebellar artery syndrome: fact or fiction. Clin Otolaryngol Allied Sci 2003; 28:75-80.

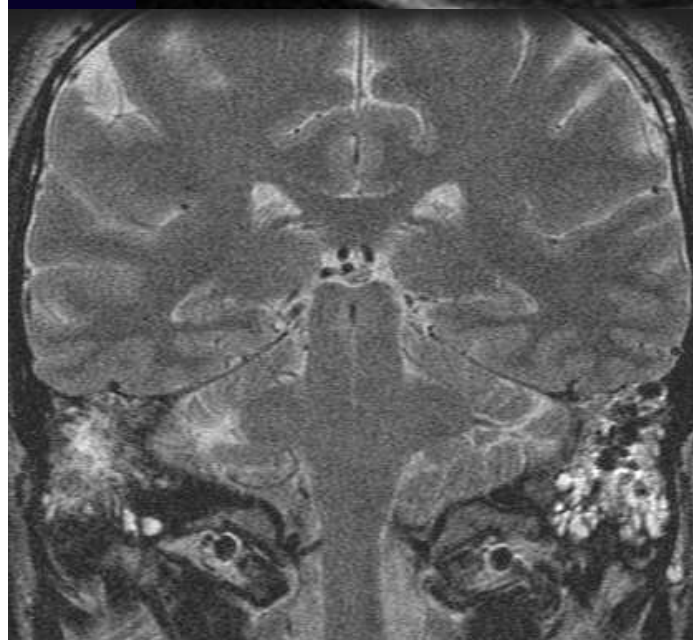
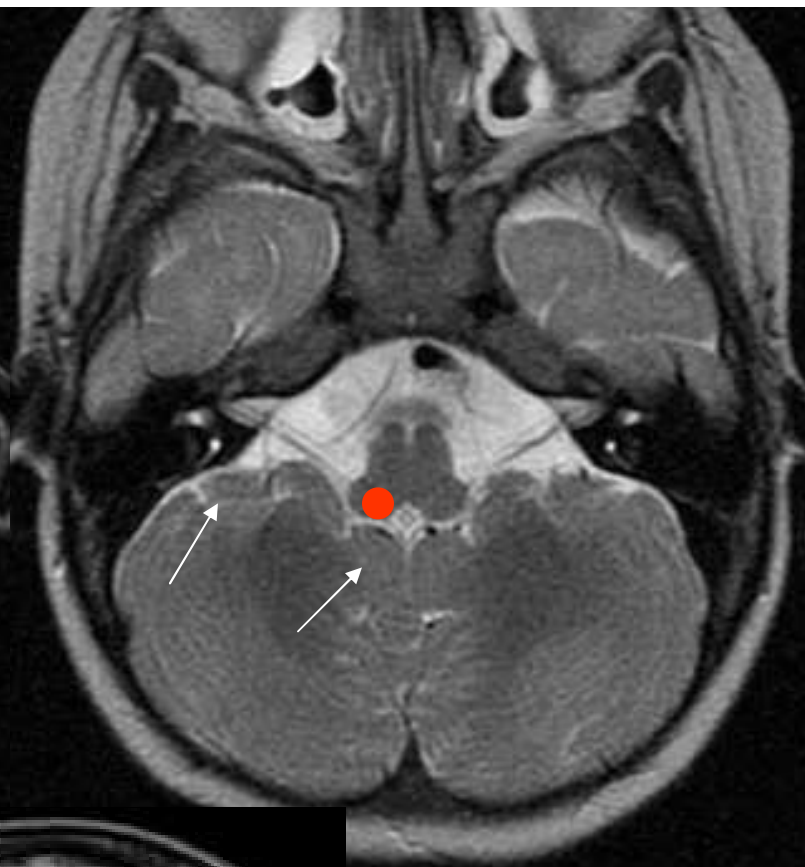
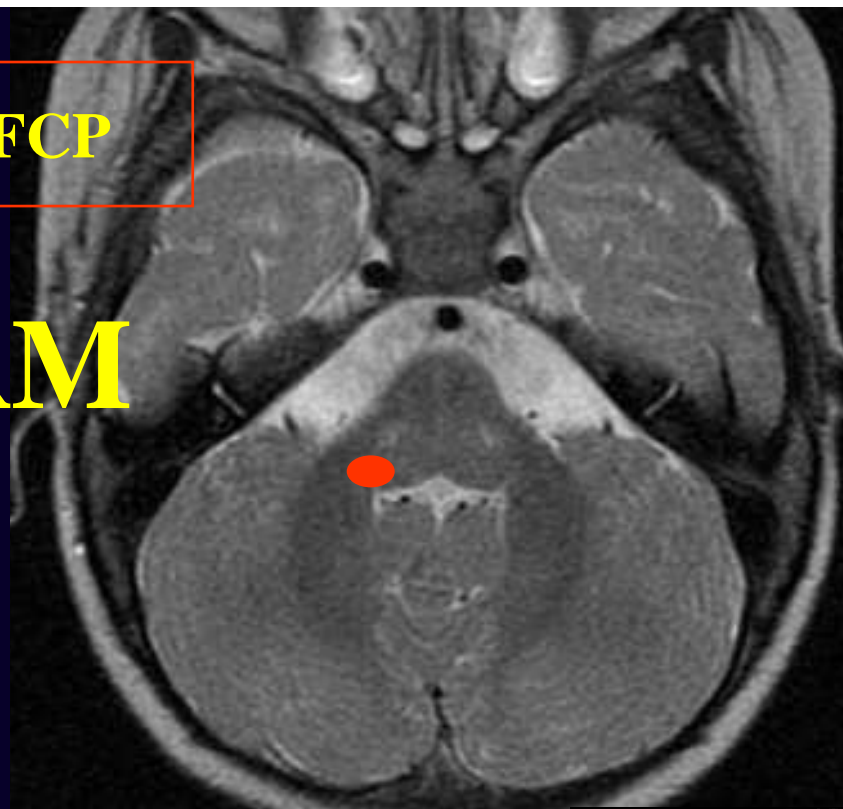
FCP

TC

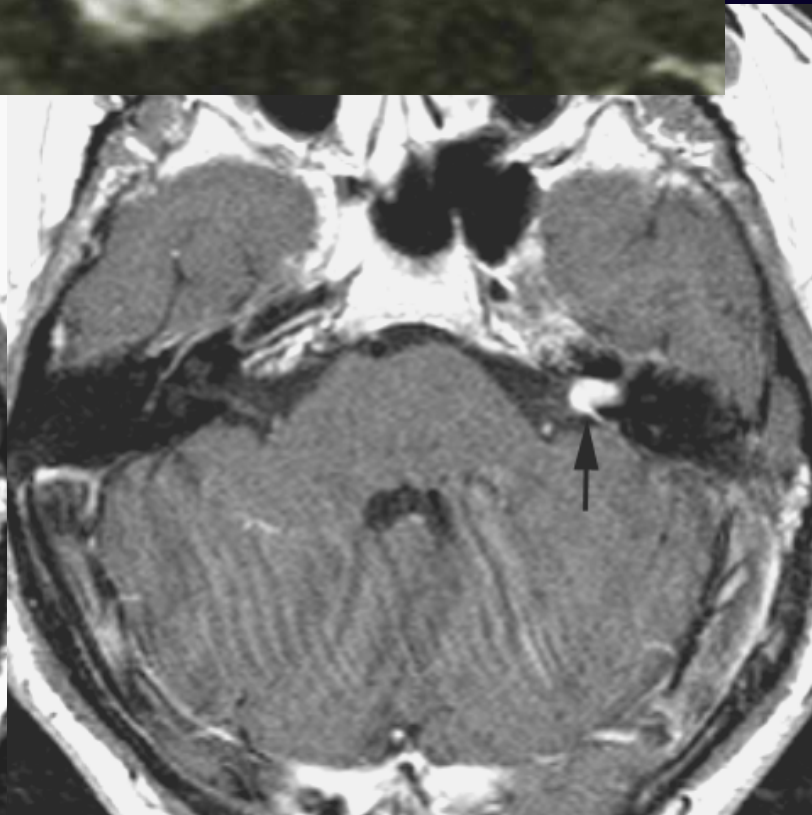


FCP

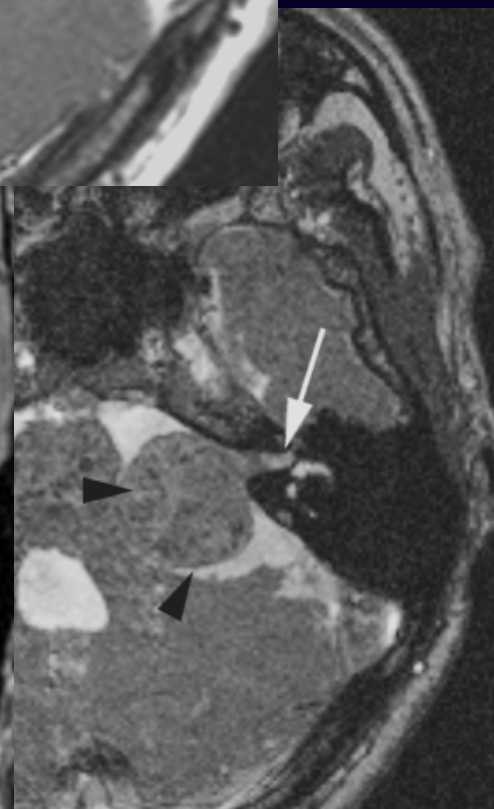
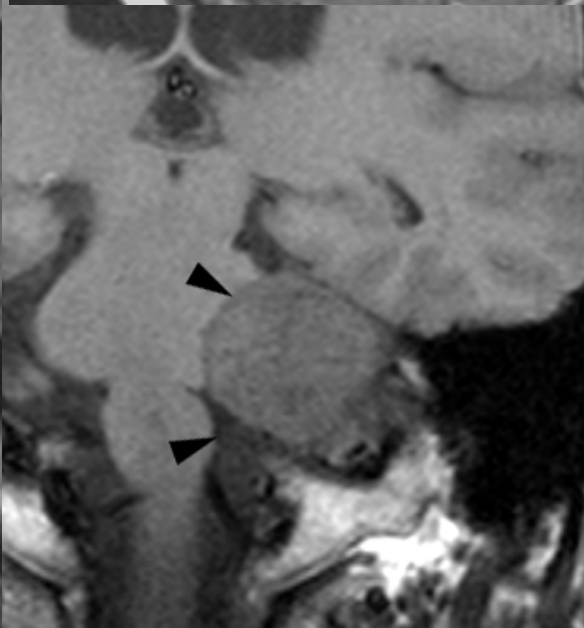
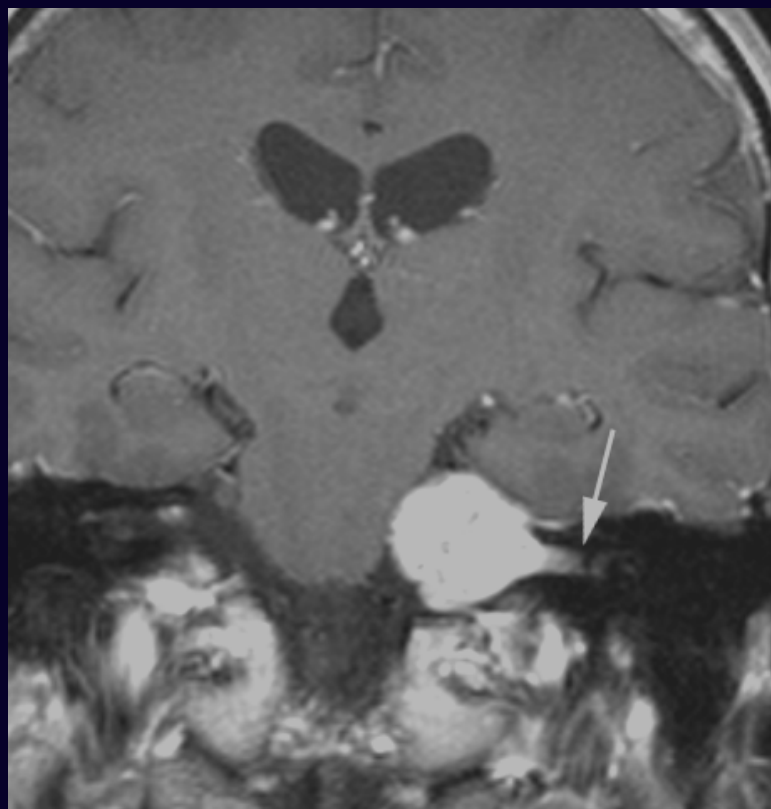
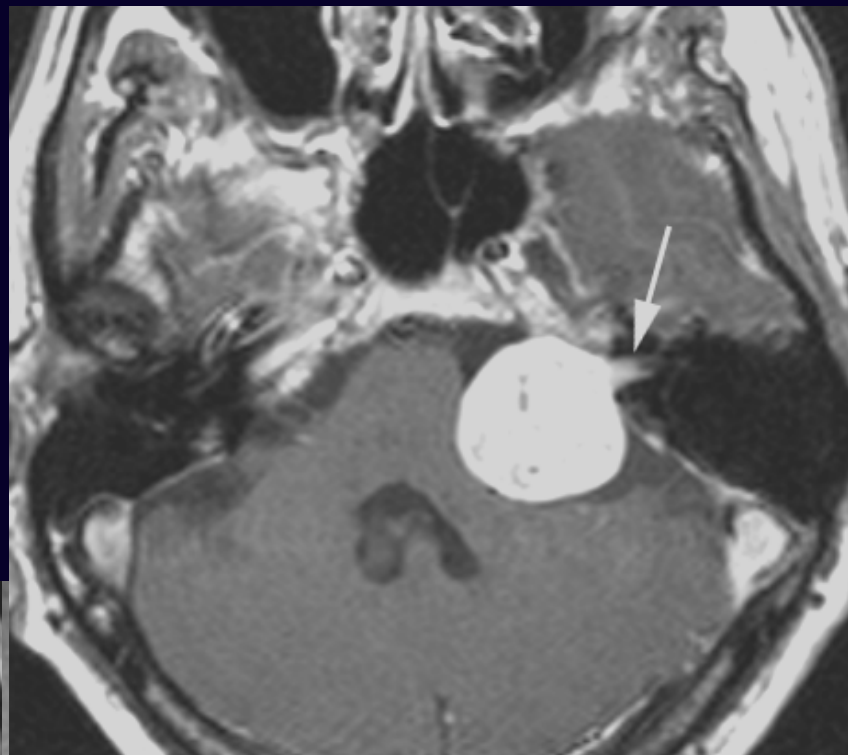
RM



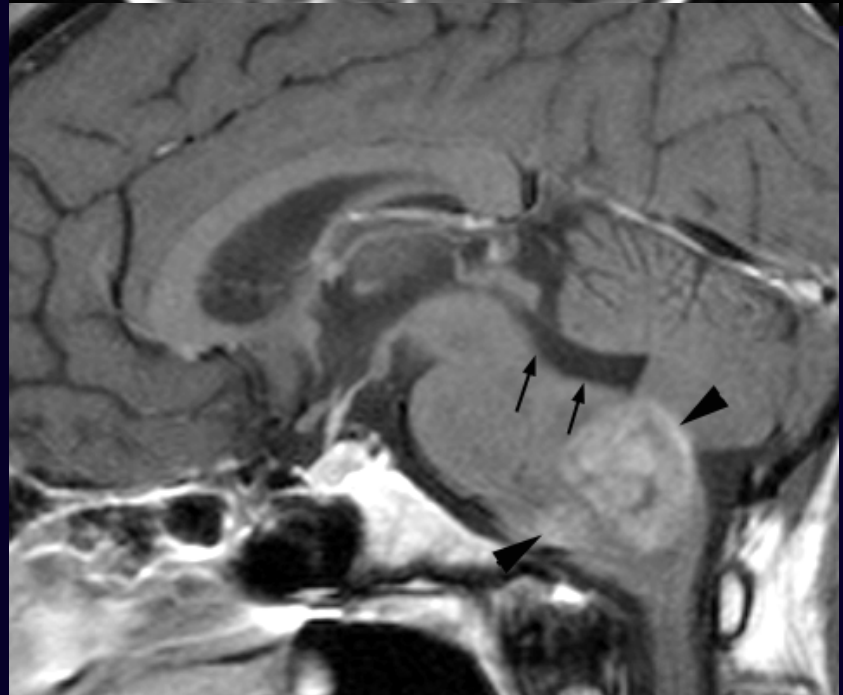
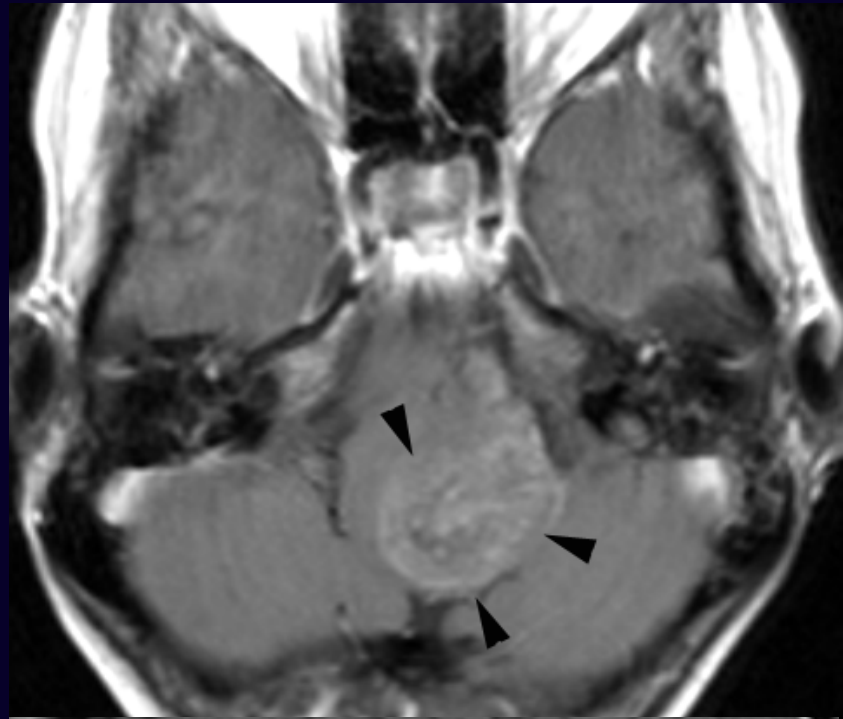
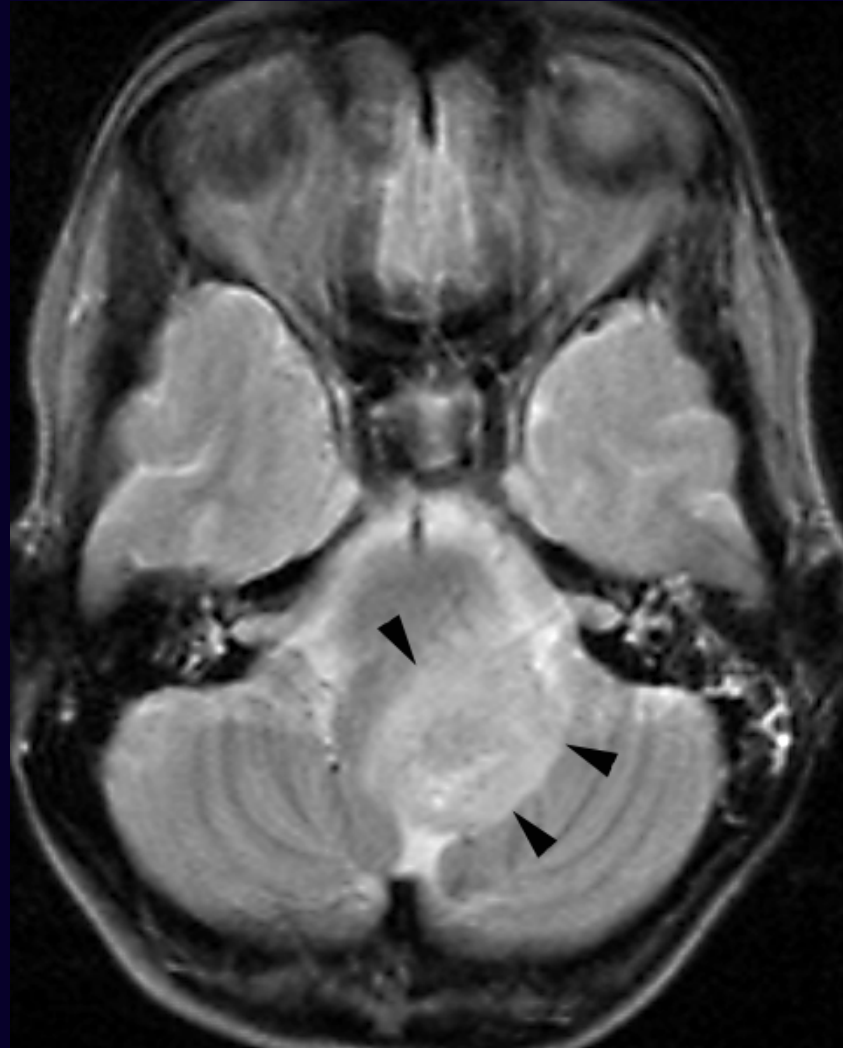
**neurinoma
intra-canalicolare**



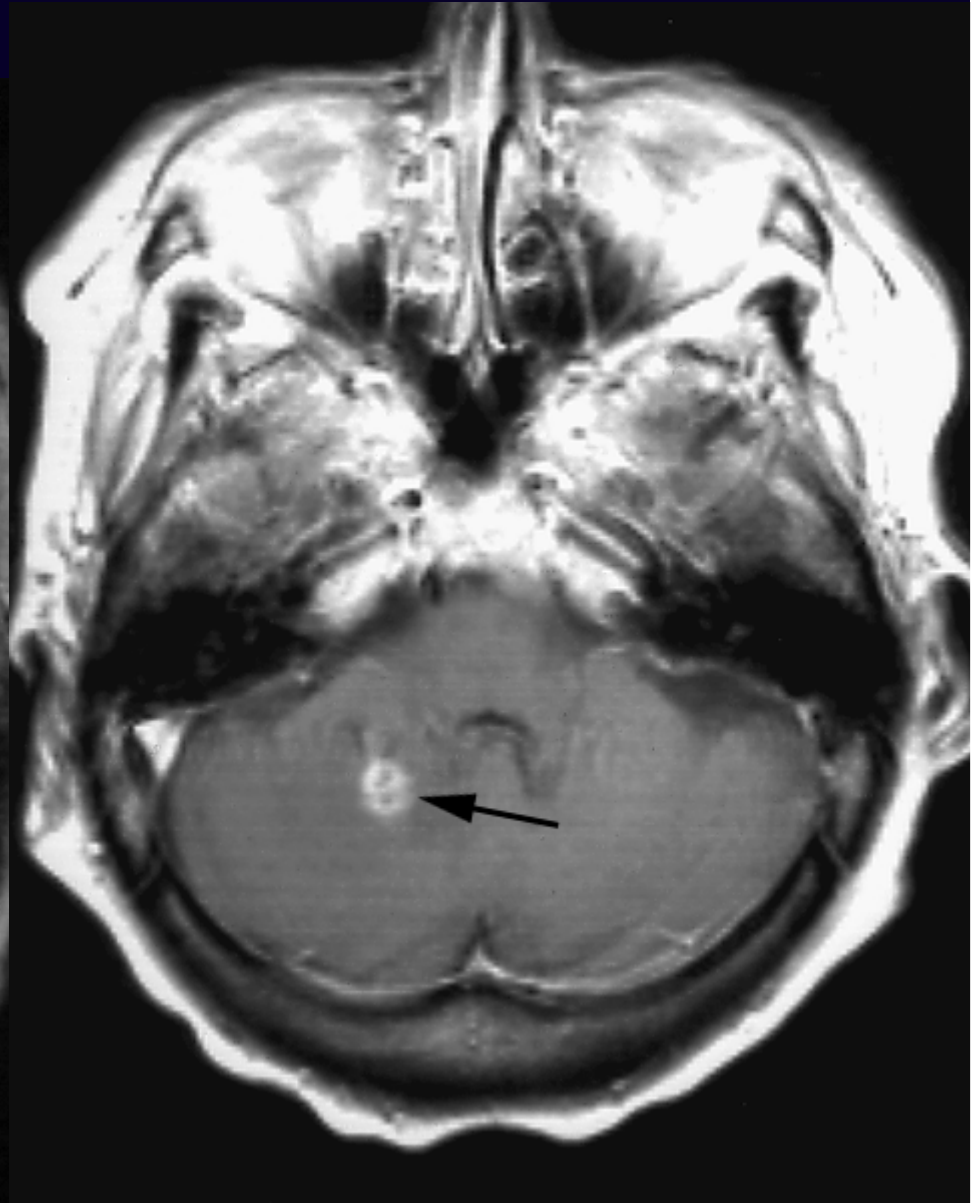
**neurinoma
extracanalicolare**



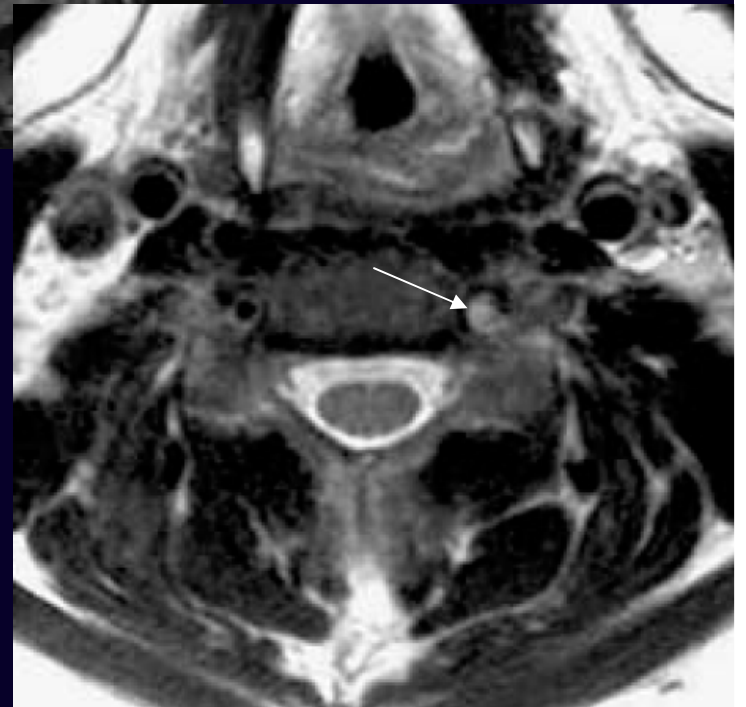
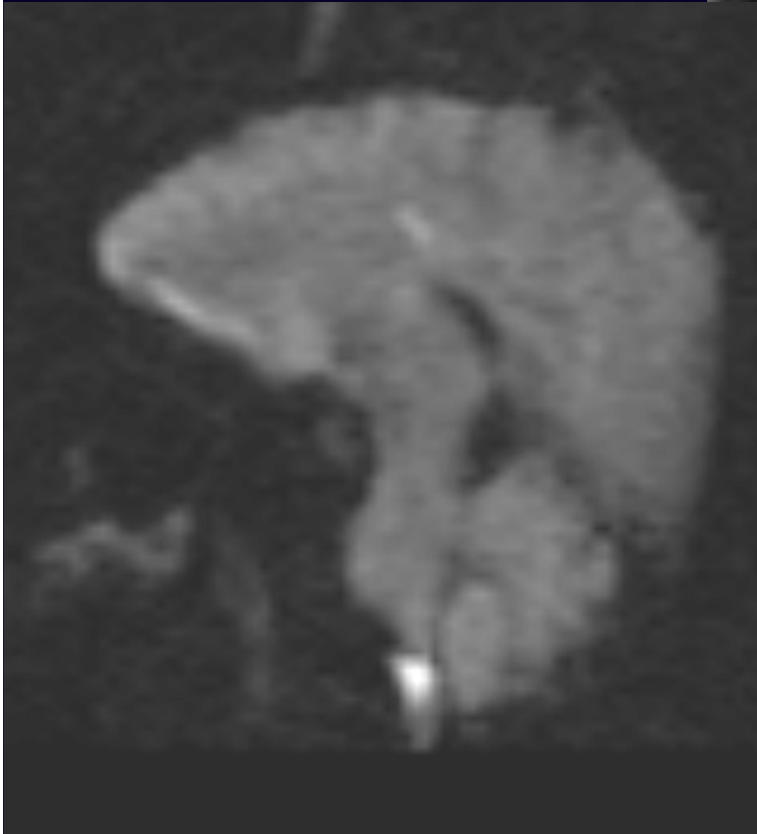
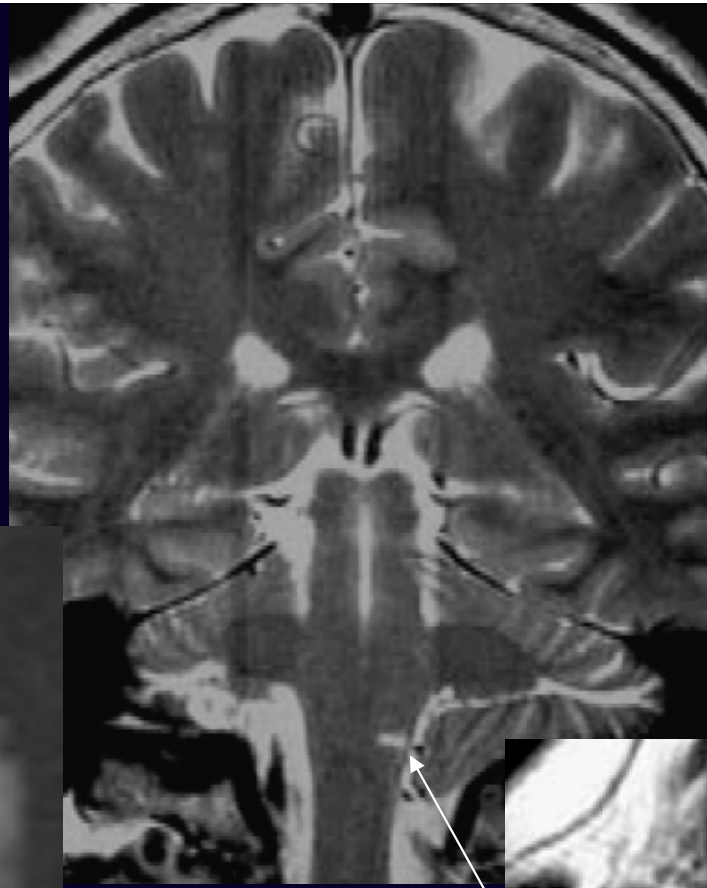
glioma



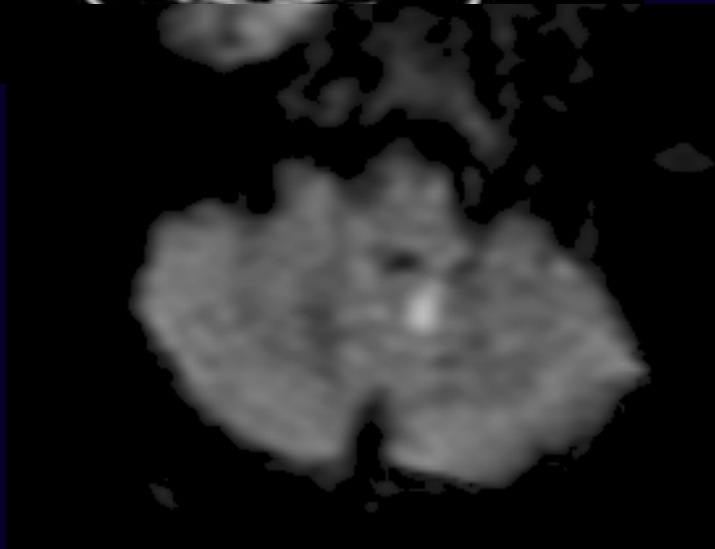
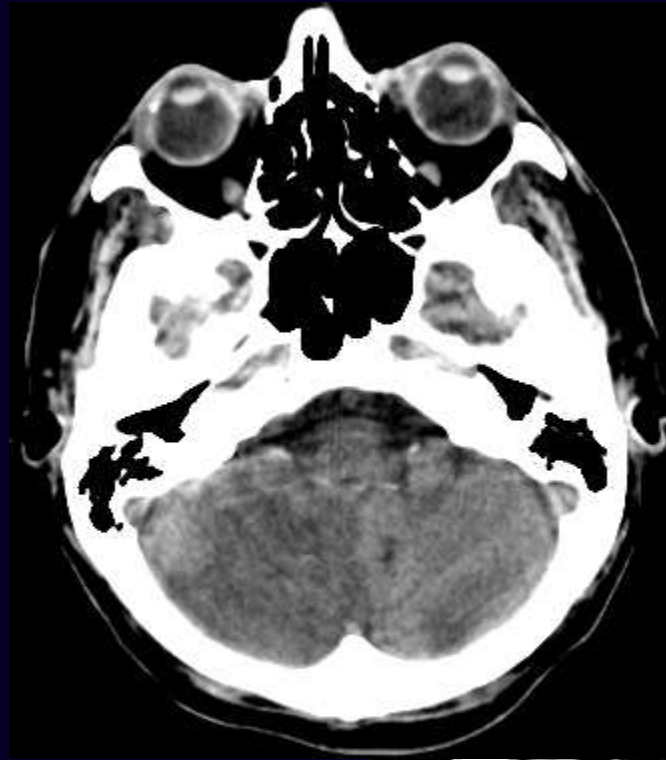
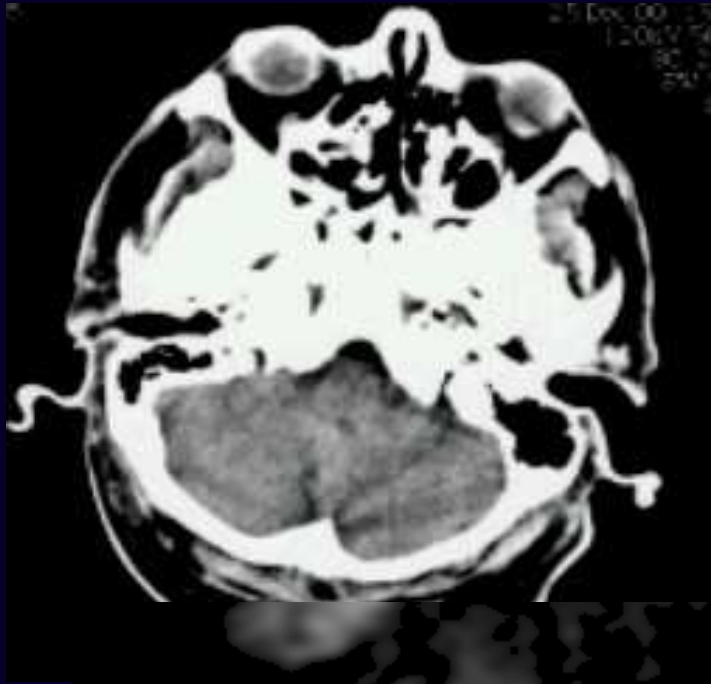
metastasi



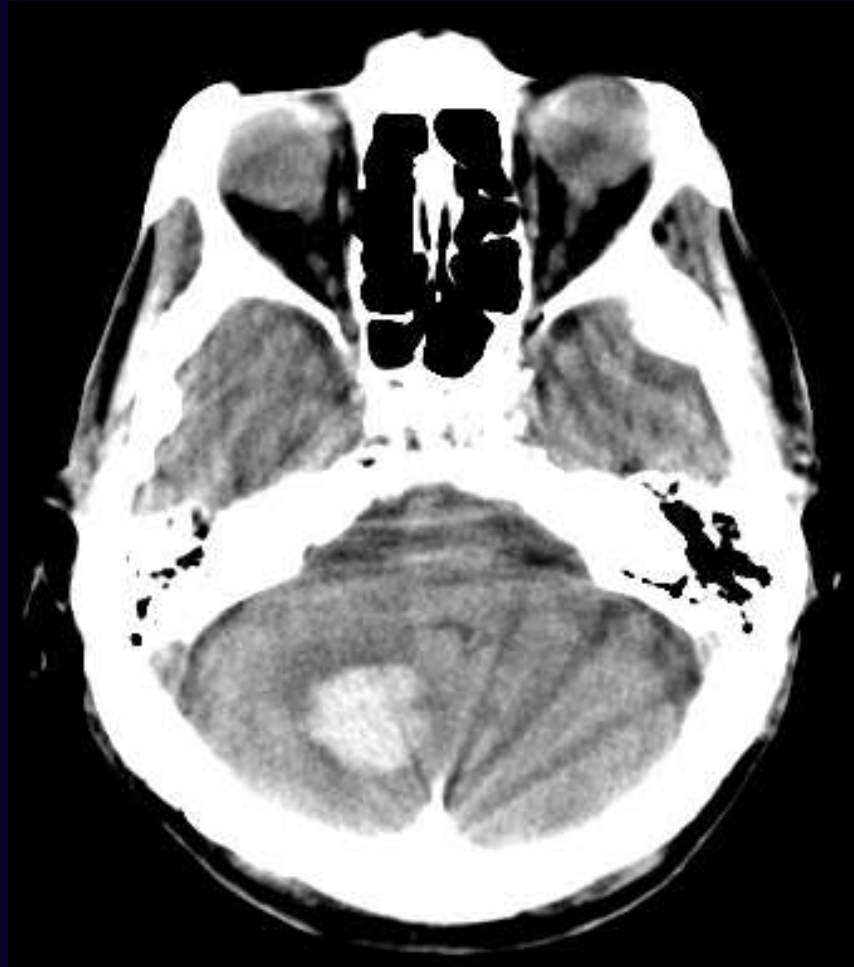
**infarto
bulbare**



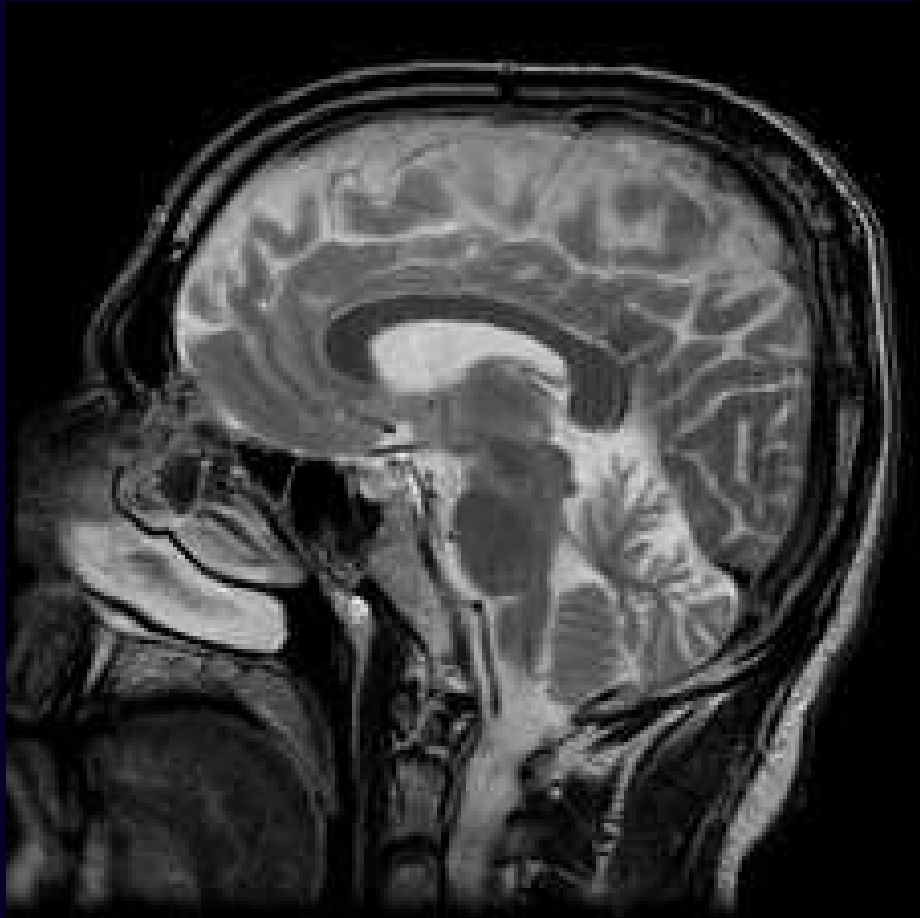
**infarto
cerebellare**



**ematoma
cerebellare**



**atrofia
cerebellare**



regione sopratentoriale

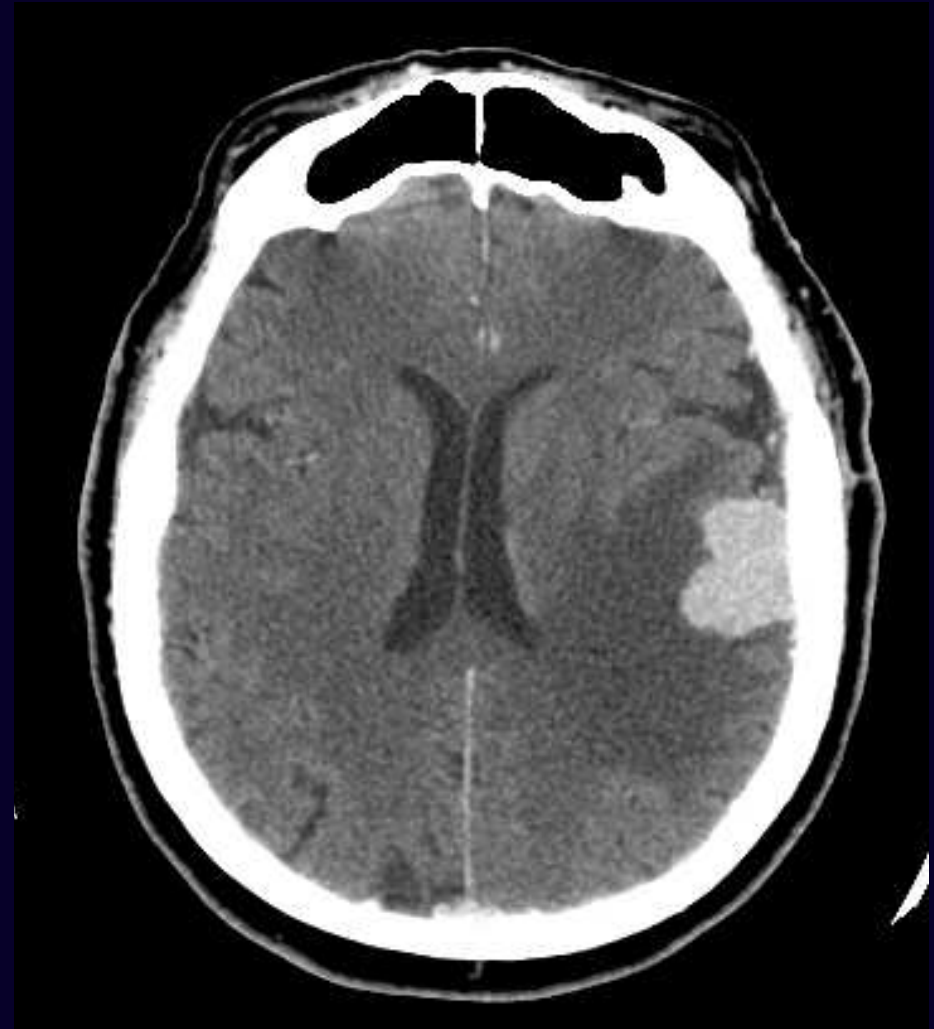
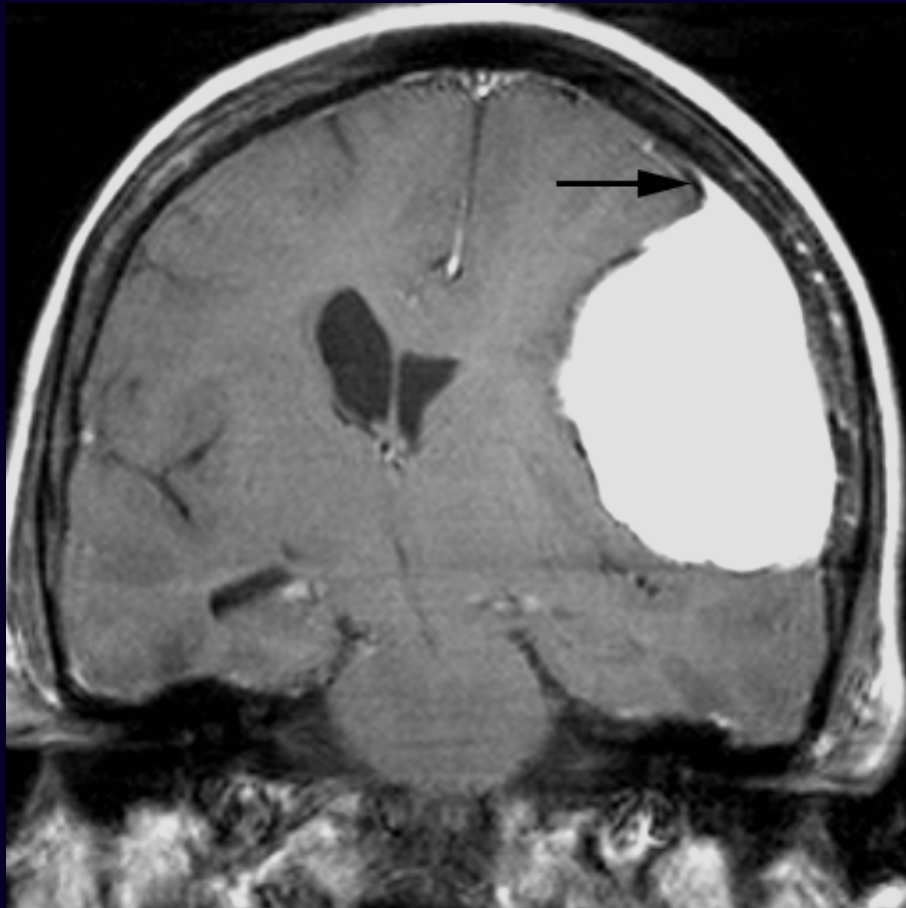
TC

- **Disponibile, di rapida esecuzione (urgenza)**
 - **Globalmente buona qualità di immagine**
 - **Zone “buie”: fosse creniche anteriore e media, vertice**
-

RM

- **Scarsamente disponibile**
- **Durata di esame lunga (30' ca.)**
- **Imaging ottimale (multiparametrica – multiplanare – ottimo contrasto lesionale)**

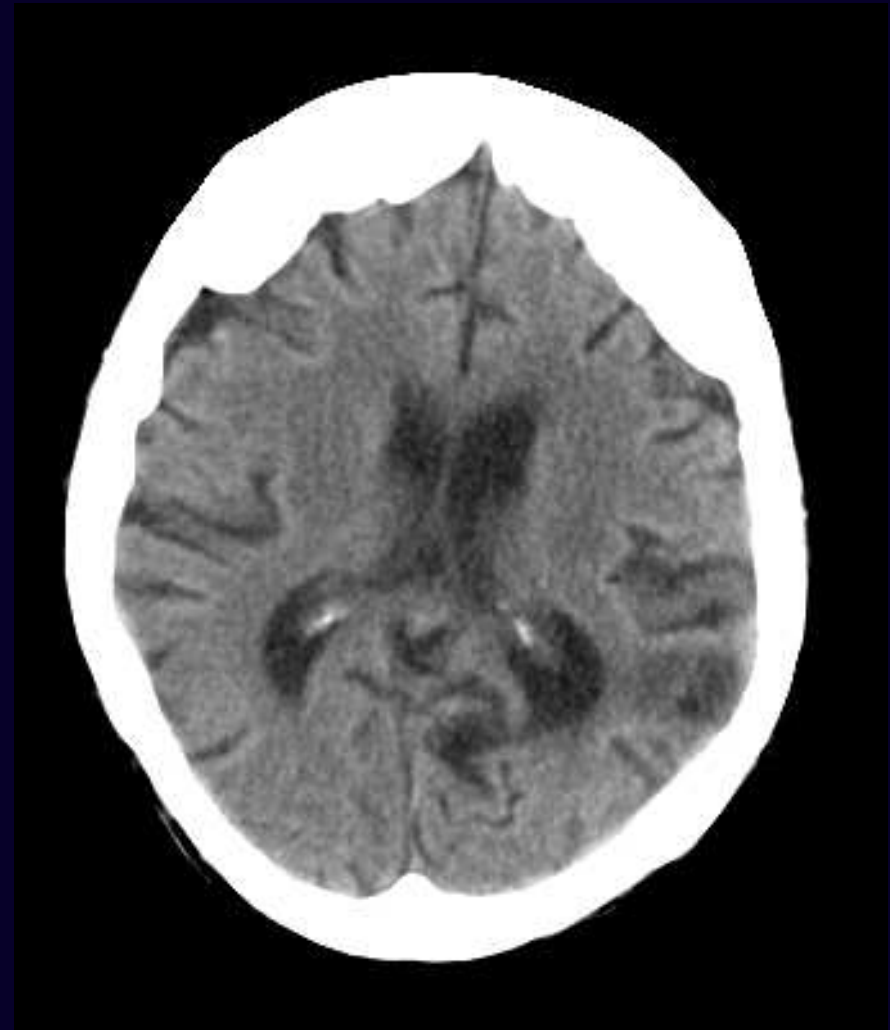
meningioma



**ematoma
sottodurale cronico**



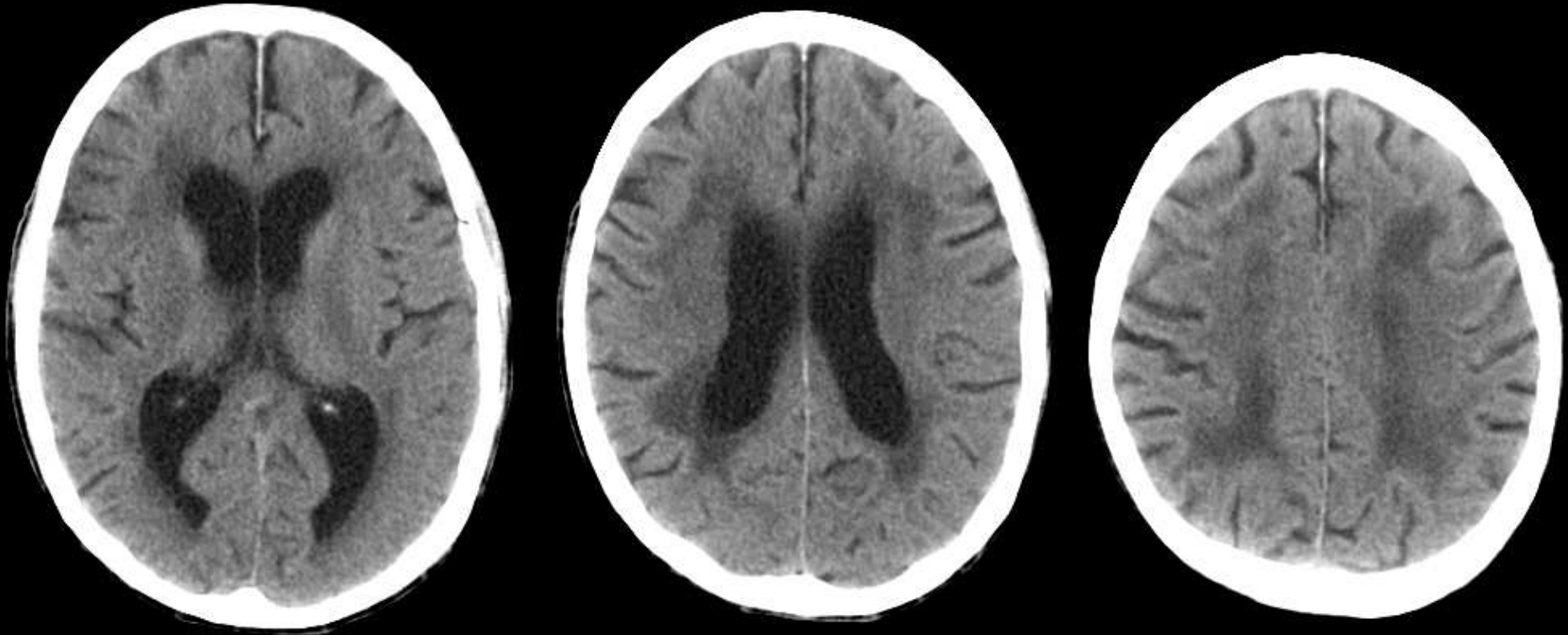
ischemia



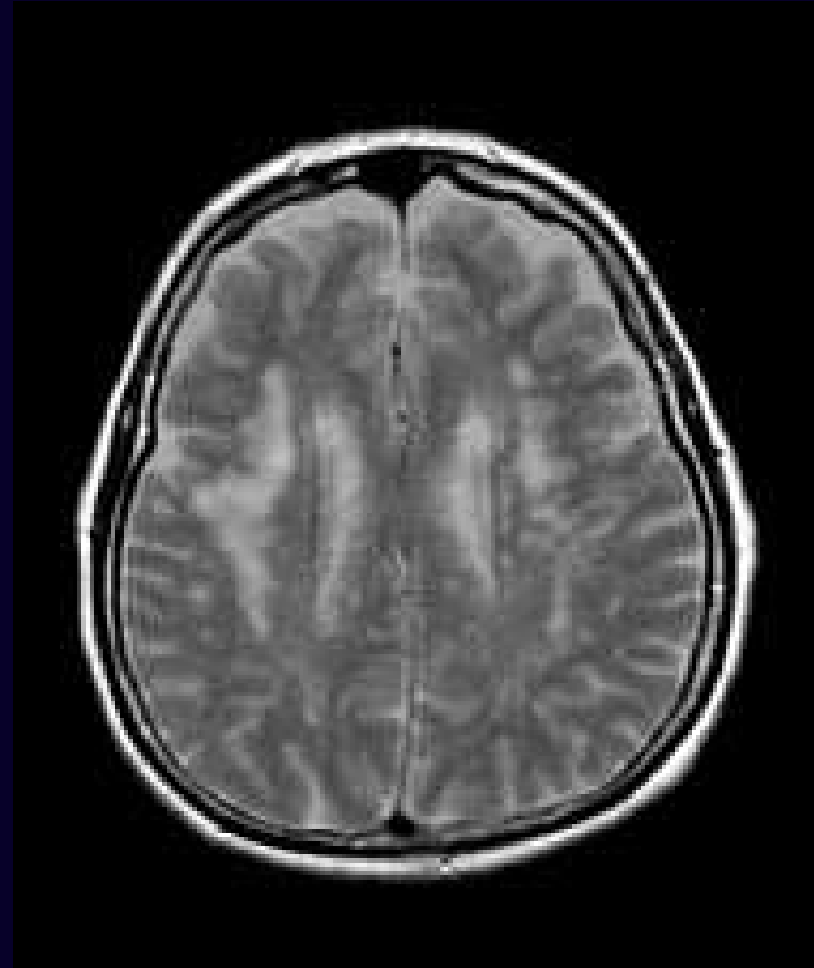
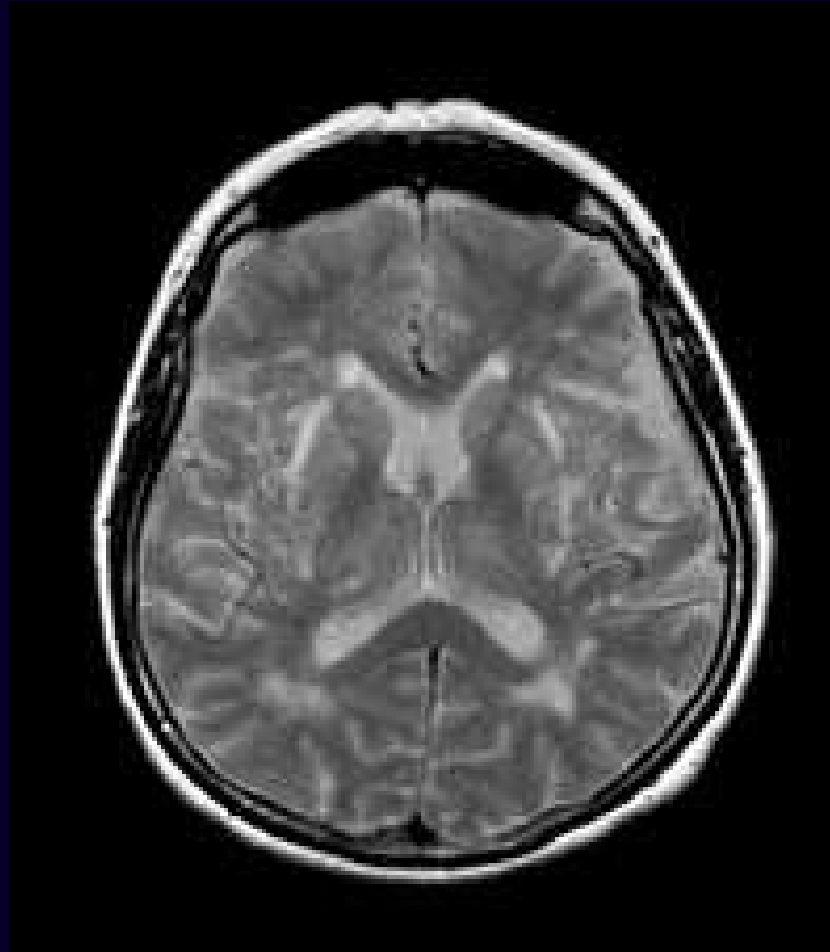
idrocefalo



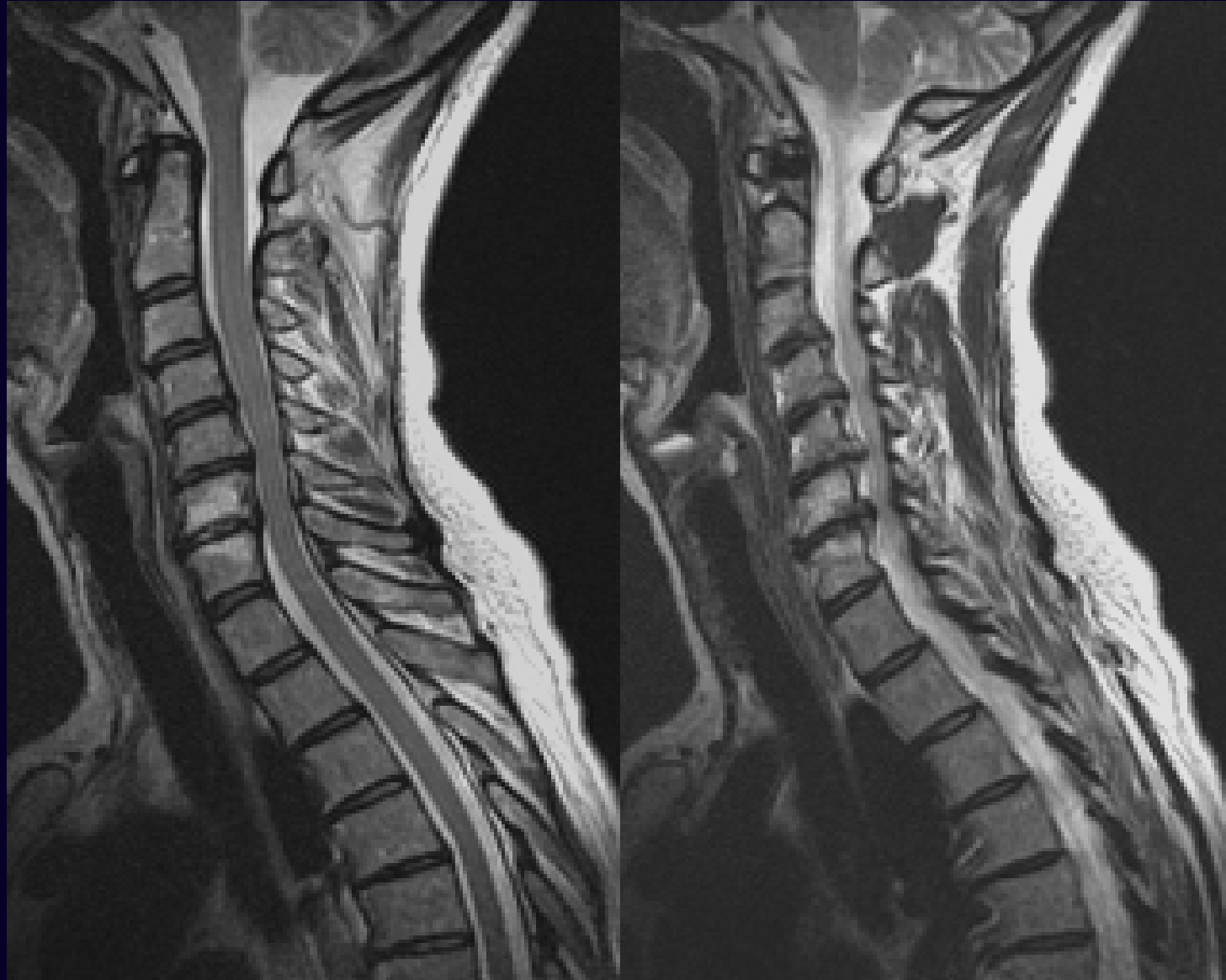
**leucoencefalopatia
multinfartuale**



**leucoencefalopatia
multinfartuale**

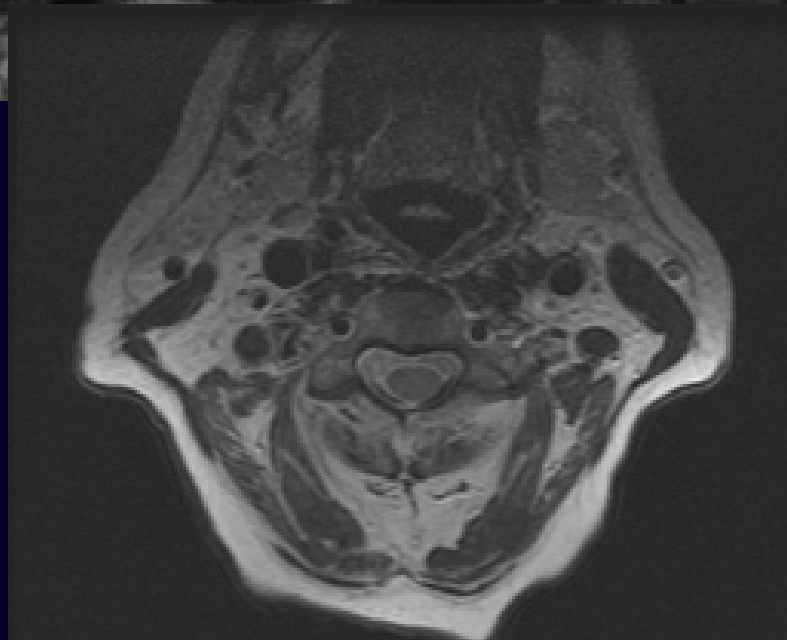


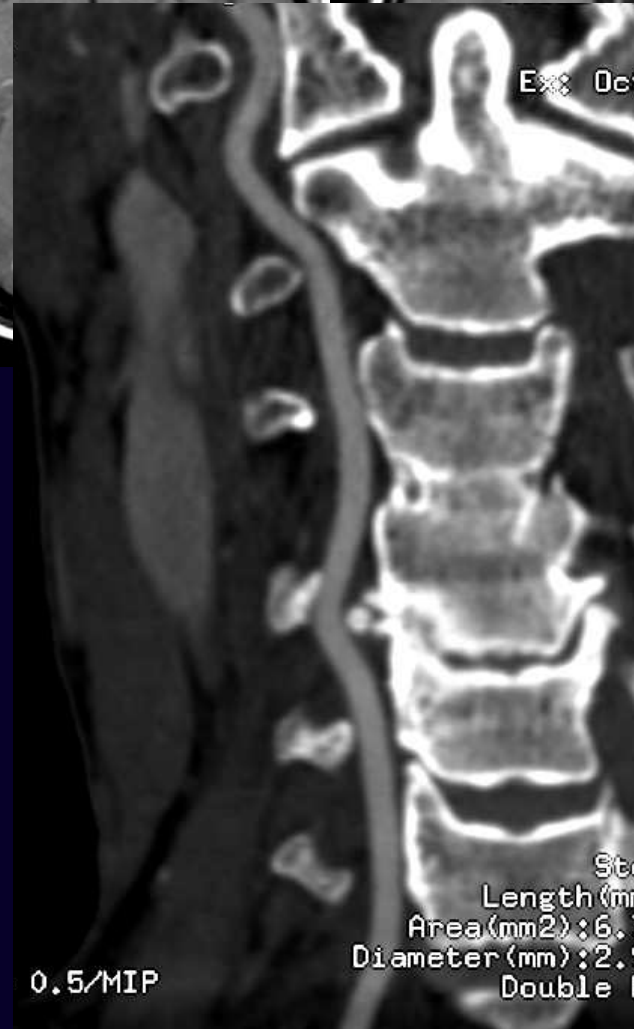
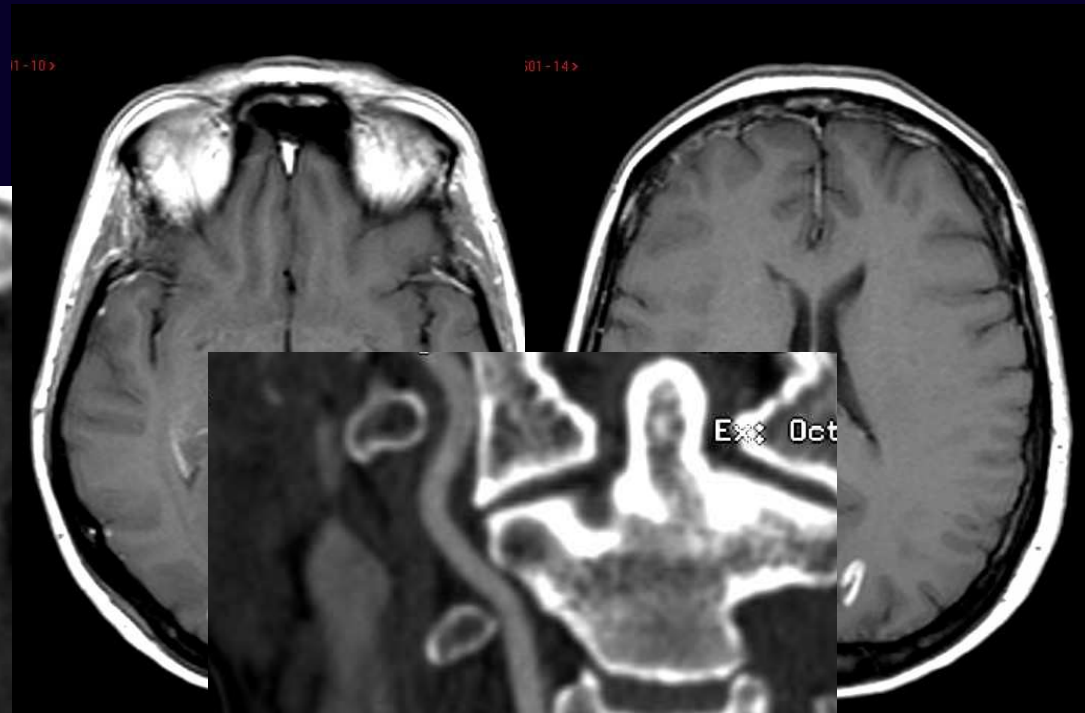
**rachide
cervicale**



rachide cervicale



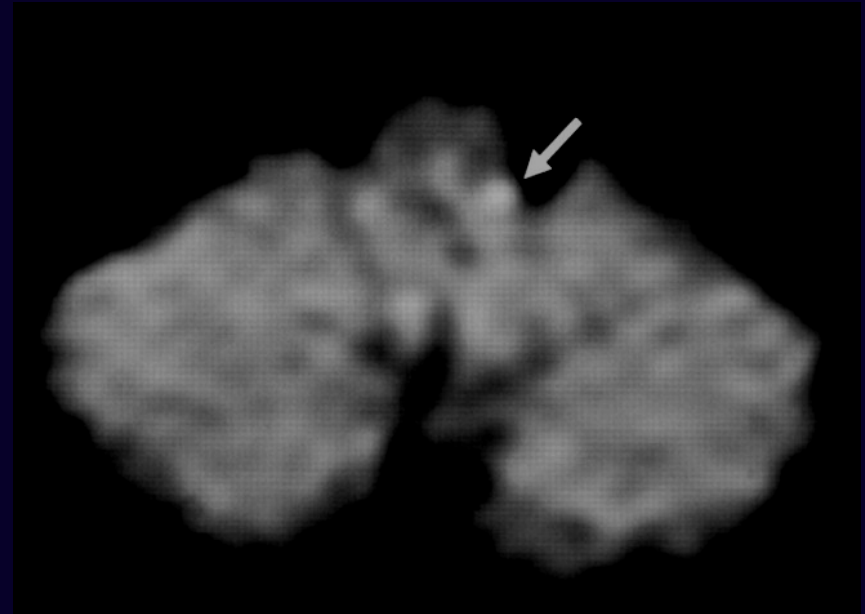
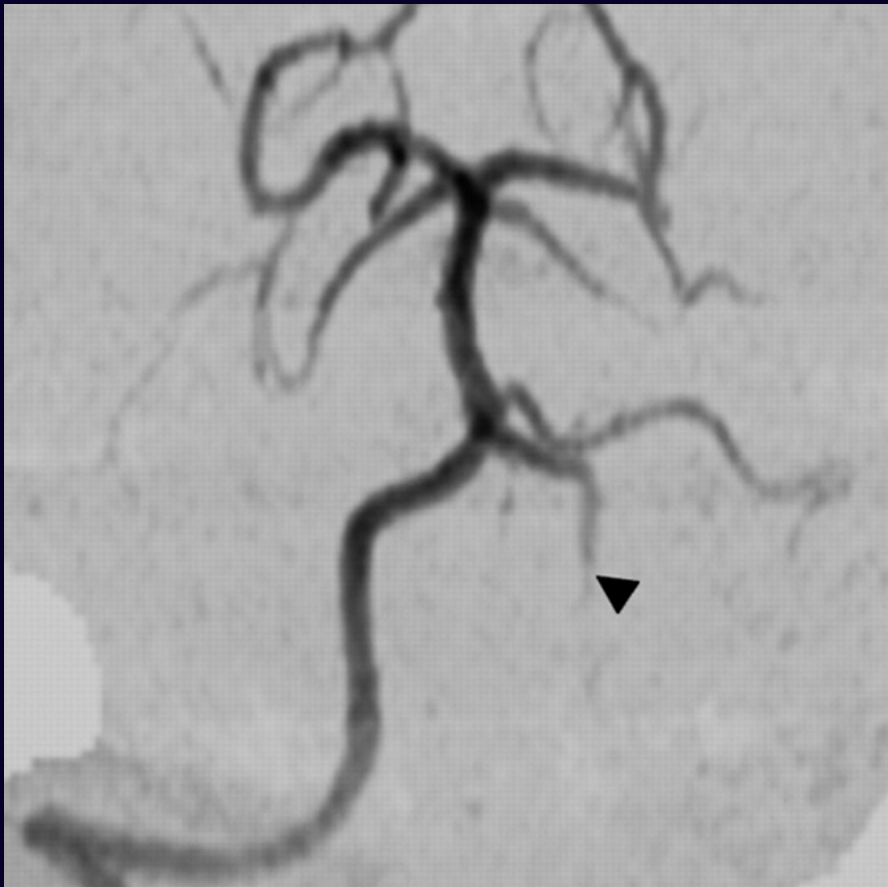




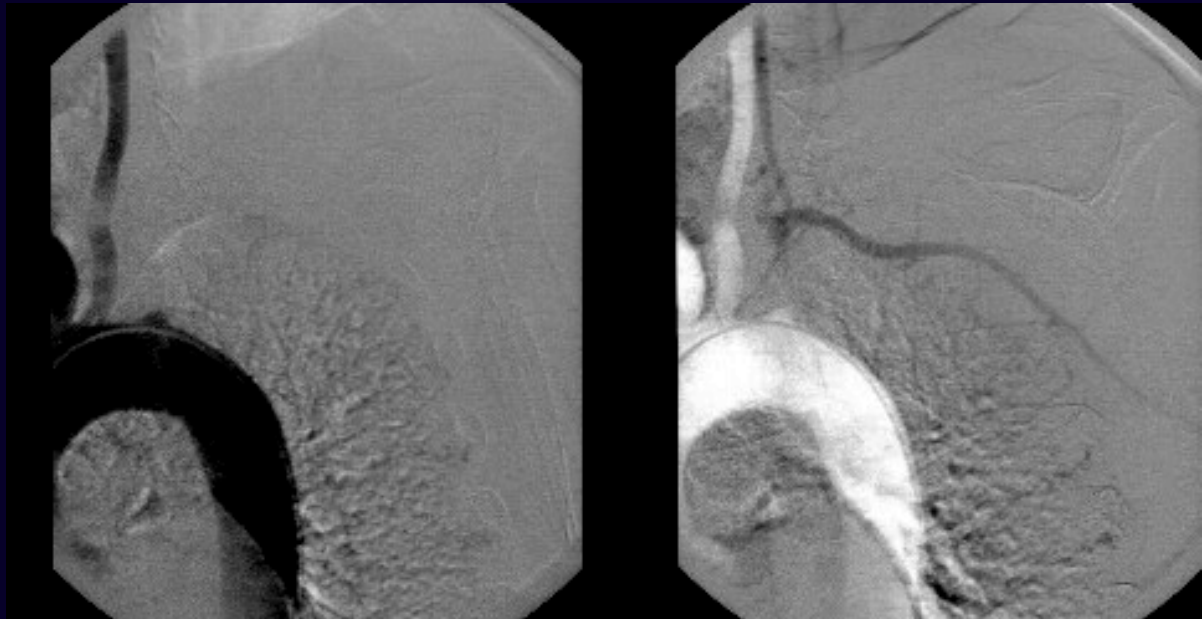
**asse
vertebro - basilare**



**trombosi a.
vertebrale**



furto a. succlavia



Vertigine parossistica posizione benigna (BPPV)

L'imaging non è utile nella diagnosi di routine della BPPV, perchè non esistono reperti radiologici (TC o RM) con carattere diagnostico.

I clinici non dovrebbero richiedere l'esecuzione di esami radiografici ... in pazienti con diagnosi di BPPV, a meno che la diagnosi non sia incerta o ci siano altri segni o sintomi non attribuibili alla BPPV che richiedano un approfondimento.

Clinical practice guideline: Benign paroxysmal positional vertigo. Otolaryngology–Head and Neck Surgery (2008) 139, S47-S81

Le tecniche di imaging non devono essere considerate esami di screening diagnostico in pazienti affetti da vertigine. La TC e la RM dovrebbero essere eseguite dopo appropriata valutazione clinica.

In caso di vertigine centrale, la RM è da considerarsi la prima scelta diagnostica di imaging.

Bruzzone MG, Grisoli M, De Simone T, Regna-Gladin C. Neuroradiological features of vertigo. *Neurol Sci* 2004;24:S20–S23

When does the patient with vertigo need an urgent brain scan?

- (1) Acute brain imaging (ideally magnetic resonance imaging) is mandatory if there are **one or more** of the following:
 - (a) Isolated vertigo of hyperacute onset (seconds) which persists
 - (b) Acute vertigo with an intact head impulse test
 - (c) Acute vertigo with new onset headache, especially occipital
 - (d) Acute vertigo with any central signs, including severe gait or truncal ataxia
 - (e) Acute vertigo and deafness without typical Meniere's history

- (2) Acute neuro-imaging is not mandatory if a patient satisfies **all** of the following criteria:
 - (a) Subacute onset of vertigo (*several* minutes to hours)
 - (b) No other accompanying neurological symptoms, including headache or deafness
 - (c) No central neurological signs
 - (d) Signs compatible with an acute unilateral peripheral vestibulopathy, including an abnormal head impulse test
 - (e) Acute vertigo and deafness with typical Meniere's history

**American College of Radiology
ACR Appropriateness Criteria®**

Clinical Condition:

Vertigo and Hearing Loss

Sensorineural hearing loss, acute and intermittent vertigo.

Radiologic Procedure	Rating
MRI head and internal auditory canal without and with contrast	8
MRI head and internal auditory canal without contrast	7
CT temporal bone without contrast	6
CT head without and with contrast	3

Vertigo, no hearing loss, normal neurological examination.

Radiologic Procedure	Rating
MRI head and internal auditory canal without and with contrast	8
MRI head and internal auditory canal without contrast	7
CT temporal bone without contrast	5
CT head without and with contrast	4

Episodic vertigo, new onset (hours to days).

Radiologic Procedure	Rating
MRI head and internal auditory canal without and with contrast	7
MRI head and internal auditory canal without contrast	6
MRA head with or without contrast	6
CT head without and with contrast	5
CTA head with contrast	5
CT temporal bone without contrast	4

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

CONSIDERAZIONI CONCLUSIVE

Indispensabile inquadramento clinico prima dell'imaging

Molte condizioni cliniche frequenti non necessitano il ricorso all'imaging diagnostico di routine (es. BPPV, labirintite/neuronite vestibolare, m. di Menière, spondilartrosi cervicale), in particolare in caso di vertigini di origine periferica.

La RM è da considerarsi esame di imaging di prima scelta rispetto alla TC nei casi di vertigine a sospetta origine centrale.

✓ Labirinto	RM (anche TC in traumi o post-operatorio)
✓ CUI e FCP	RM
✓ Reg. sopratentoriale	RM (TC in urgenza)
✓ Rachide cervicale	RM
✓ Asse vertebro-basilare	ARM/ATC o AGF (ev. terapia endovascolare)