

脑外肿瘤

影像学诊断及鉴别诊断

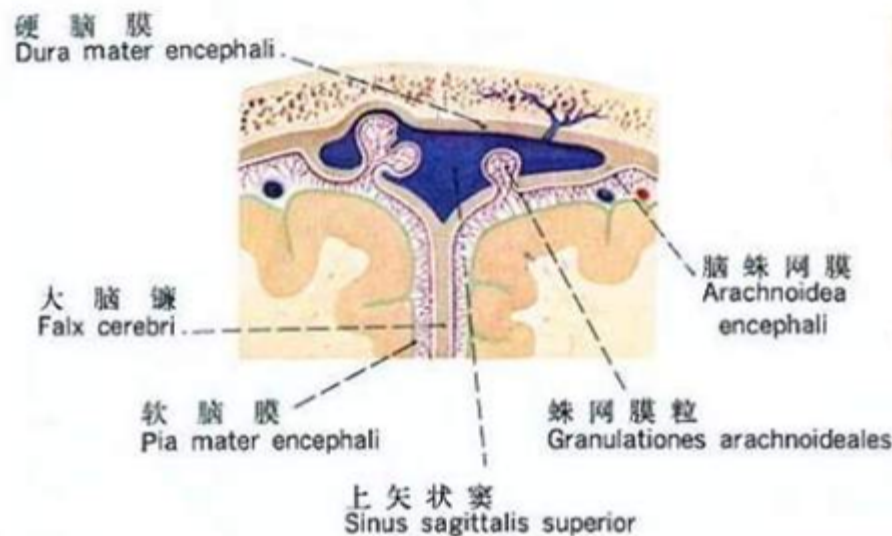
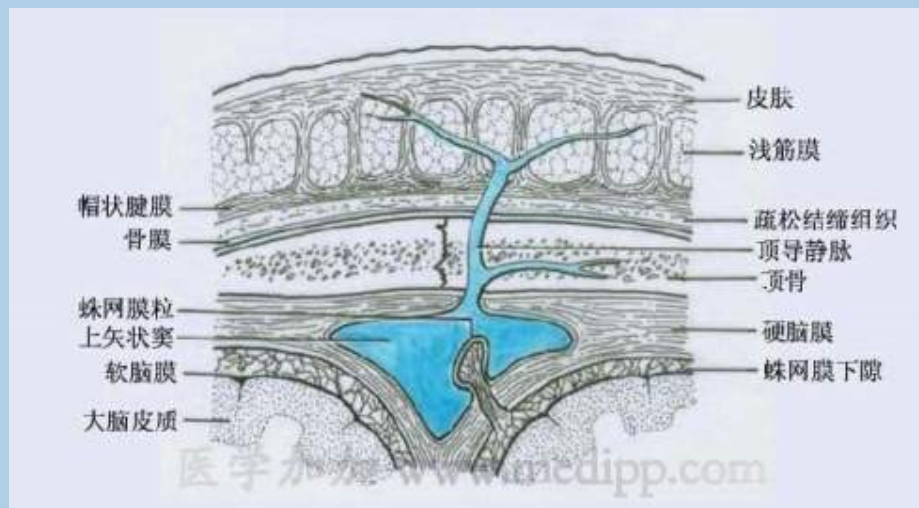
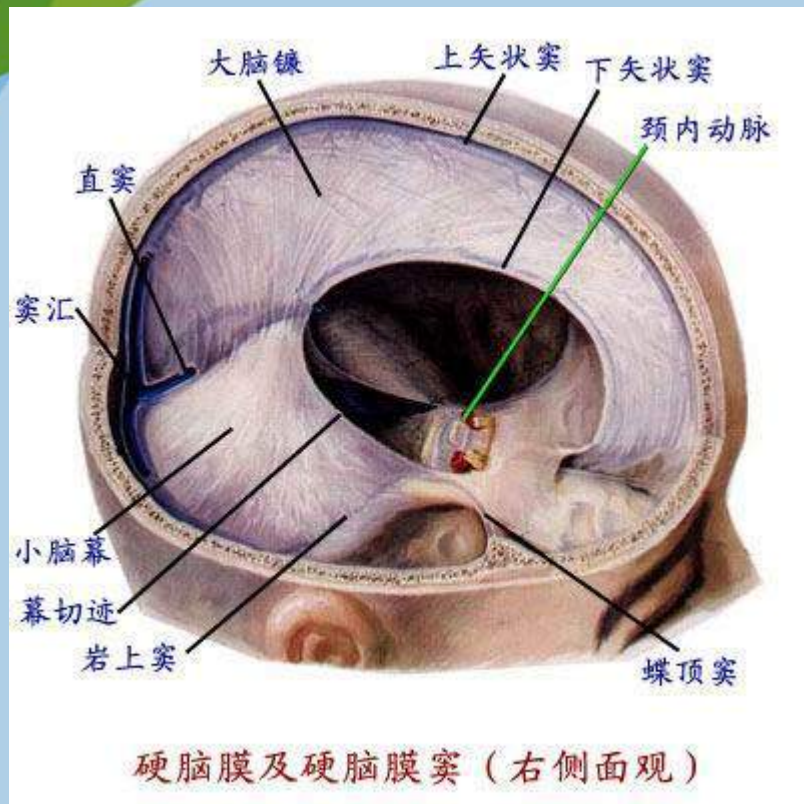
上海交通大学附属第一人民医院

张贵祥 guixiangzhang@sina.com

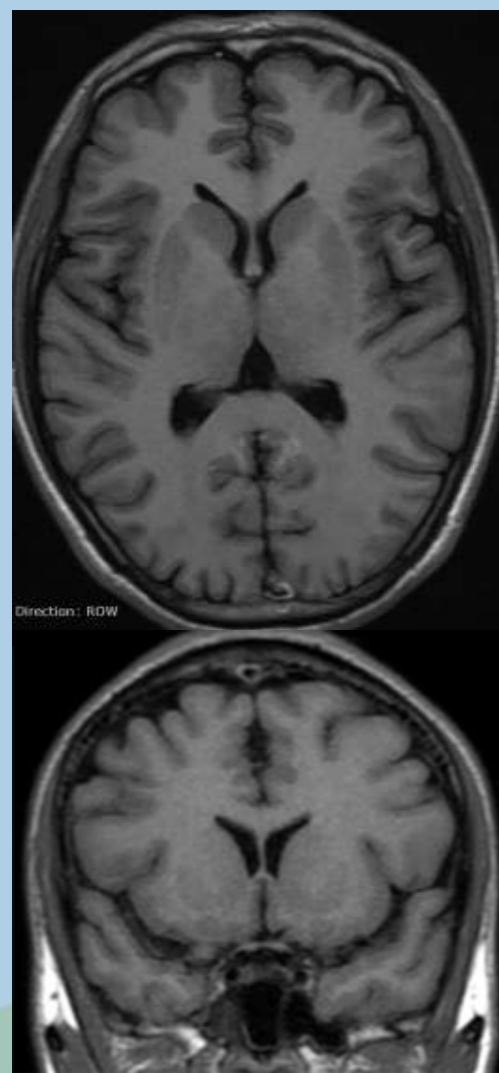
脑外肿瘤影像学诊断及鉴别诊断

- 一、脑外解剖结构特点
- 二、脑外肿瘤的分类
- 三、脑外肿瘤的诊断及鉴别诊断

一、脑外解剖结构特点



一、脑外解剖结构特点



头皮的解剖结构

一、**额顶枕部**：从眶上缘至枕外粗隆，侧方至颞上线。自外向内：

皮肤：厚且致密，内含汗腺、皮脂腺、淋巴、血管、毛囊和头发。

皮下组织：由致密结缔组织间隔和其间的脂肪、血管和神经组成。

帽状腱膜：白色坚韧的膜状结构，它前连额肌，后连枕肌，侧方与颞浅筋膜融合。该层与皮肤之间由纤维束紧密连接。

腱膜下层：薄层疏松结缔组织，由导血管与颅内静脉窦相通，是**颅内感染**和静脉窦栓塞的途径之一。

骨膜：贴附于颅骨表面，在颅缝处贴附紧密，故骨膜下血肿可被局限。

二、颞部

上界为颞上线，下界为颞弓上缘。自外向里依次是：

皮肤

皮下组织

颞筋膜

颞肌

骨膜

骨膜与颞骨结合紧密，不易分开。



图示：正常颞部头皮解剖：

皮肤呈现状高密度影 (arrowhead)，

皮下脂肪呈低密度影 (straight white arrow)，

颞筋膜 (squiggly arrow)，

帽状腱膜下层脂肪组织 (feathered arrow)，

颞肌 (black arrow)。

RadioGraphics
2010; 30:461-482

正常头颅的大小和形状

正常人头颅的大小和形状因个体发育、年龄、性别等因素而有一定的差异。判断头颅的大小以测量颅骨的前后径，横径和高径的比例来确定。

前后径：自眉间至枕外粗隆的最大距离。

横径：两侧颞骨鳞状缝上缘间的最大距离。

高径：侧位片上枕大孔前缘中点至颅顶最高点的距离。

正常人成人颅骨各径线的正常值如下

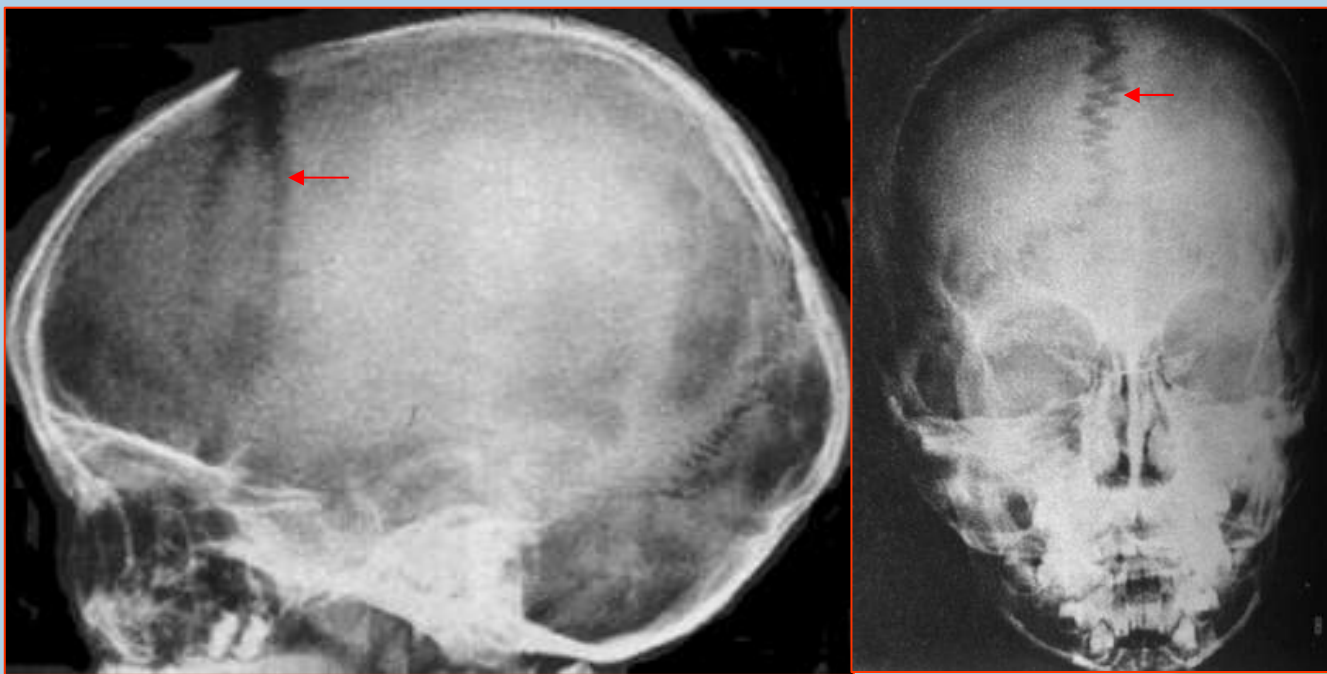
项	目	男 (mm)	女 (mm)
前	后 径	215	203
横	径	174	170
高	径	150	147



正常成人的颅面比例为2: 1。年龄越小比例相差越大。

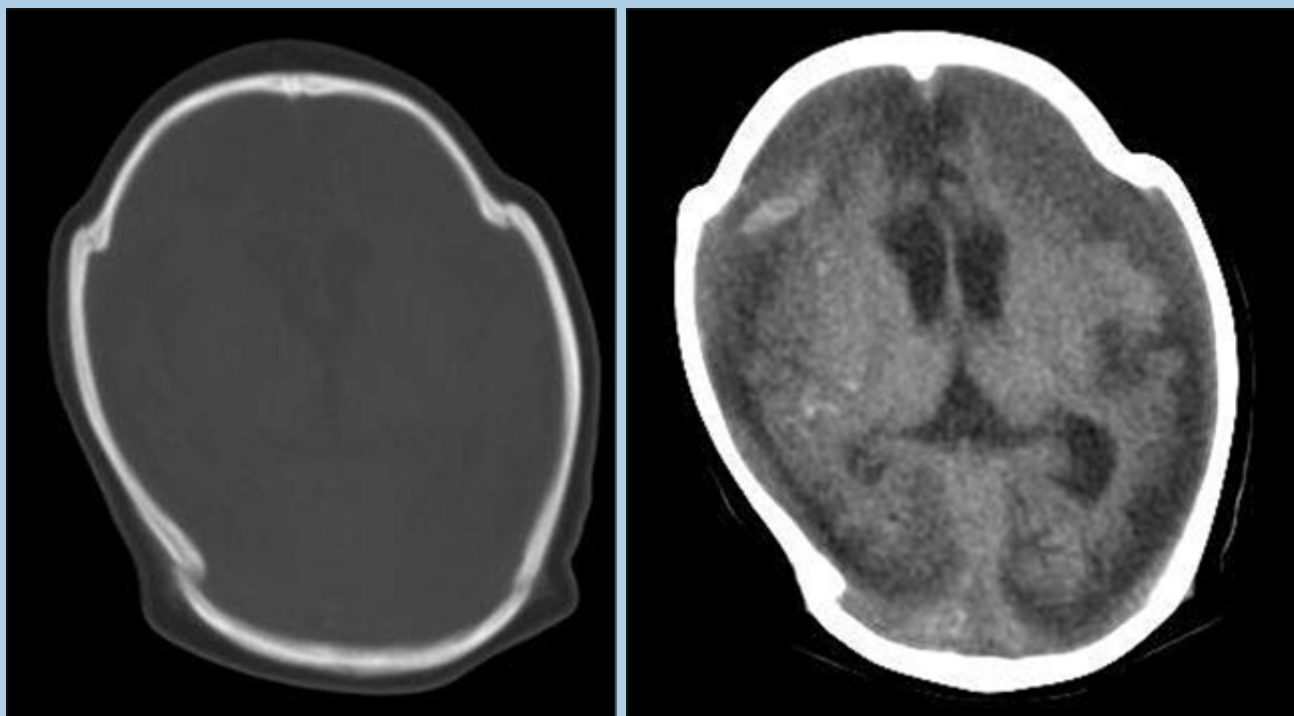
头颅大小、形态病理改变

颅骨增大：婴幼儿多见于先天性脑积水，慢性硬膜下血肿，
颅内肿瘤。成人多见于生长激素性垂体瘤，



颅高压导致颅缝分离

颅骨狭小： 见于儿童，**狭颅症**和大脑发育不全。



正常颅板

分外板，板障，内板

外、内板：密质骨，厚度为1-2mm，呈线状致密影。**板障：**位于内、外板之间，厚度为1-2mm，呈海绵状密度较低的条状影。

6岁以前分层清楚。

老年人板障层骨化，内、外板融合成一层。

颅骨病变

- 颅骨密度异常
 - 颅骨密度增加：普遍性，局限性
 - 颅骨密度减低：普遍性，局限性
- 颅脑大小异常
 - 小颅脑：头小畸形
 - 大颅脑：巨头畸形
- 颅脑形状异常
 - 颅盖缺损
 - 获得性异常
 - 外伤后
 - 肿瘤

颅骨密度异常

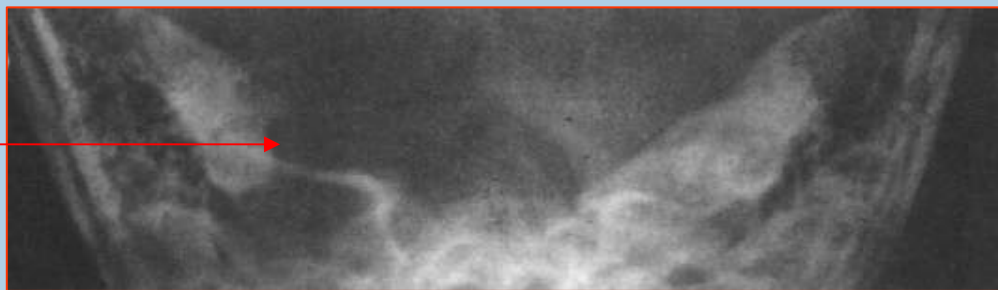
局限性颅骨吸收：脑膜瘤，听神经瘤，慢性硬膜下血肿等。

局限性颅骨破坏：骨髓炎和结核，多发性骨髓瘤，转移瘤等。

局限性颅骨缺损：颅裂，脑膜脑膨出，外伤，手术后等。

普遍性颅骨吸收、变薄：婴幼儿先天性脑积水，成人颅内肿瘤。

听神经瘤



颅骨密度异常

局限性颅骨增生：脑膜瘤，骨肉瘤，成骨性转移瘤。

普遍性颅骨增生：生长激素性垂体瘤，
晚期畸形性骨炎，
骨纤维异常增殖症。



骨硬化症 (Osteopetrosis)：1904年德国Albert-Schonberg首先报道，此后定名为石骨征。原因可能与骨吸收异常有关，钙盐大量沉积于骨内，外观像大理石。出生婴儿，下颌骨、颅底密度弥漫性增高如象牙。颈椎骨密度增高硬化。

软骨发育不全 (Achondroplasia)



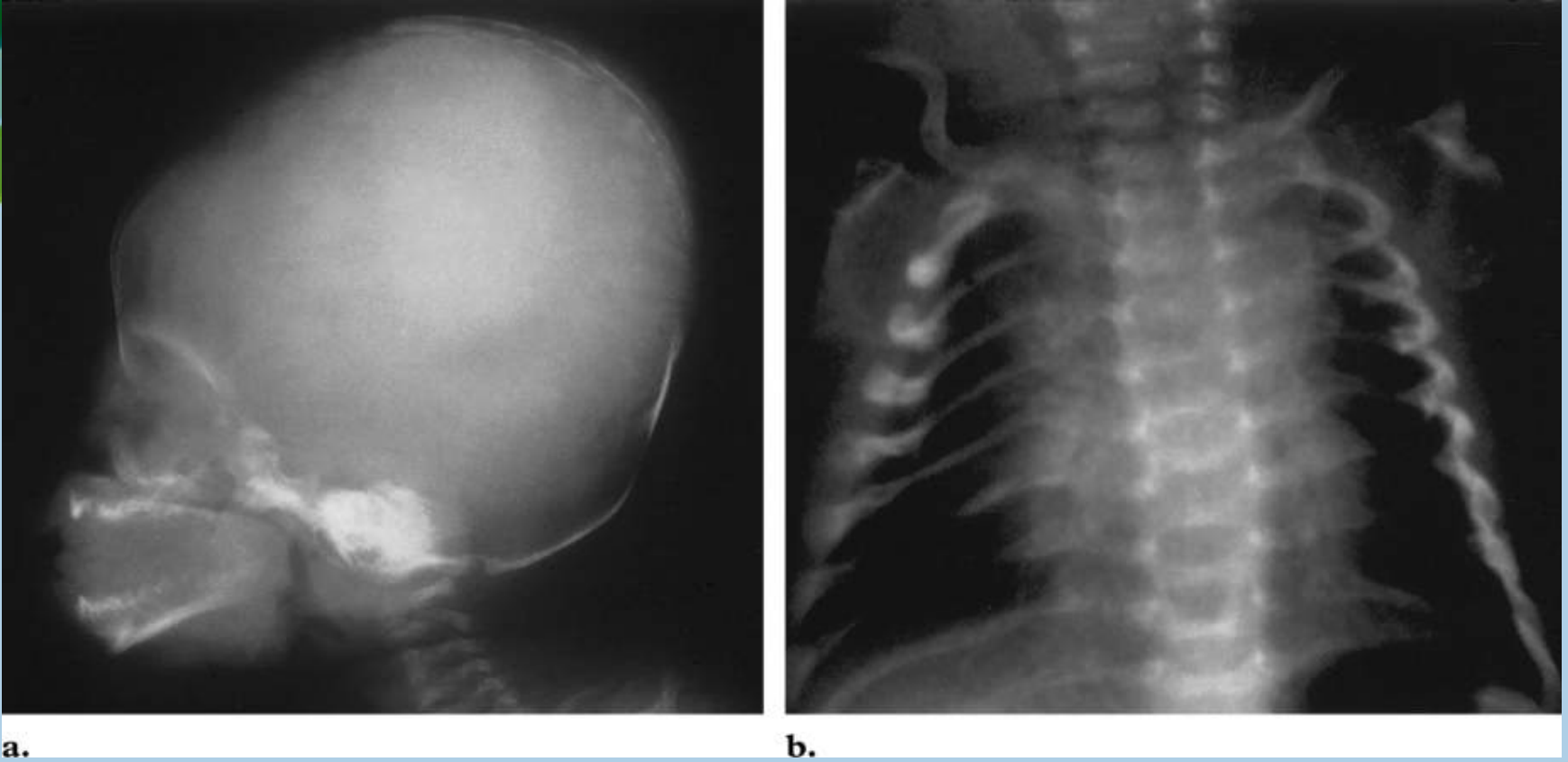
a.



b.

先天性常染色体显性遗传，胚胎第二周软骨内骨化失败。颅盖大，颅底小，前额突出，扁平鼻。

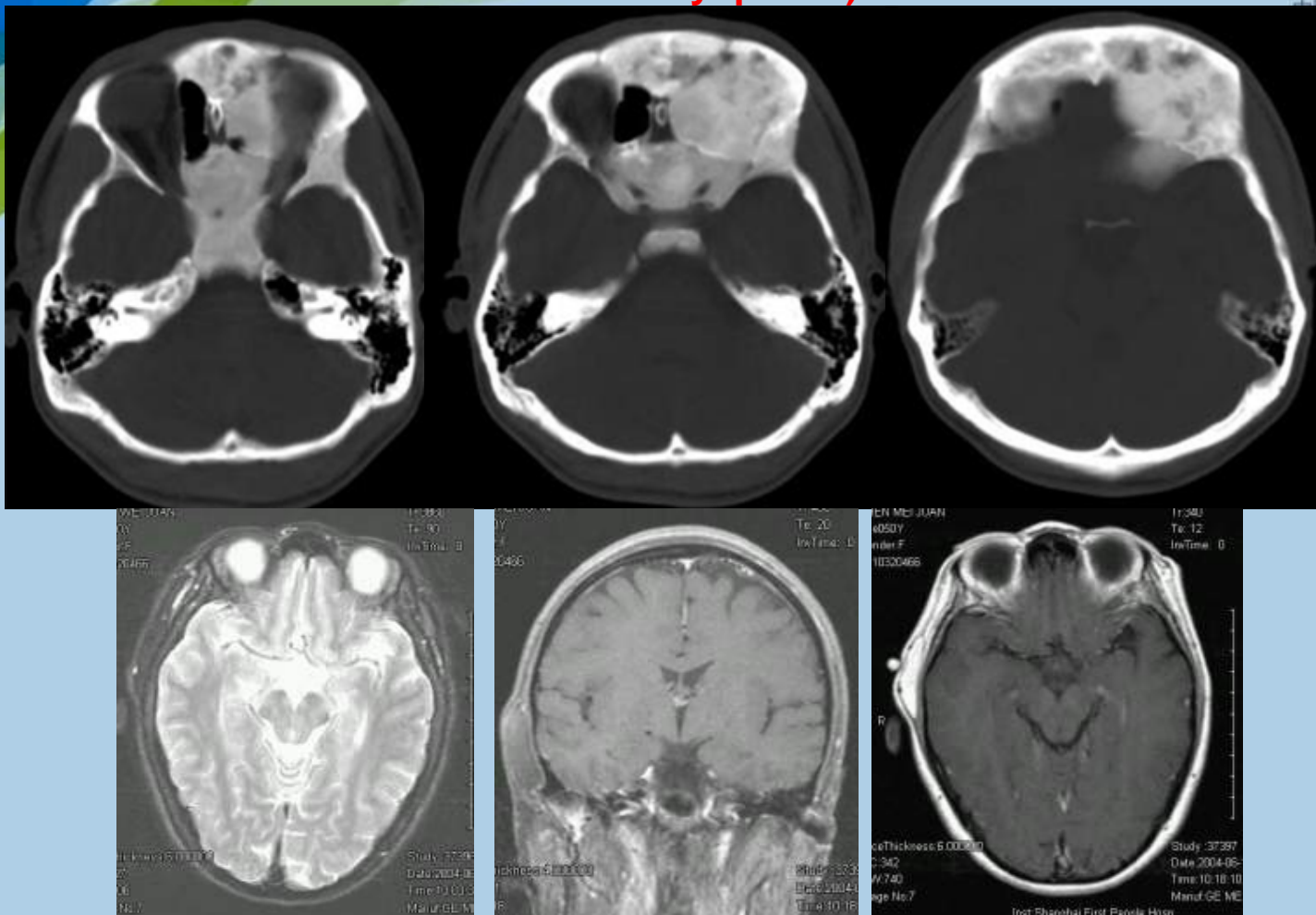
成骨不全 (Osteogenesis imperfecta)



RadioGraphics 2004; 24:507-522

成骨不全属于常染色体显性遗传，蓝巩膜100%，广泛的间充质缺损，膜内化骨受抑制，骨膜肥厚但骨皮质菲薄，分散的钙化，囟门闭合延迟。串珠样肋骨，多发骨折及骨痂形成。

骨纤维异常增殖症 (fibrous dysplasia)



是一种原因不明、进展缓慢的自限性良性骨纤维组织疾病。正常骨组织被吸收，被梭形纤维细胞及发育不良的网状骨小梁替代。骨组织膨胀、畸形，骨小梁紧密，增粗。

头皮肿块

脑膜膨出(Rudimentary Menigocele): 发生在婴儿出生后, 多位于中线

血管瘤(Hemangioma): 分为海绵状血管瘤, 蔓状血管瘤, 毛细血管瘤三种。血管瘤外观呈粉红色到紫红色的瘤状病灶, 是血管窦、异常扩张的血管和增生纤维组织组成的肿块。

皮下脂肪瘤(Lipoma): 脂肪瘤由分化良好的脂肪组织构成

表皮样囊肿(Epidermoid Cyst)

基底细胞癌(Basal Cell Carcinoma)

鳞状细胞癌(Squamous Cell Carcinoma)

转移瘤(metastasis)



Occipital meningoencephalocele

Radiographics radiographics 2004;24:1655-1674

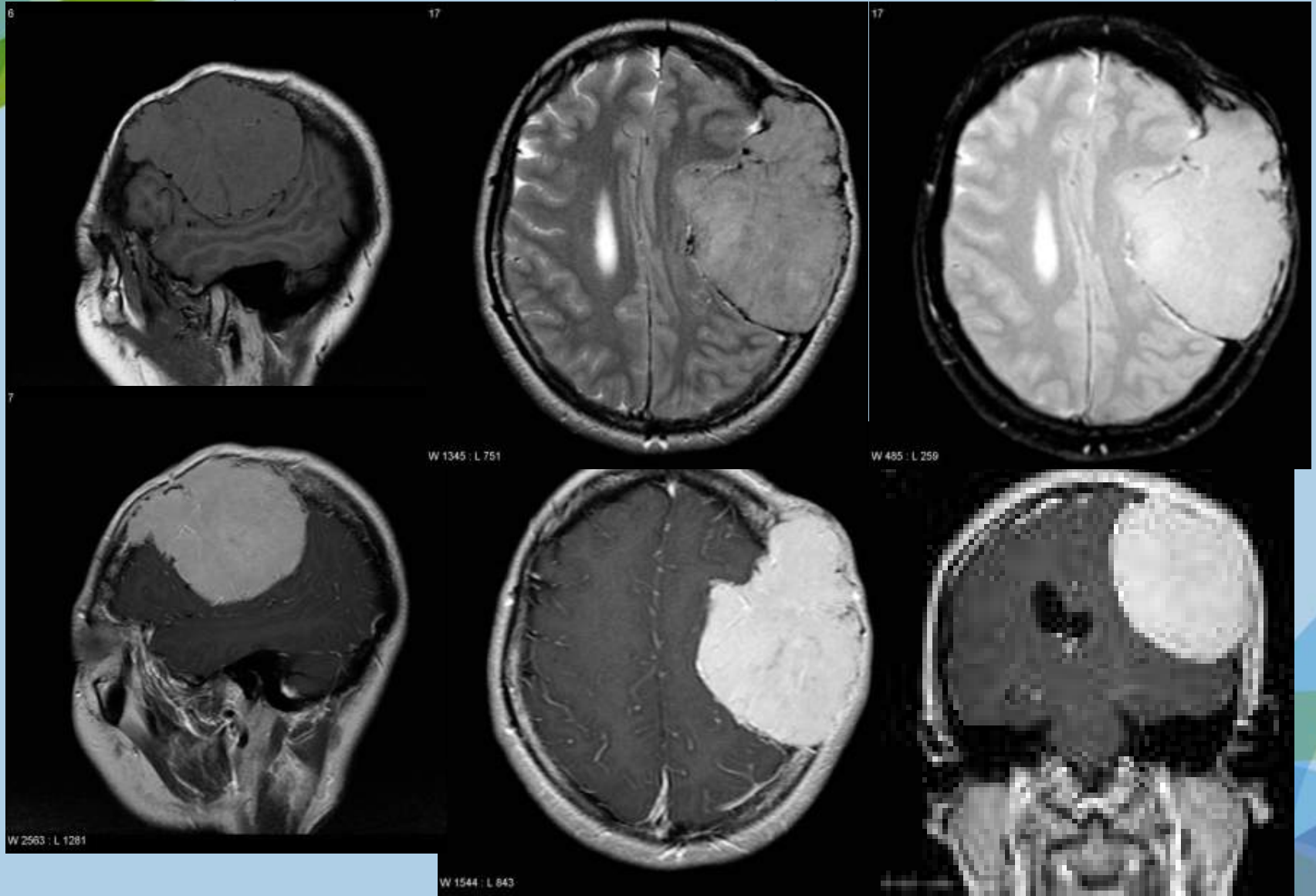
脑膜、脑组织与脑脊液通过颅骨未闭合的缝隙疝出颅外形成的先天性畸形。
胚胎3个月内神经管发育不良造成颅骨先天性缺损，发病率1/5000。



Naso-orbital frontoethmoidal encephalocele

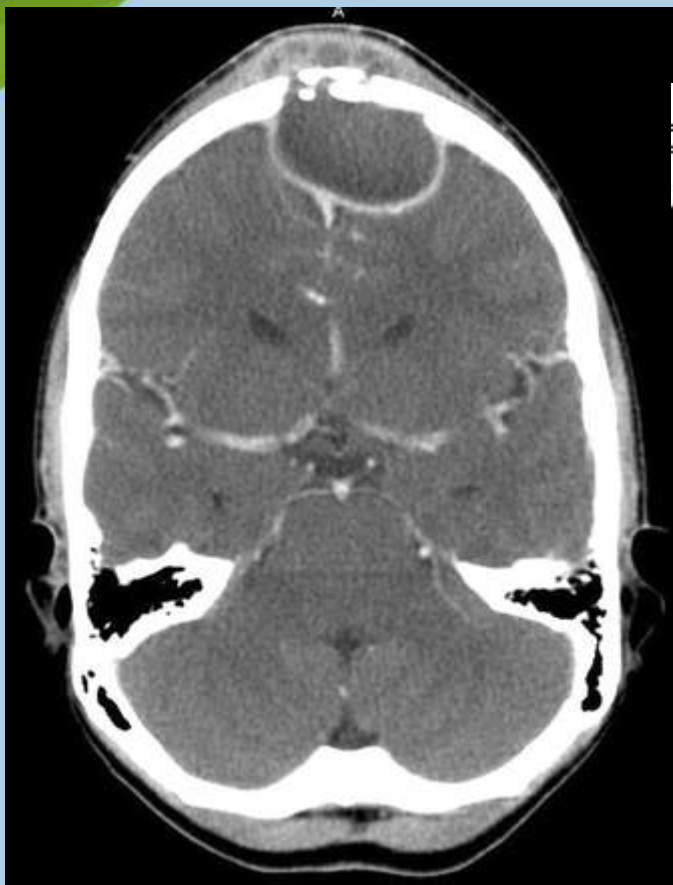
Haemangiopericytoma: MRI demonstrates a very large extra-axial mass eroding through the bone. It vividly enhances, and had large feeding vessels around the margins. There is no evidence of invasion into the brain. Features are consistent with a [haemangiopericytoma](#).

Case contributed by: [Dr Frank Gaillard](#) [view revision history](#)



表皮样囊肿（epidermoid）



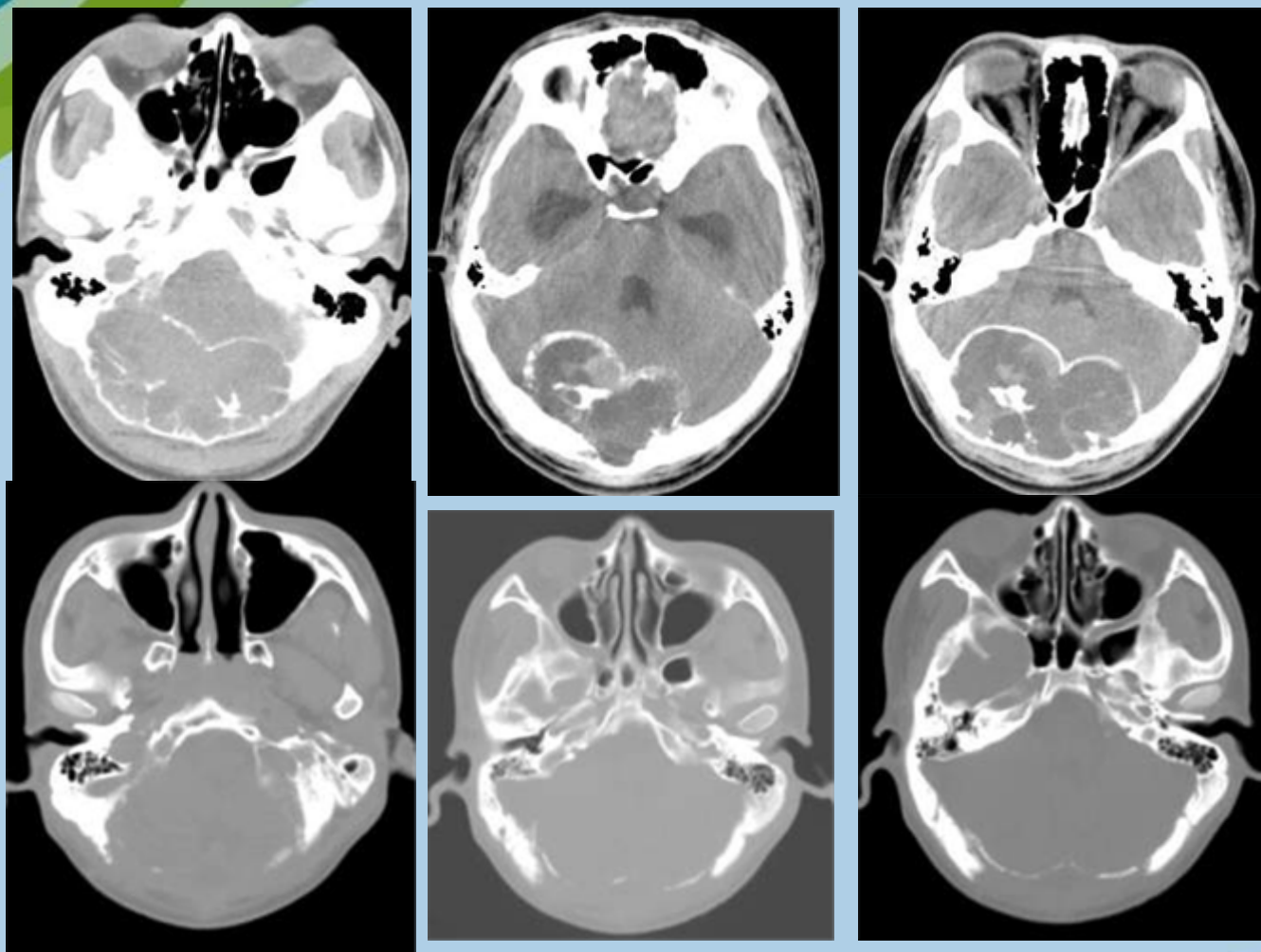


osteomyelitis



前列腺癌转移

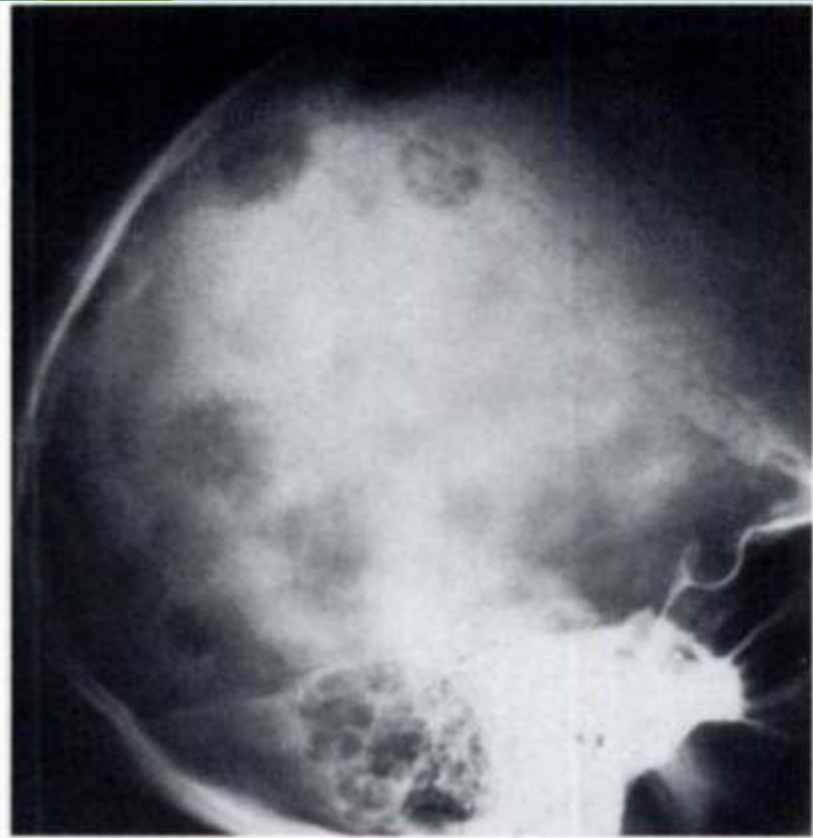
骨母细胞瘤手术前、后



1932年Jaffe首先报道掌骨骨母细胞瘤，可能与血管异常有关。膨胀性肿块，含有丰富的血管，内见钙化，骨皮质菲薄，周围见反应性硬化带。镜下发现大量骨母细胞呈巢状，血管丰富伴疏松纤维组织。

尤文氏肉瘤

(Ewing sarcoma)



Radiographics 1993;13:959-961

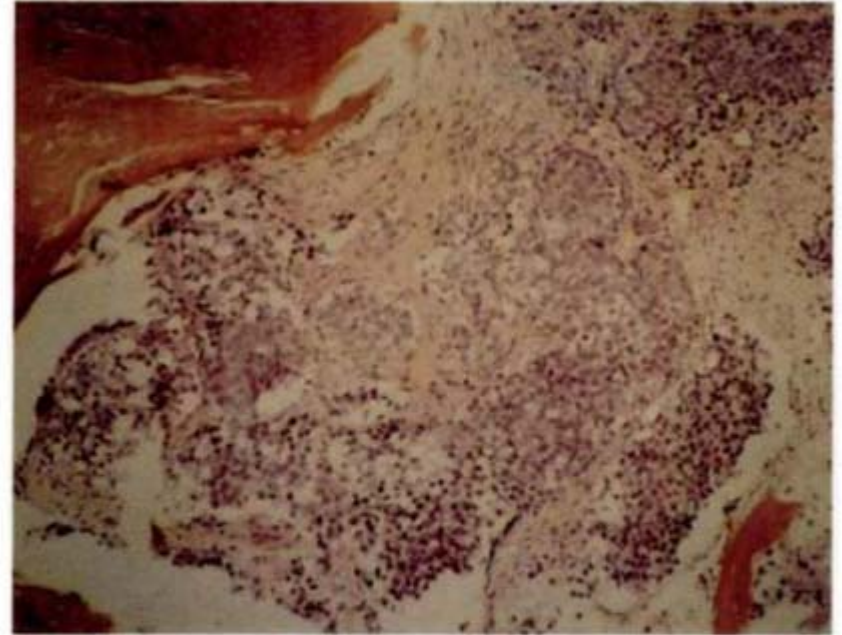
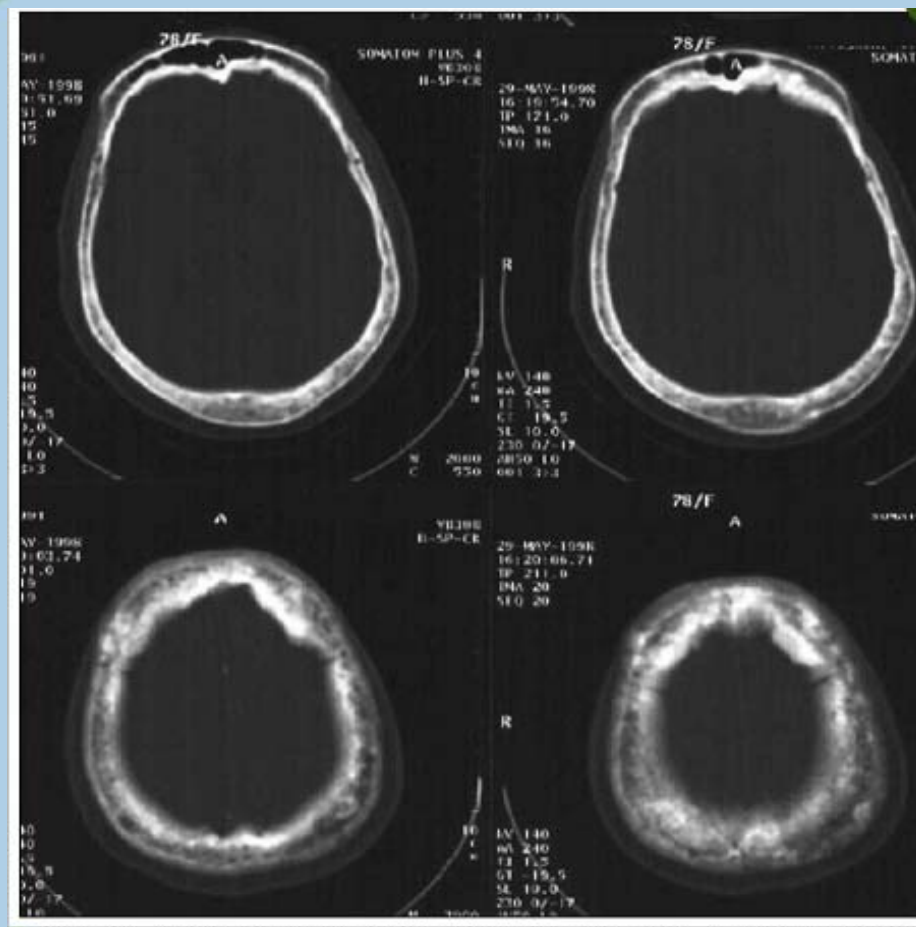


Figure 5. Photomicrograph (original magnification, $\times 120$; hematoxylin-phloxine-saffron stain) of a histologic specimen shows that the tumor invading bone is composed of nests of small cells with an elevated nucleocytoplasmic ratio typical of Ewing sarcoma.

尤文氏肉瘤，好发于**10-25岁**青少年，男性略多，原发于骨髓腔内的小圆细胞肿瘤，骨质出现虫蚀样或鼠咬状破坏，骨髓腔扩大呈蜂窝状，界限不清楚，无骨硬化征象。

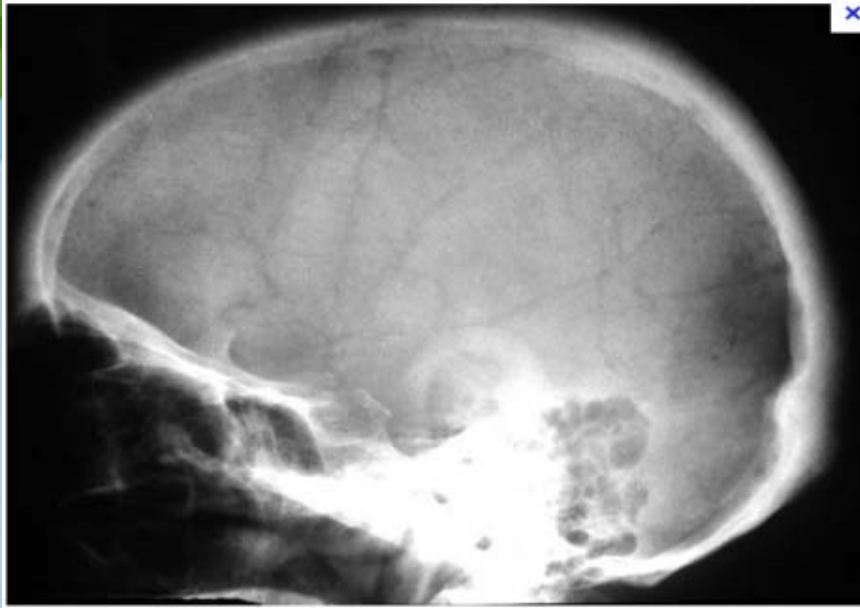
佩吉特病 (Paget's disease)



又名畸形性骨炎，先天性骨代谢异常所致的局部骨变形性疾病，破骨细胞过度活跃引起骨溶解加速，骨破坏、再生伴不规则骨痂形成，可有囊性变及纤维化，骨变形，骨皮质与骨髓质分不清。

甲状旁腺机能亢进 (Hyperparathyroidism)

Salt and pepper skull



Normal



PTH分泌过多，高血钙、低血磷。颅骨表现的
的特殊性—颅骨三层结构模糊不清，多发点
状透光区，高密度的“盐、胡椒面征”。

二、脑外肿瘤的分类 2007WHO

1、脑(脊)膜肿瘤(tumours of the meninges)

脑脊膜上皮细胞肿瘤(tumours of meningotheial cells)

脑(脊)膜瘤(meningioma)

上皮型(meningoethelial)

纤维型(fibrous)

过渡型(transitional)

砂粒型(psammomatous)

血管瘤型(angiomatous)

微囊型(microcystic)

分泌型(secretory)

淋巴细胞丰富型(lymphoplasma cyte-rich)

化生型(metaplastic)

脊索样型(chordoid)

透明细胞型(clear cell)

非典型性(atypical)

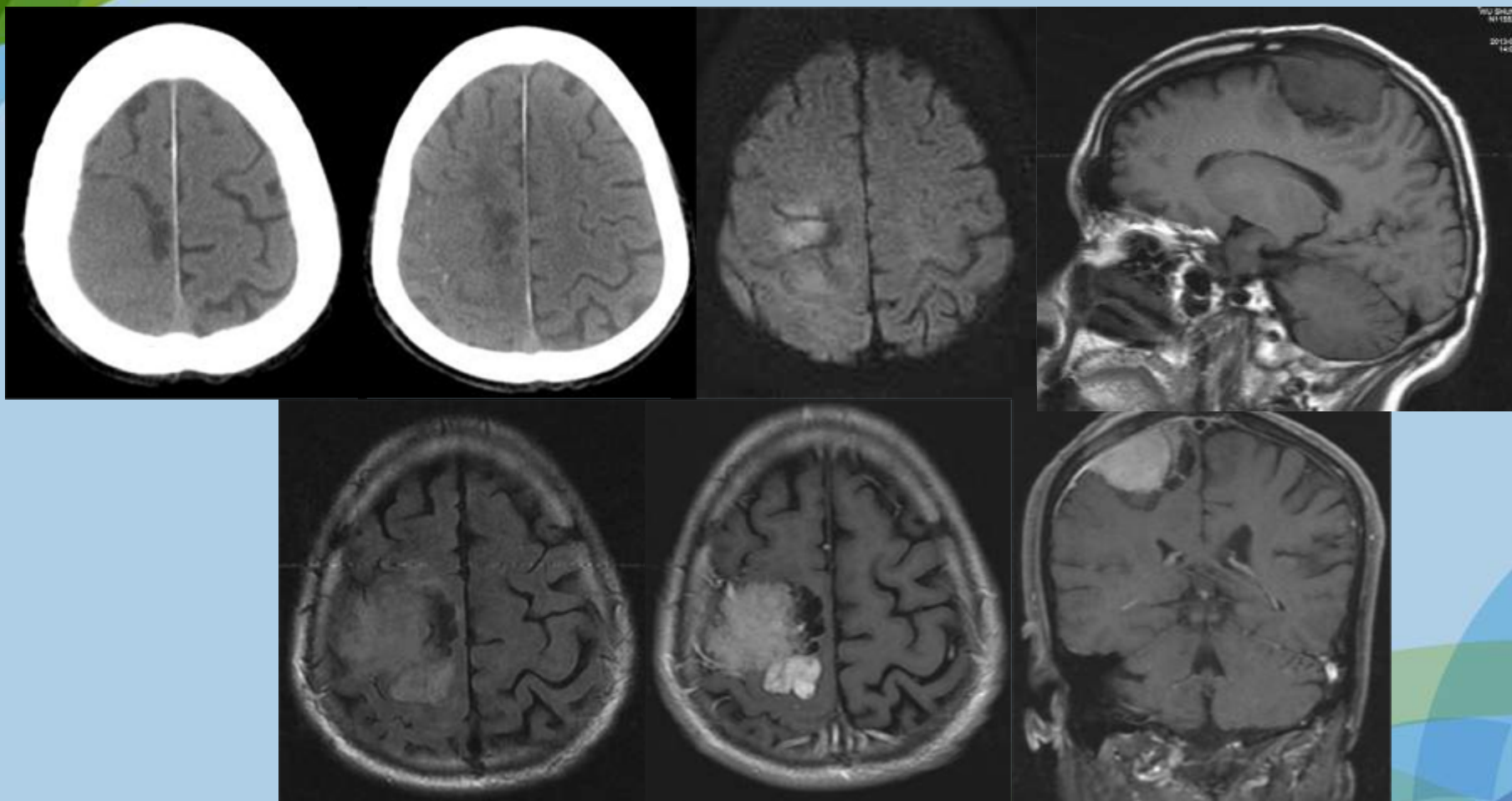
乳头型(papillary)

横纹肌样型(rhabdoid)

间变性(恶性)脑膜瘤(anaplastic/ malignant meningioma)

三、脑外肿瘤的诊断

脑膜瘤



二、脑外肿瘤的分类

2、脑膜间质肿瘤 (mesenchymal tumours)

脂肪瘤 (lipoma)

血管脂肪瘤 (angiolipoma)

蛰伏脂肪瘤 (冬眠瘤) (hibernoma)

脂肪肉瘤 (liposarcoma)

孤立性纤维瘤 (solitary fibrous tumour)

纤维肉瘤 (fibrosarcoma)

恶性纤维组织细胞瘤 (malignant fibrous histiocyoma)

平滑肌瘤 (leiomyoma)

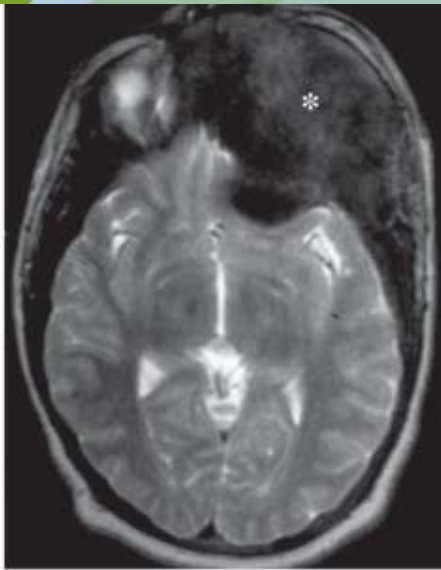
平滑肌肉瘤 (leiomyosarcoma)

横纹肌瘤 (rhabdomyoma)

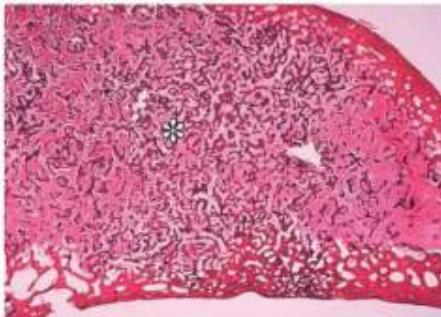
横纹肌肉瘤 (rhabdomyosarcoma)



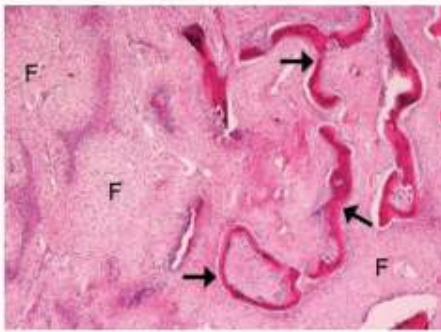
a.



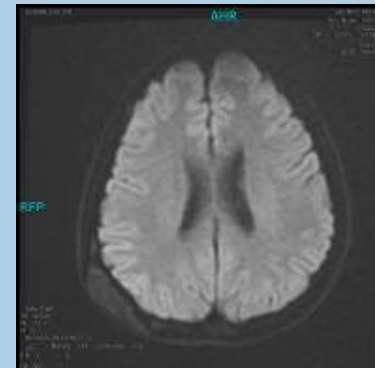
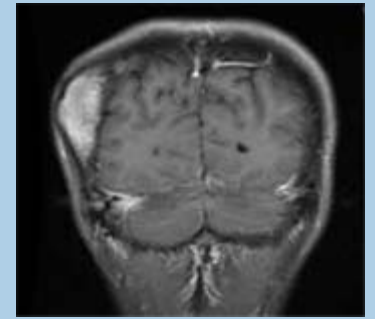
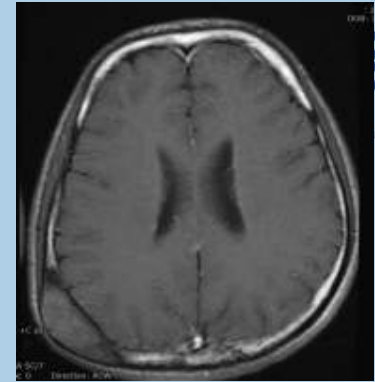
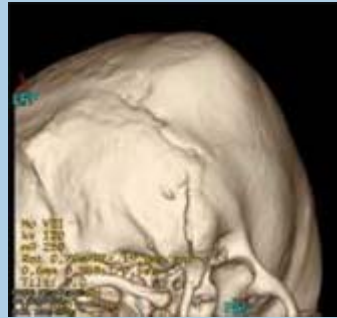
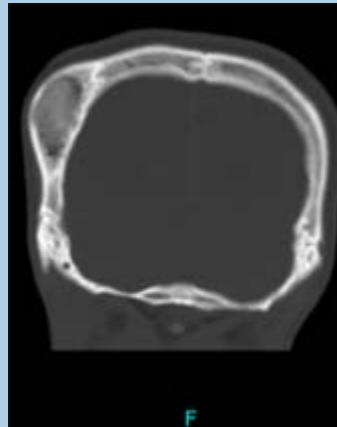
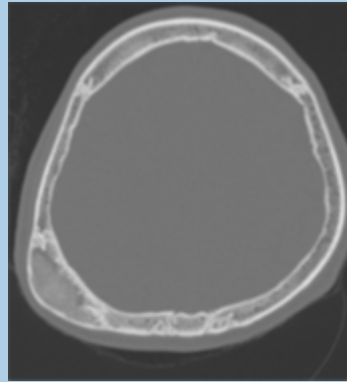
c.



d.



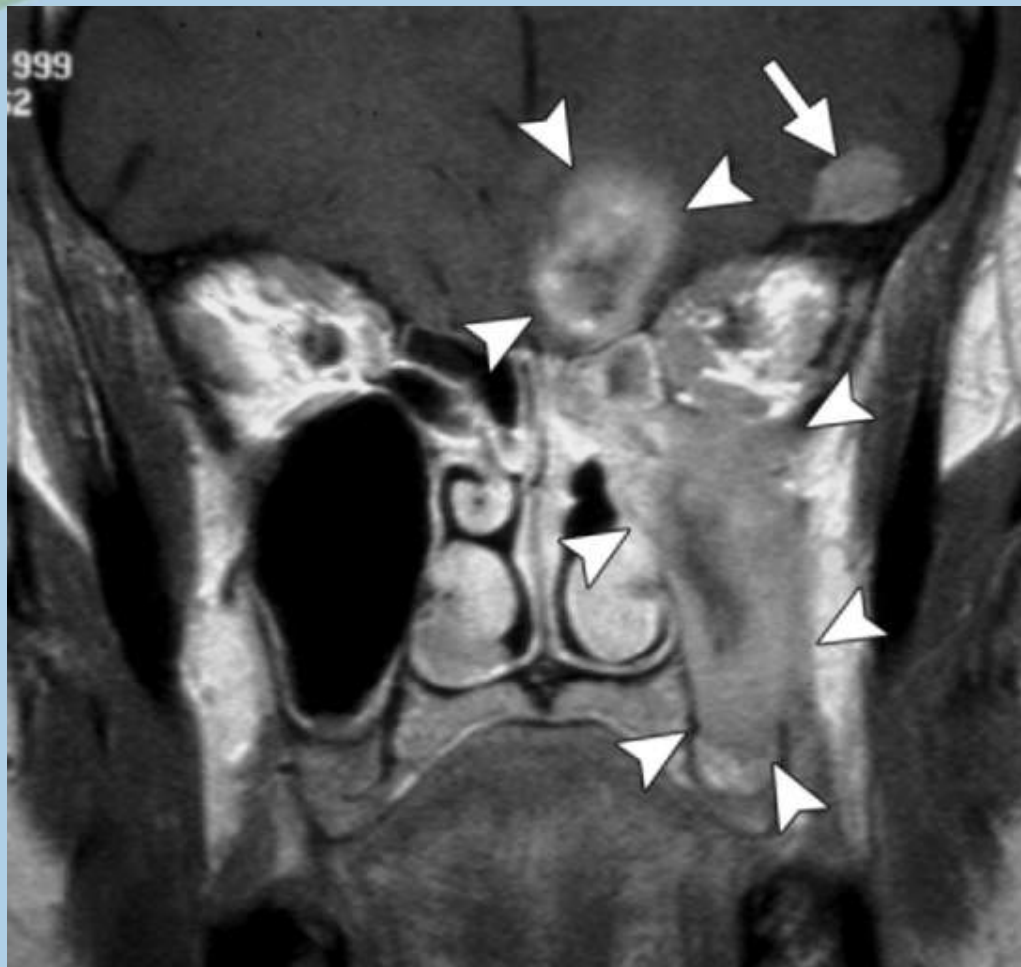
e.



fibrous dysplasia

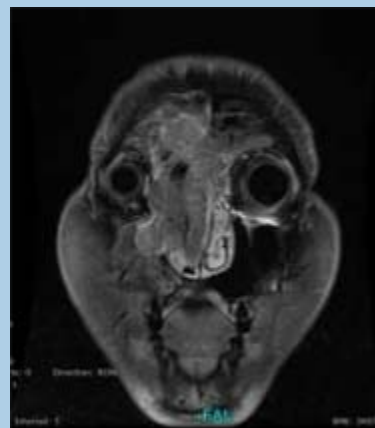
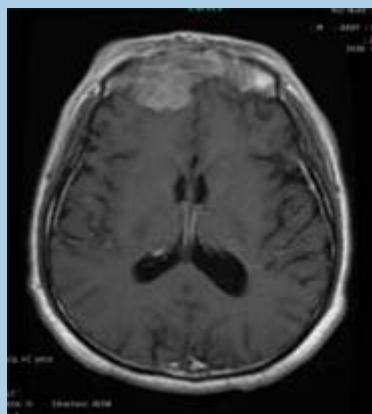
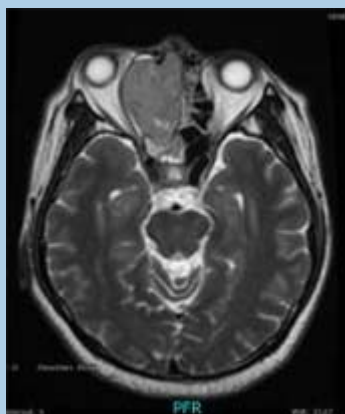
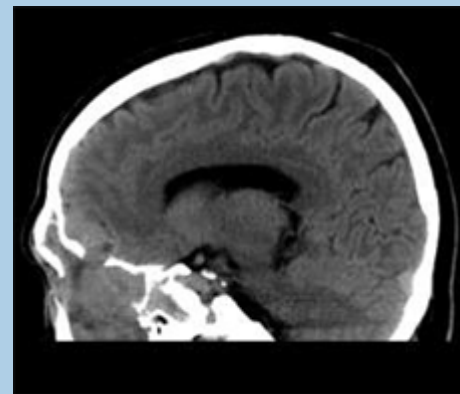
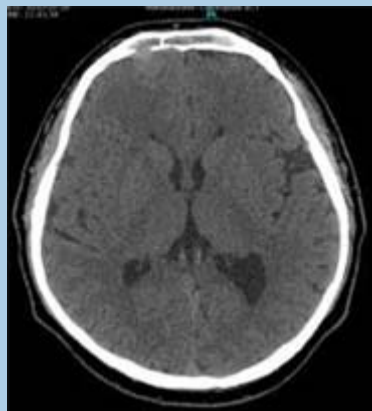
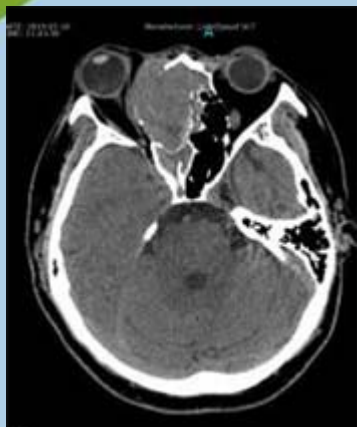
RadioGraphics 2008;
28:1193-1214

Fibrosarcoma



RadioGraphics 2011; 31:1923–1954

鼻腔横纹肌肉瘤



二、脑外肿瘤的分类

3、骨源性肿瘤

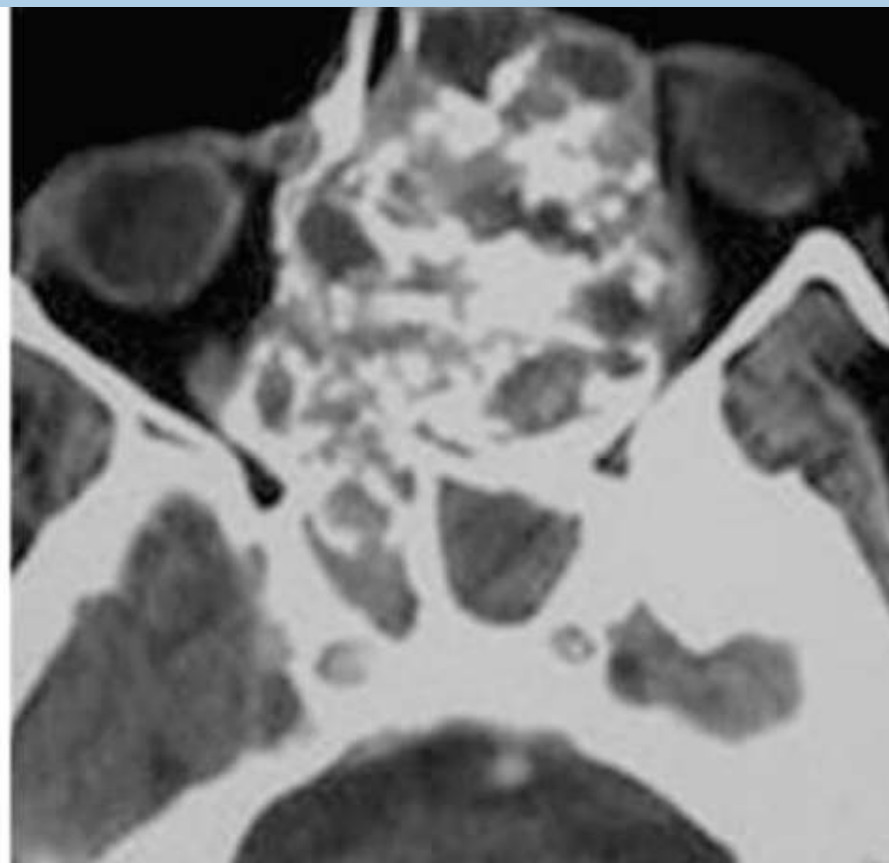
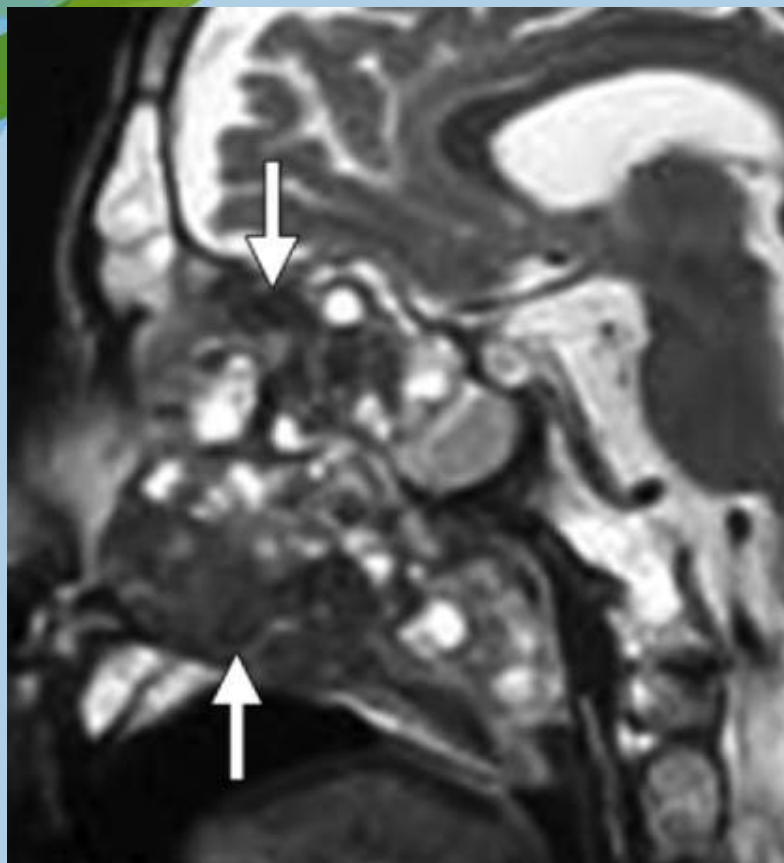
软骨瘤 (chondroma)

软骨肉瘤 (chondrosarcoma)

骨瘤 (osteoma)

骨肉瘤 (osteosarcoma)

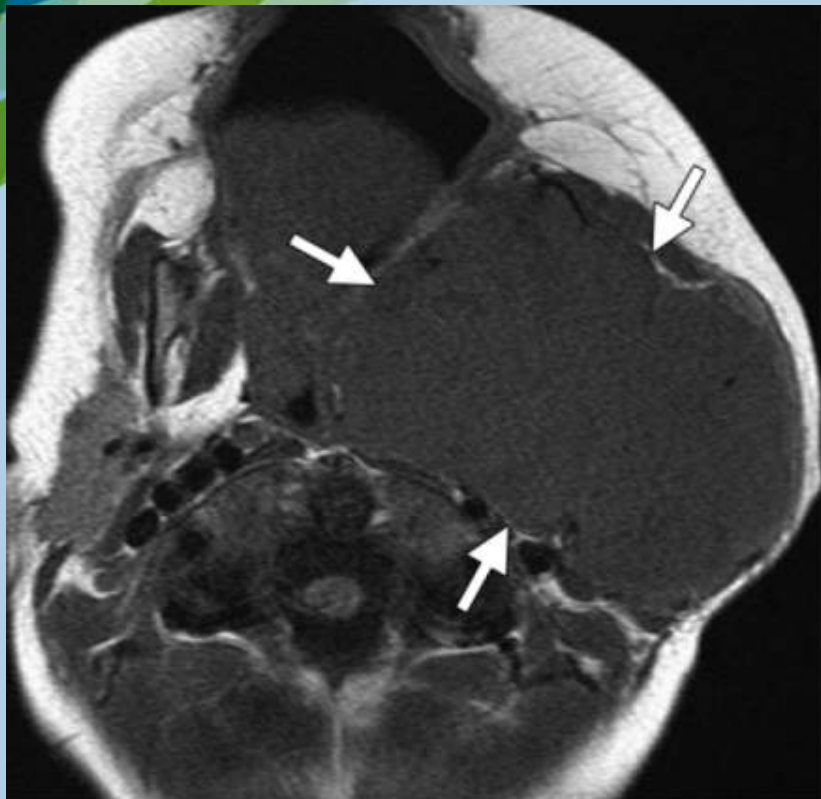
骨软骨瘤 (osteochondroma)



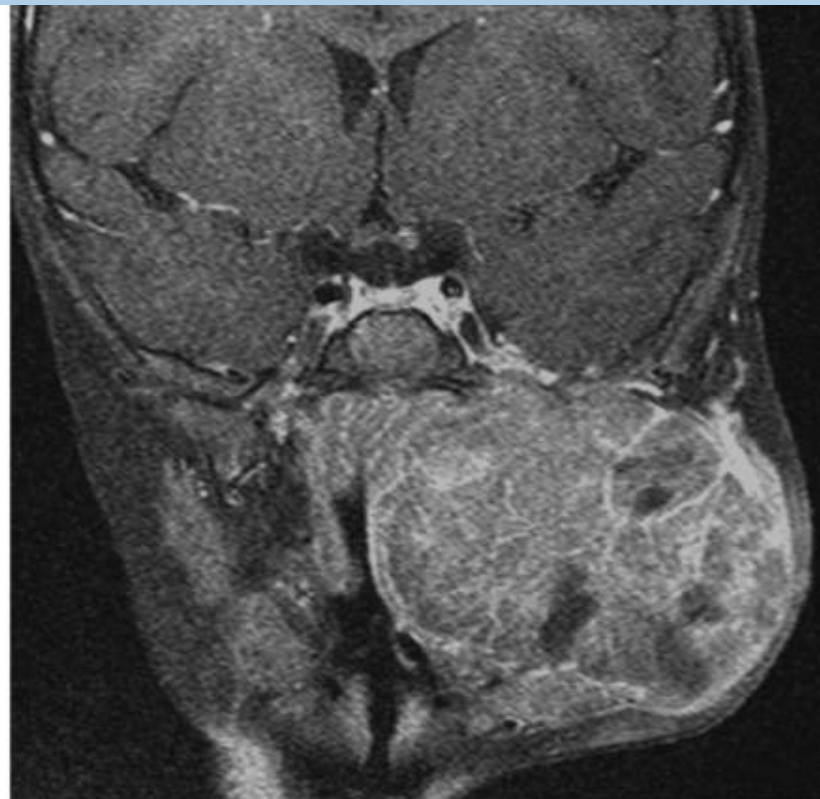
a.

b.

Chondrosarcoma
RadioGraphics 2011; 31:1923–1954



a.



b.

Ewing sarcoma

RadioGraphics 2011; 31:1923–1954

4、血管源性肿瘤

血管瘤 (haemangioma)

上皮样血管内皮瘤 (epithelioid haemangioma)

血管外皮瘤 (haemangiopericytoma)

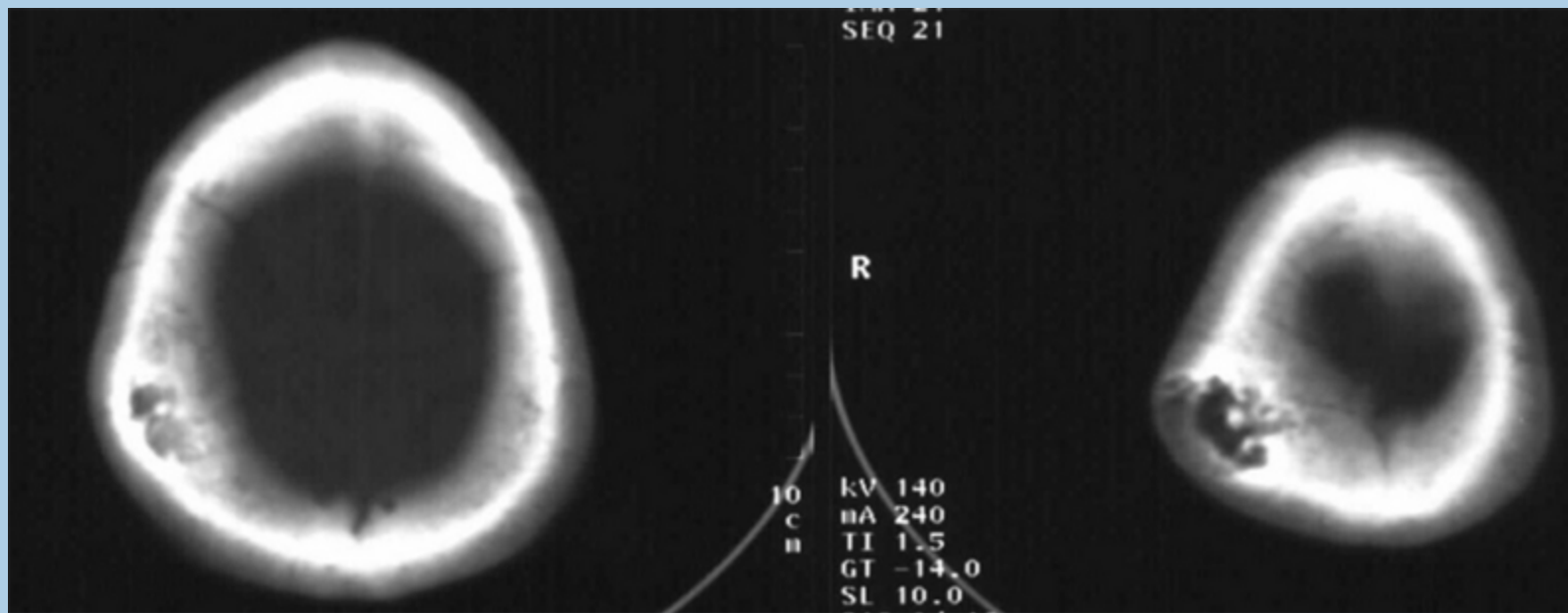
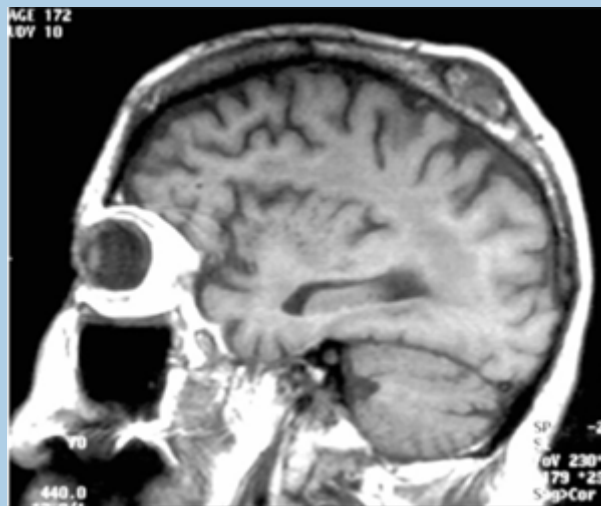
间变性血管外皮细胞瘤 (anaplastic haemangiopericytoma)

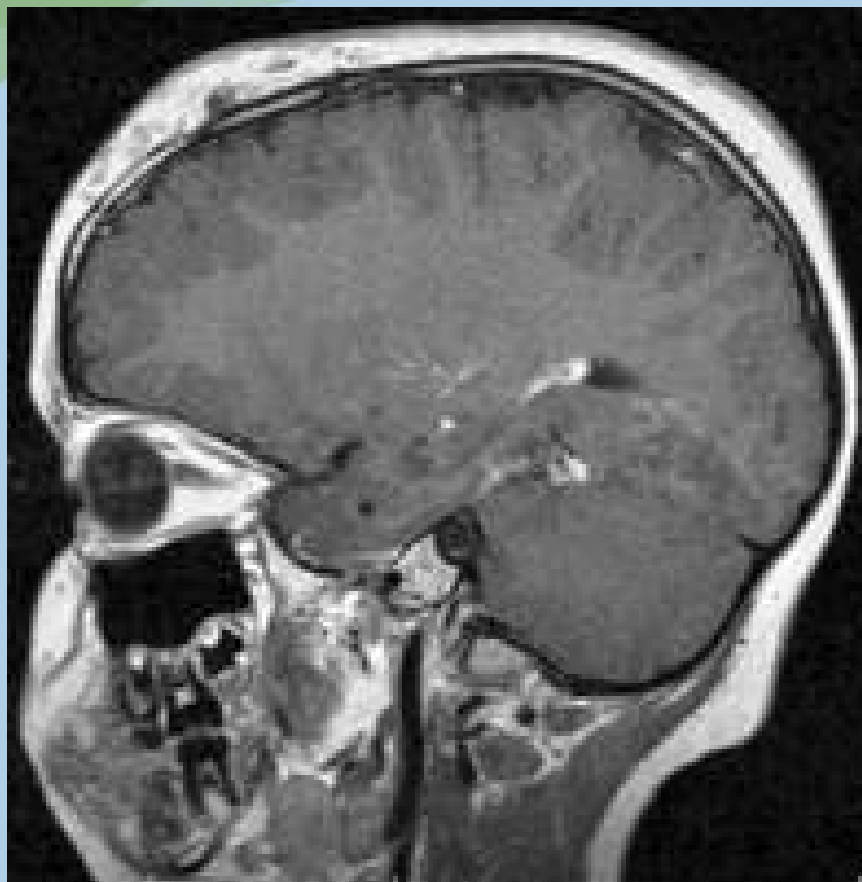
血管肉瘤 (angiosarcoma)

卡波西肉瘤 (kaposi sarcoma)

原始性神经外胚层肉瘤9364/ 3 (ewing sarcoma/PNET)

血管瘤





Sinus pericranii--颅骨膜血窦是一种罕见的血管畸形，颅内与颅外血液循环借扩张的颅骨板障静脉形成异常交通。

二、脑外肿瘤的分类

5、含色素肿瘤

原发性黑色素细胞病变 (primary melanocytic lesions)

弥漫性黑色素细胞增生症 (diffuse melanocytosis)

黑色素细胞瘤 (melanocytoma)

恶性黑色素瘤 (malignant melanoma)

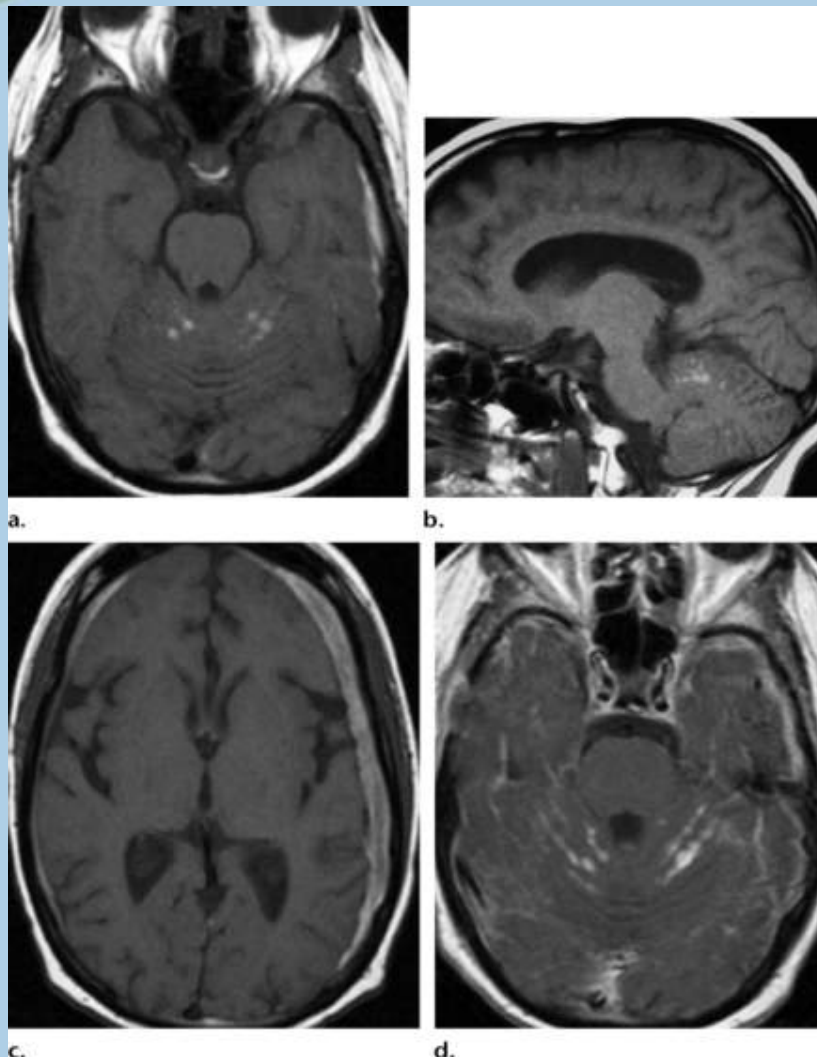
脑膜黑素瘤病 (meningeal melanomatosis)

与脑膜相关的其他类肿瘤

(other neoplasms related to the meninges)

血管母细胞瘤 (haemangioblastoma)

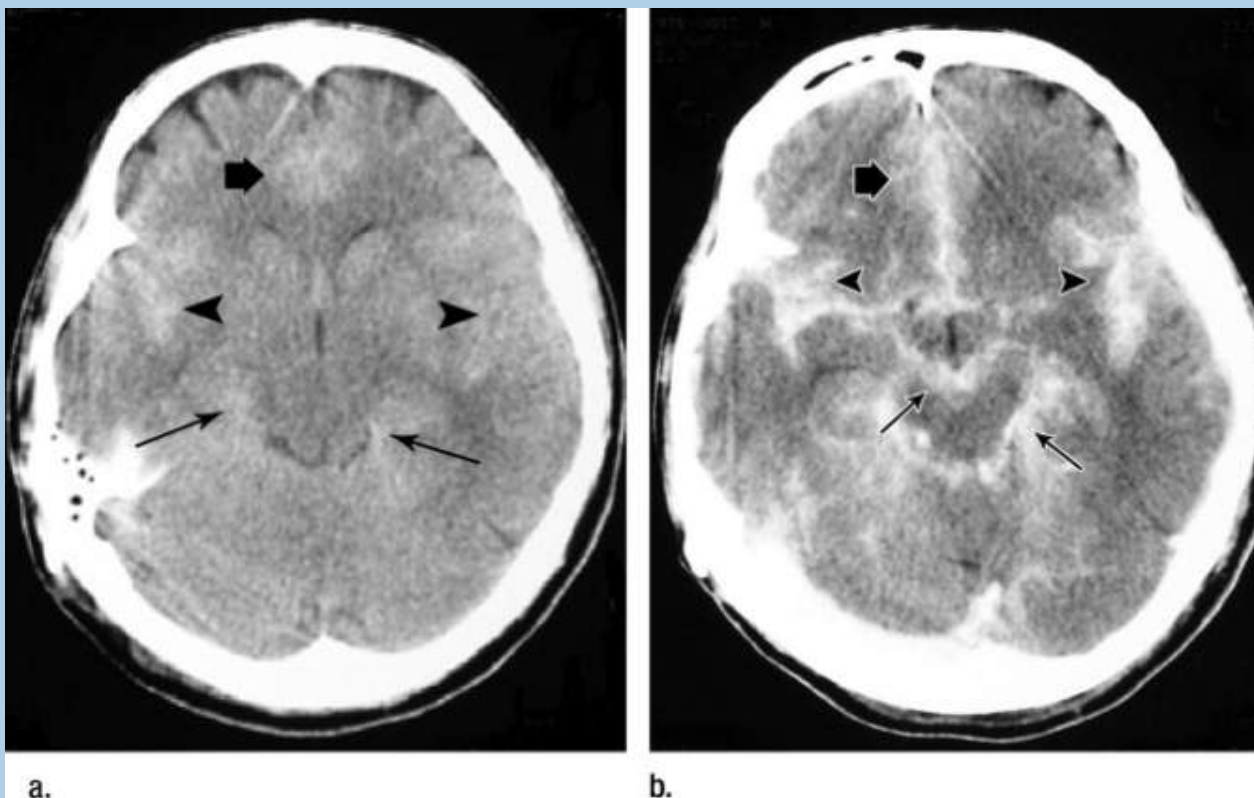
女，27岁 弥漫性脑膜黑素瘤病



RadioGraphics 2012; 32:499-516

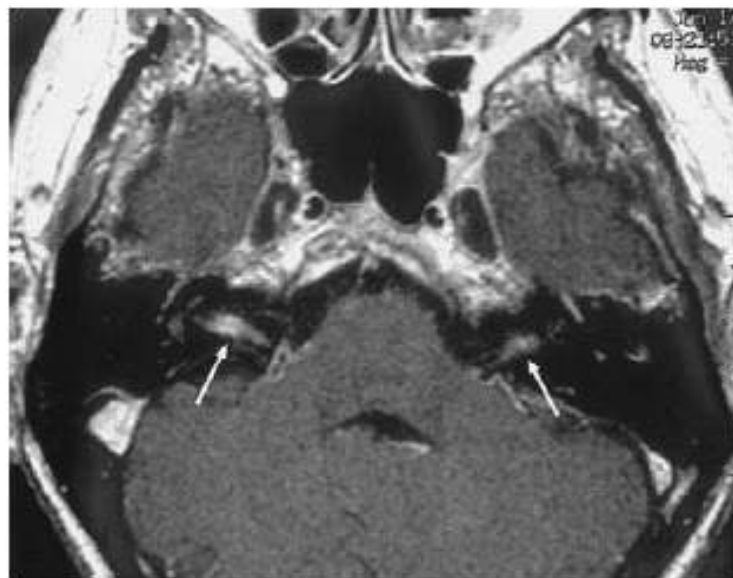
三、脑外肿瘤的诊断

5、含色素的肿瘤

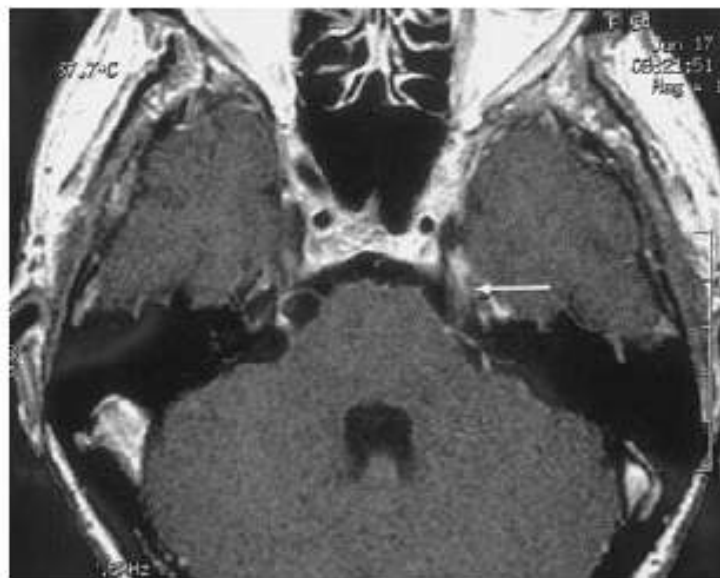


Primary Leptomeningeal Melanomatosis

RadioGraphics 2001; 21:625-639



a.



b.

女性，右足黑色素瘤手术后11年，眩晕。双侧听神经，左侧三叉神经根强化

二、脑外肿瘤的分类

6、淋巴瘤和造血系统肿瘤

(lymphomas and haematopoietic neoplasm)

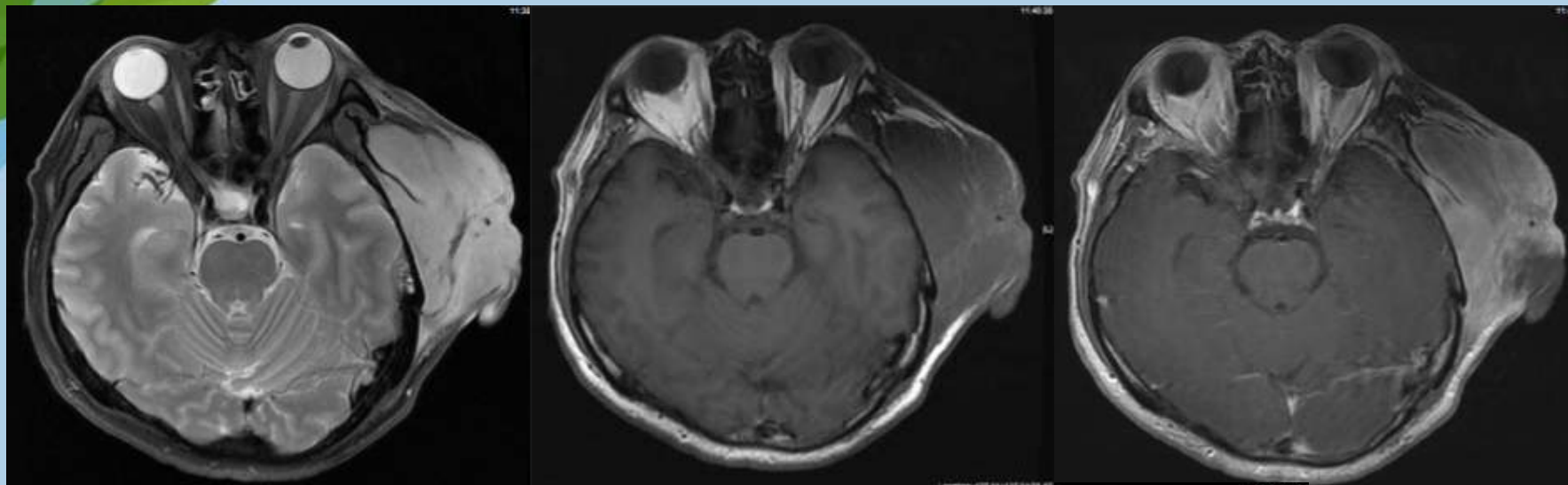
恶性淋巴瘤 (malignant lymphomas)

浆细胞瘤 (plasmacytoma)

粒细胞肉瘤 (granulocytic sarcoma)

三、脑外肿瘤的诊断

6、淋巴瘤和造血系统肿瘤



非何杰金氏病淋巴瘤

7、生殖细胞肿瘤 (germ cell tumours)

生殖细胞瘤 (germinoma)

胚胎性癌 (embryonal carcinoma)

卵黄囊性瘤 (yolk sac tumour)

绒毛膜癌 (choriocarcinoma)

畸胎瘤 (teratoma)

成熟型 (mature)

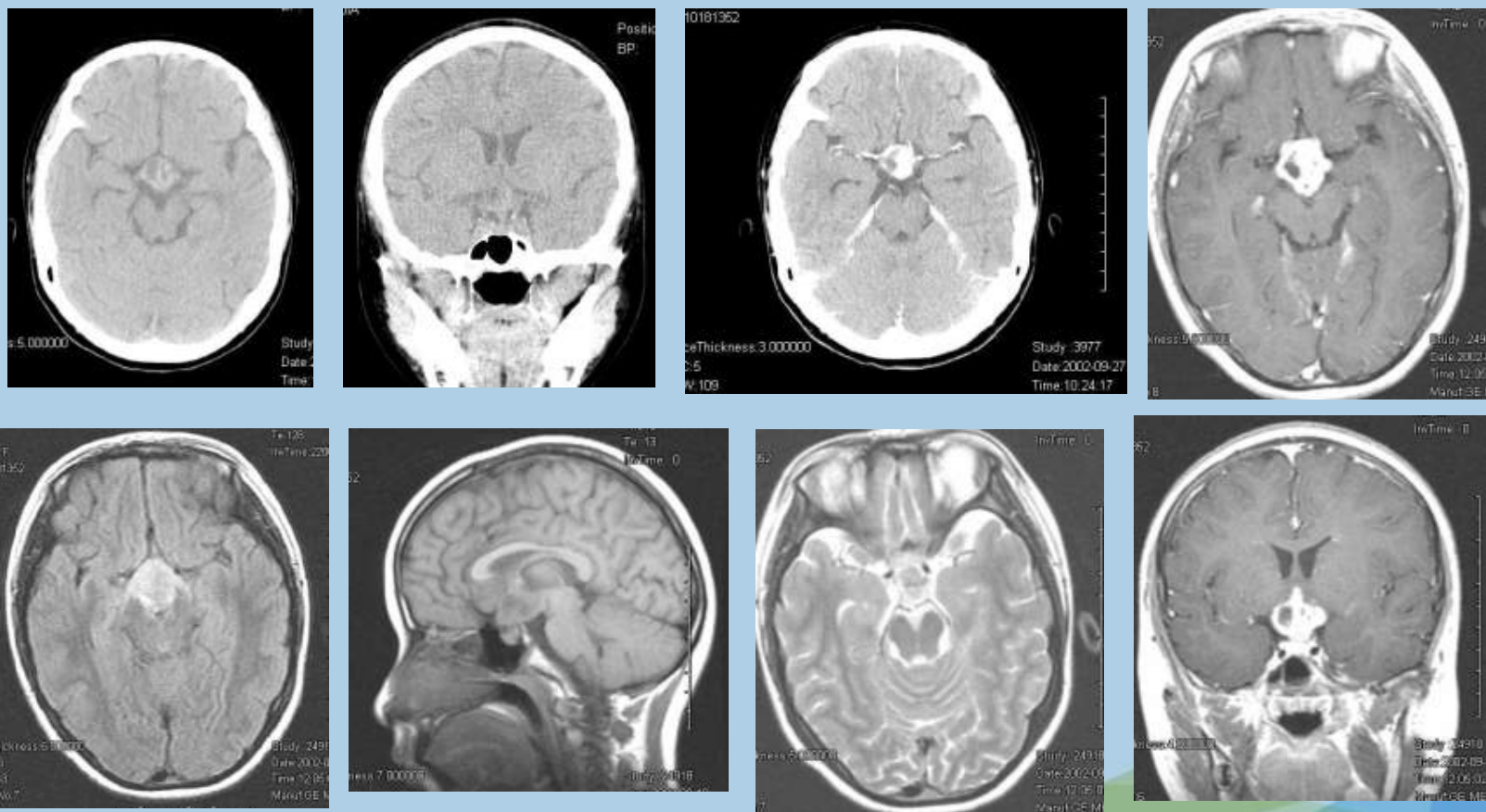
未成熟型 (immature)

畸胎瘤恶变 (teratoma with malignant transformation)

混合性生殖细胞肿瘤 (mixed germ cell tumour)

三、脑外肿瘤的诊断

7、生殖细胞肿瘤 (germ cell tumours)



男孩 13岁，多尿

二、脑外肿瘤的分类

8、鞍区肿瘤 (tumours of the sellar region)

颅咽管瘤 (craniopharyngioma)

釉质瘤型 (adamantionmatous)

乳头型 (papillary)

颗粒细胞瘤 (granular cell tumour)

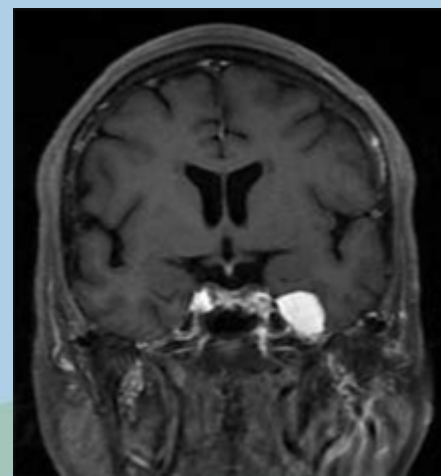
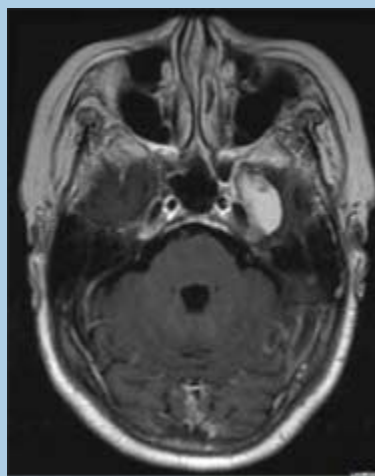
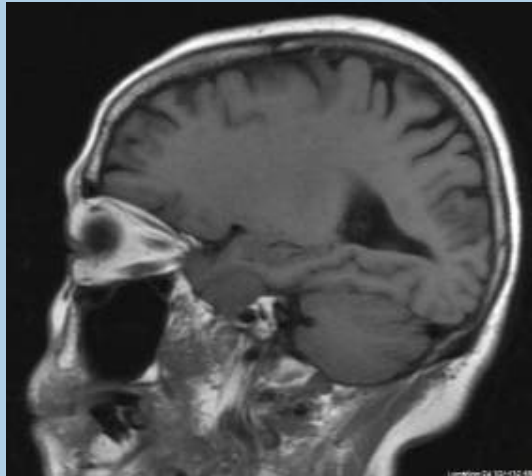
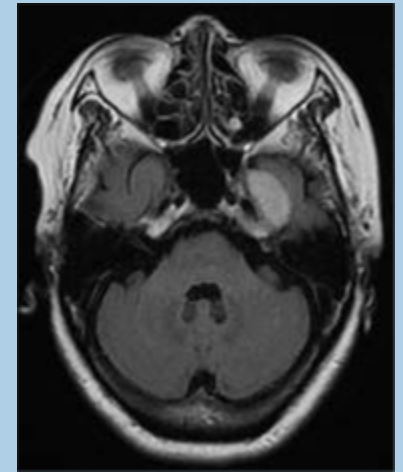
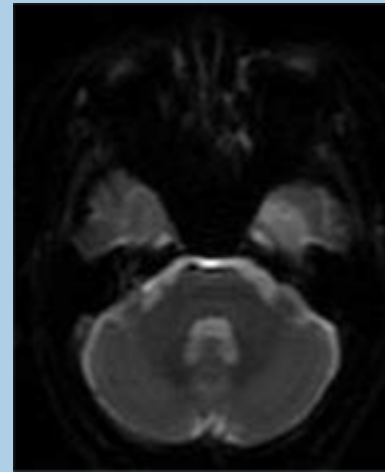
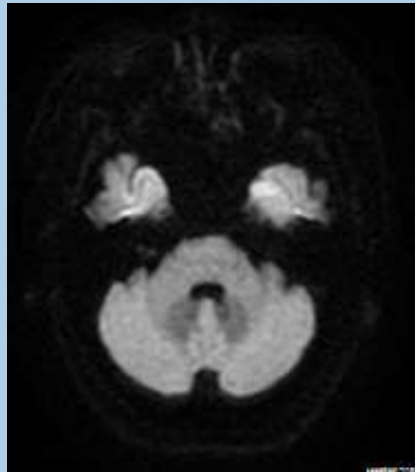
垂体细胞瘤 (pituicytoma)

腺垂体梭形细胞嗜酸性细胞瘤 (spindle cell
oncocytoma of the adenohipophysis)

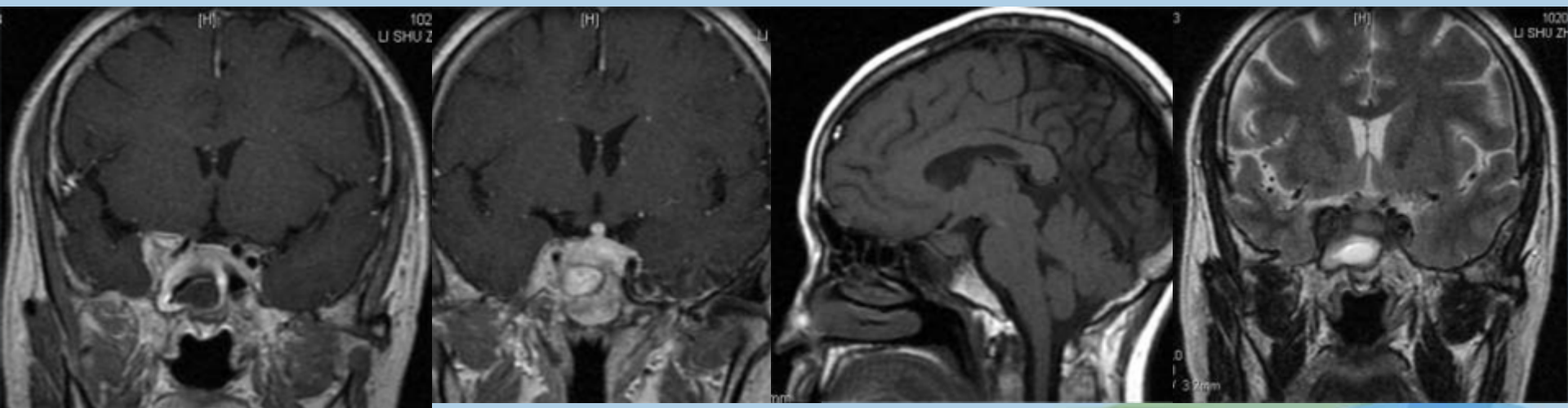
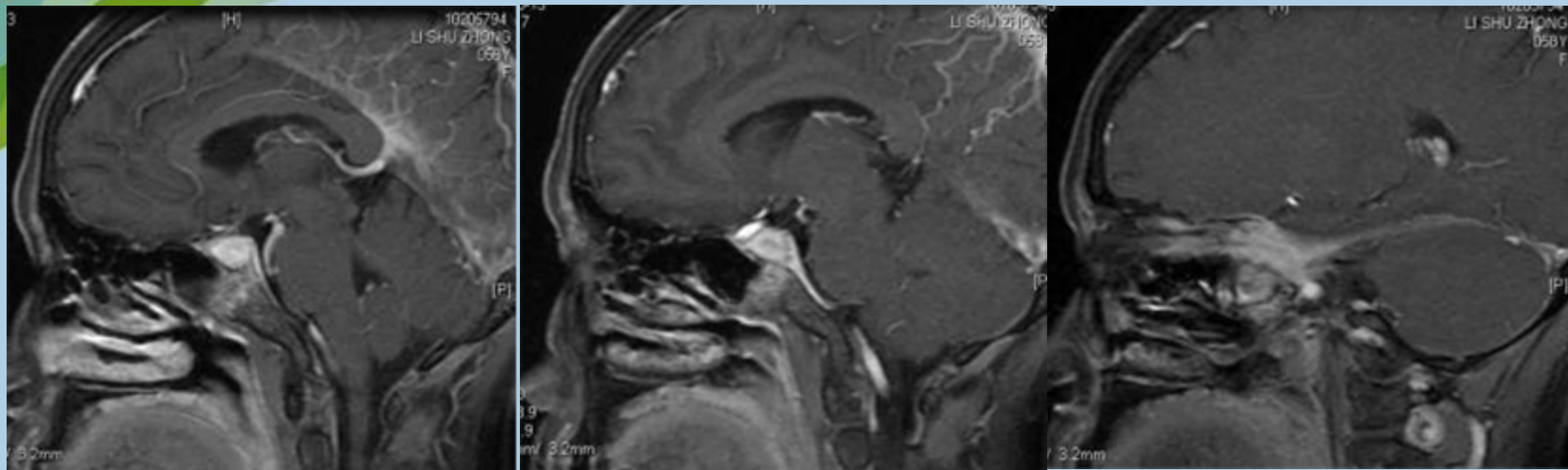
转移性肿瘤 (metastatic tumours)

鞍区肿瘤 (tumours of the sellar region)

鞍旁海绵状血管瘤

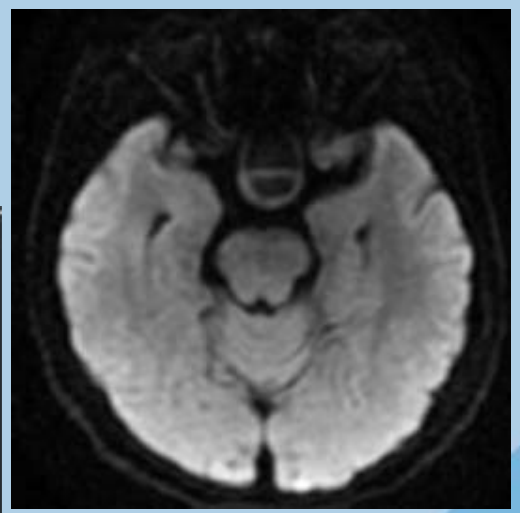
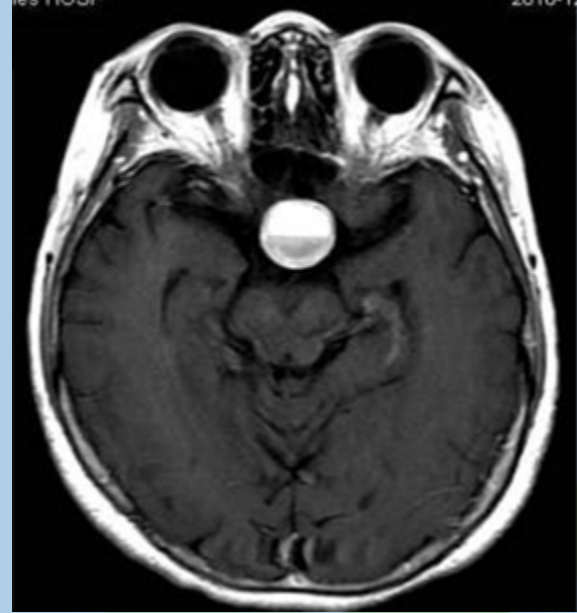
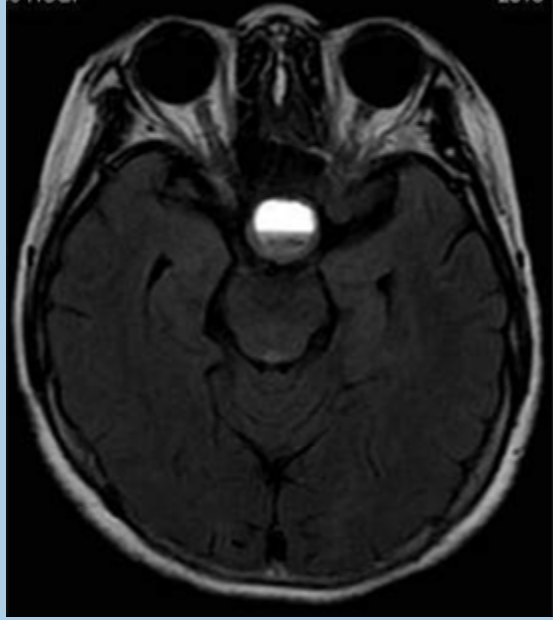
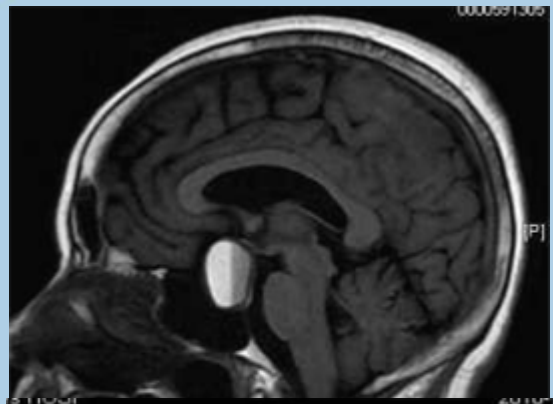


垂体瘤侵犯右侧海绵窦继发静脉栓塞



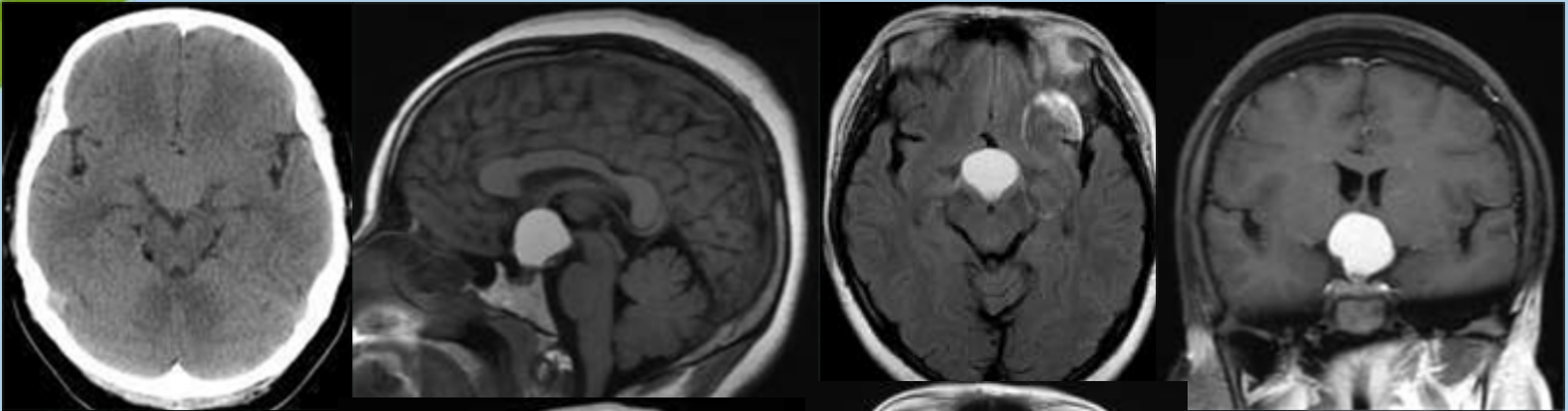
鞍区肿瘤 (tumours of the sellar region)

垂体瘤囊变卒中

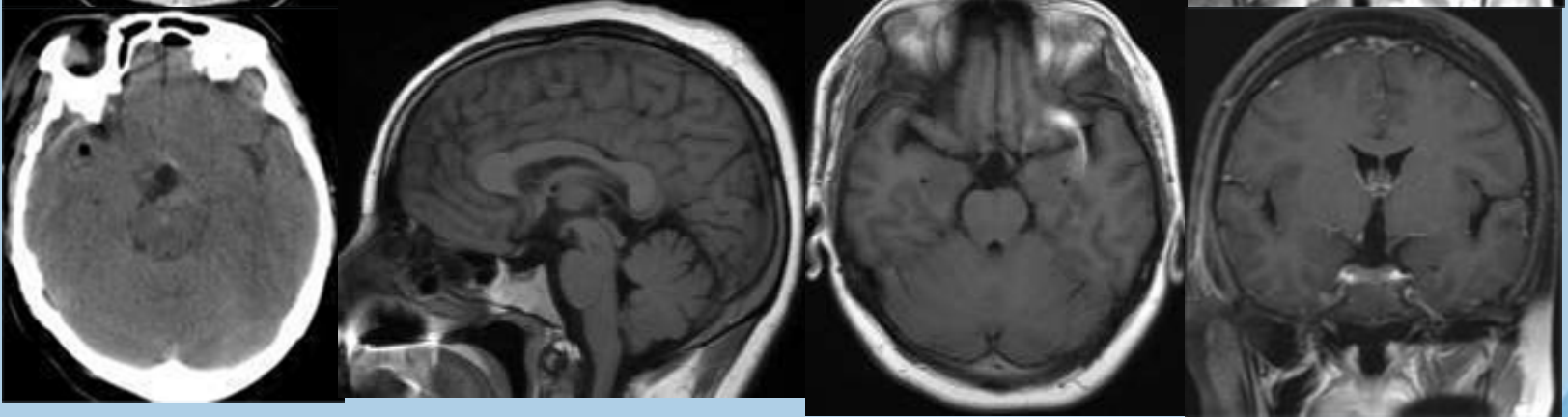


鞍区肿瘤 (tumours of the sellar region)

手术前

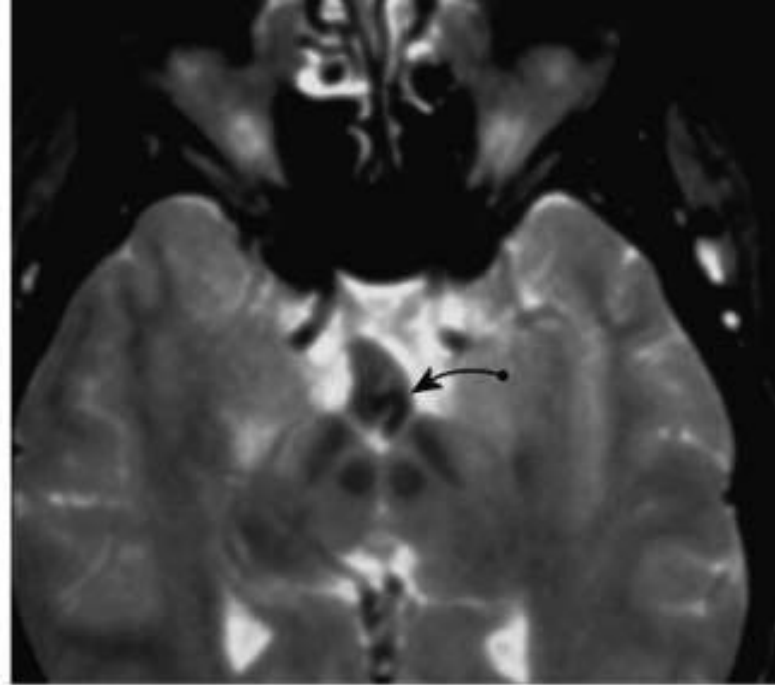
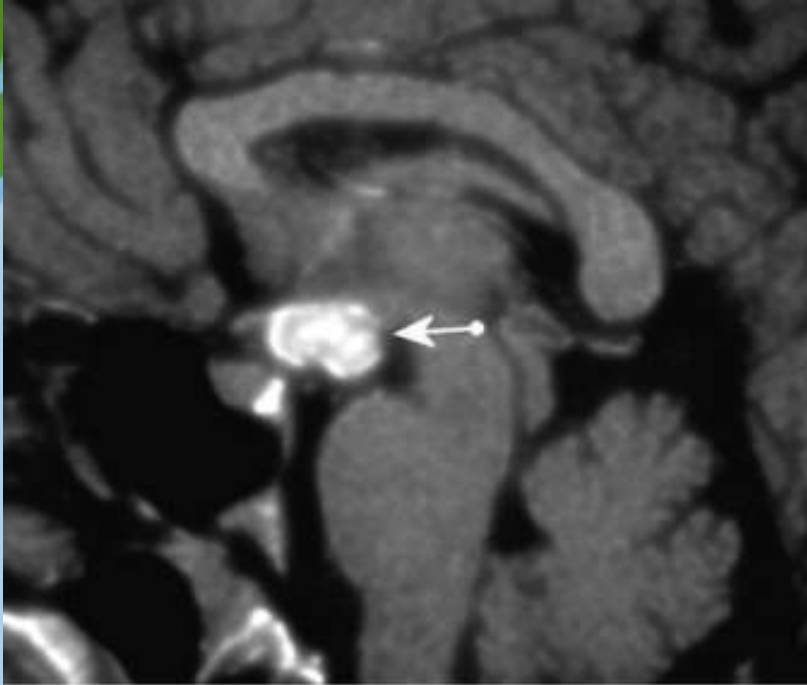


手术后



女性，36岁，颅咽管瘤CT、MRI对照

鞍区肿瘤 (tumours of the sellar region)



a.

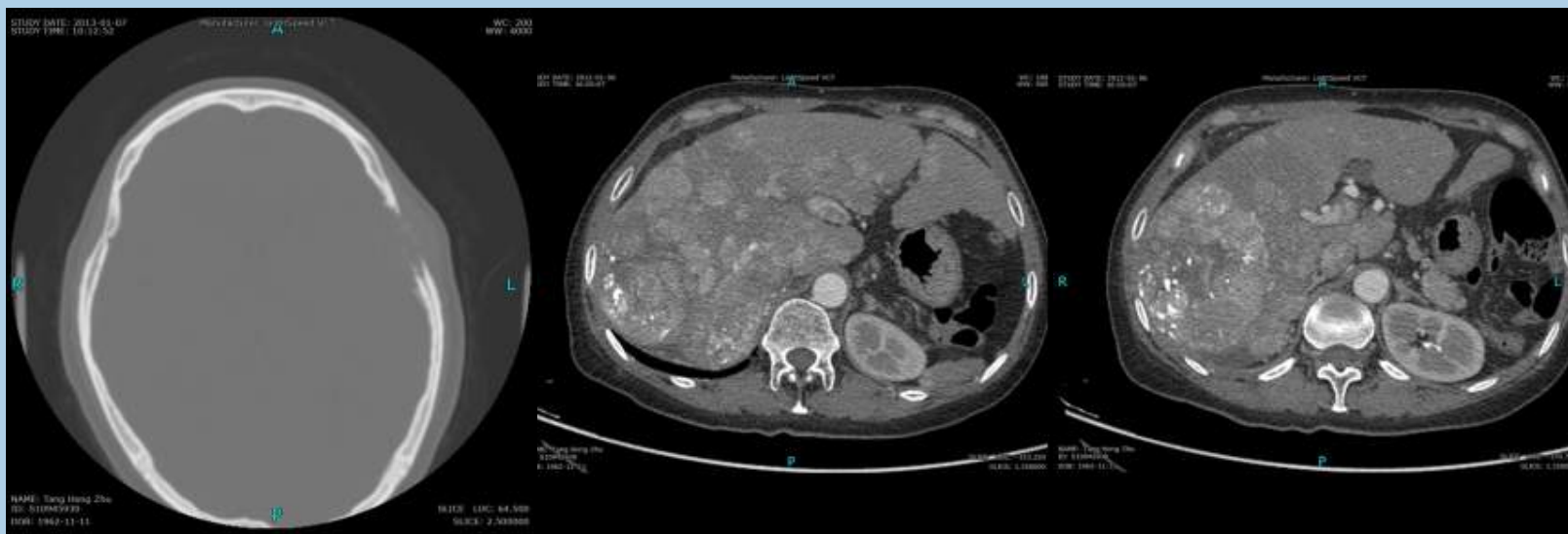
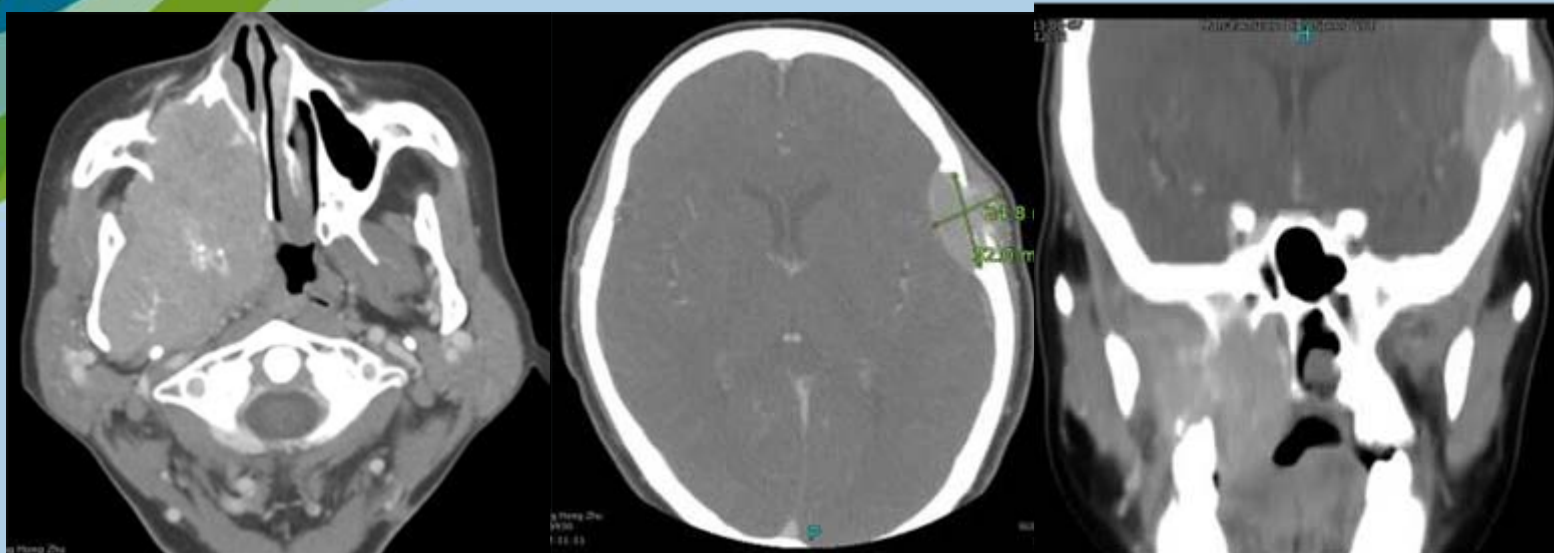
b.

T1WI

T2WI-FS

Sahar N. Saleem, Osteolipoma of the Hypothalamus. RadioGraphics 2007; 27:1087-1108

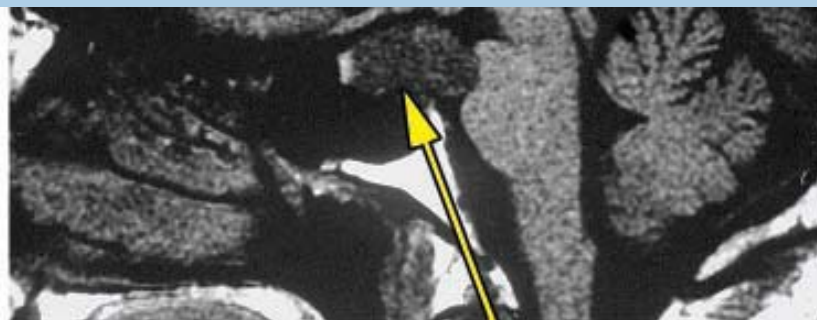
肝癌转移



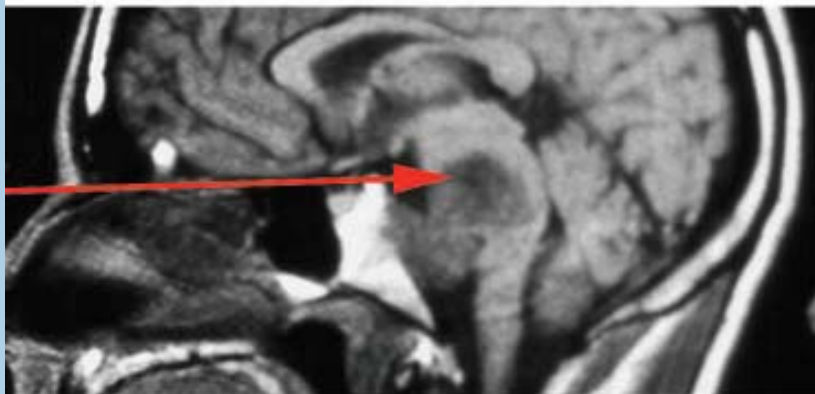
斜坡脊索瘤的发生部位



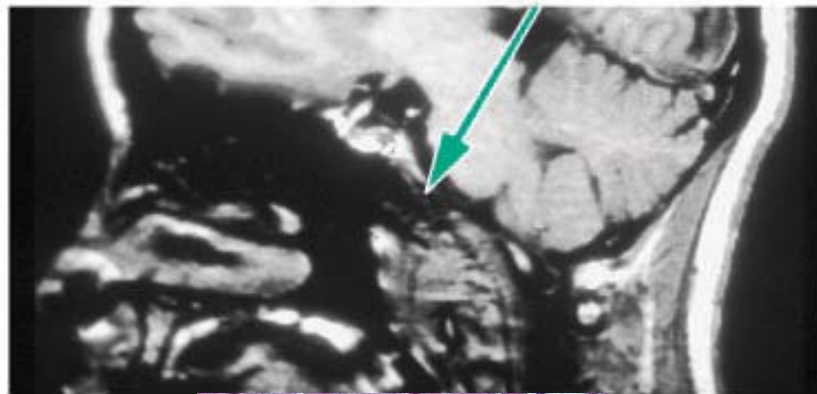
a.



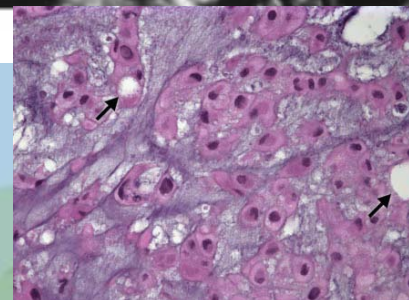
b.



c.

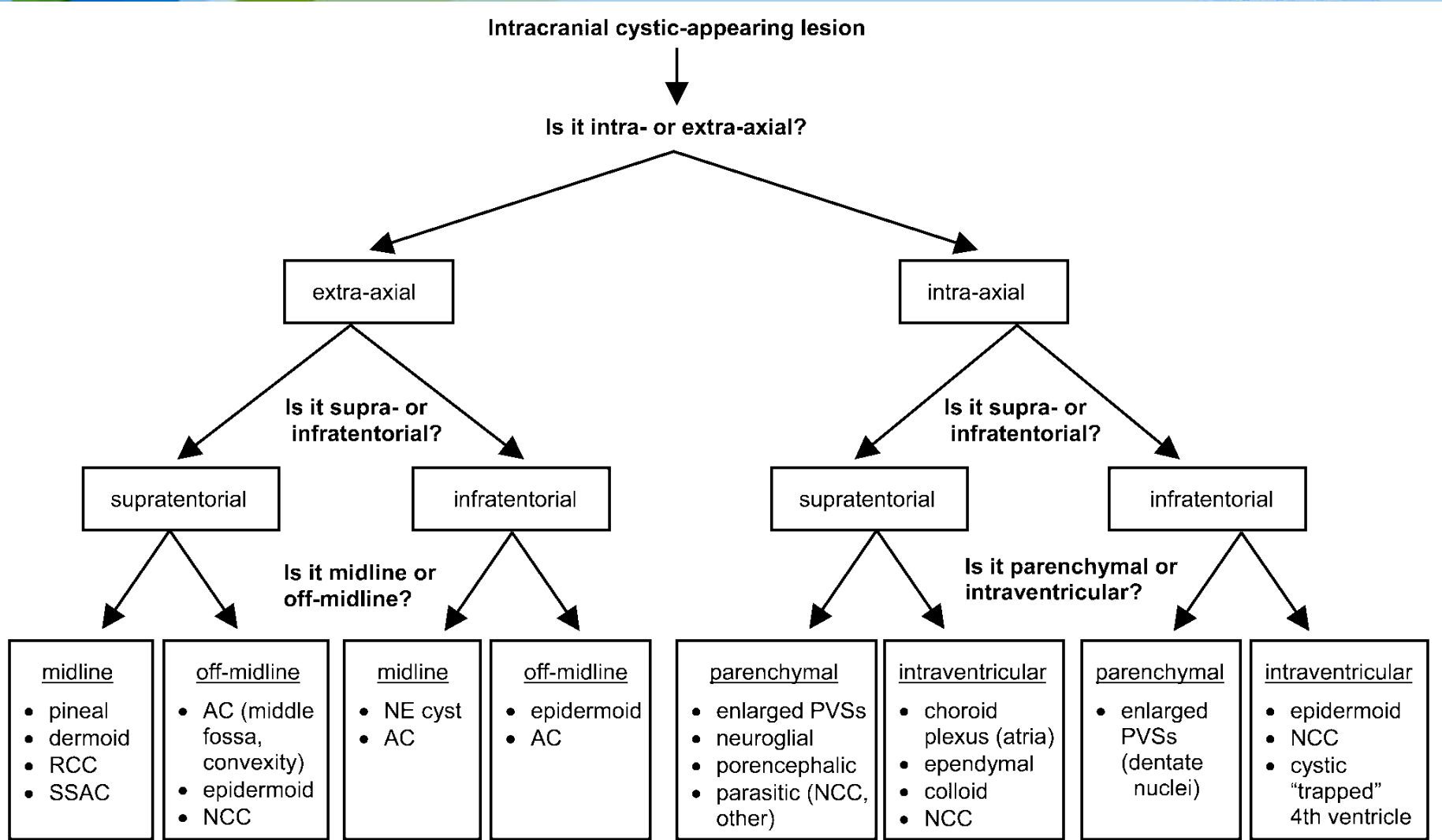


d.



RadioGraphics 2003; 23:995-1009

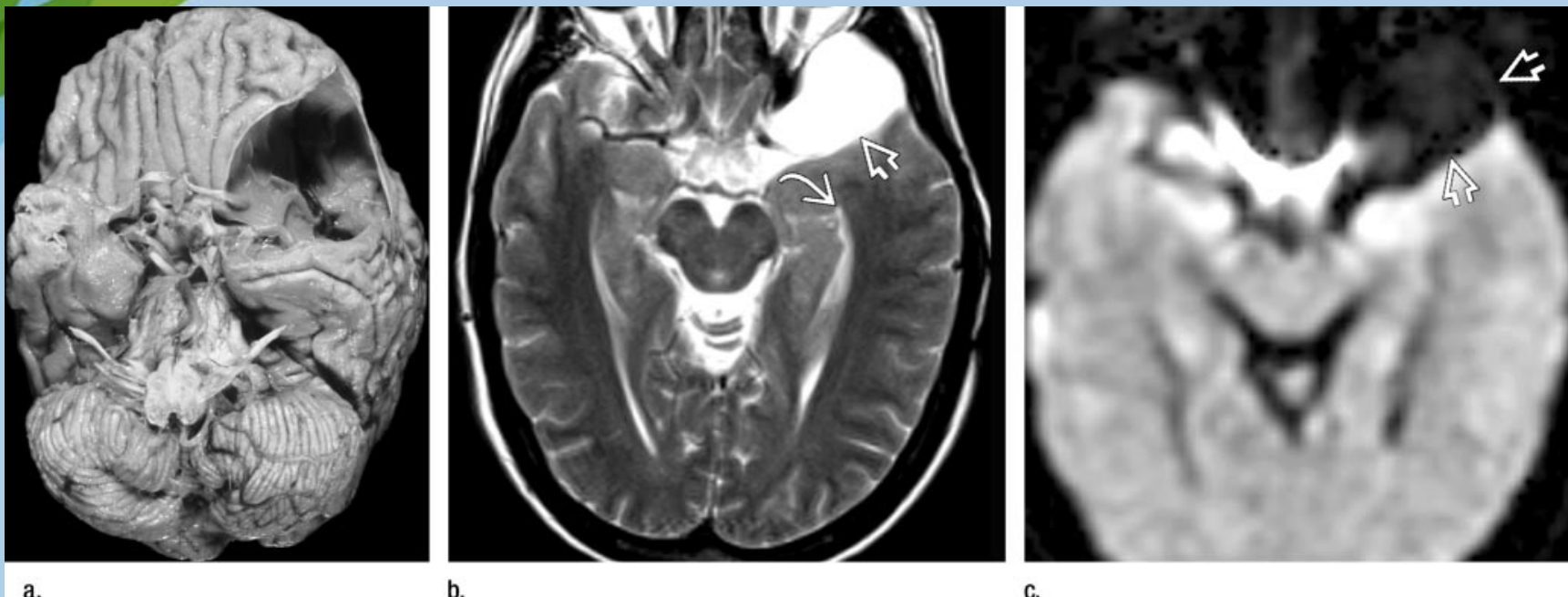
颅内囊性病变



常见的颅内囊肿

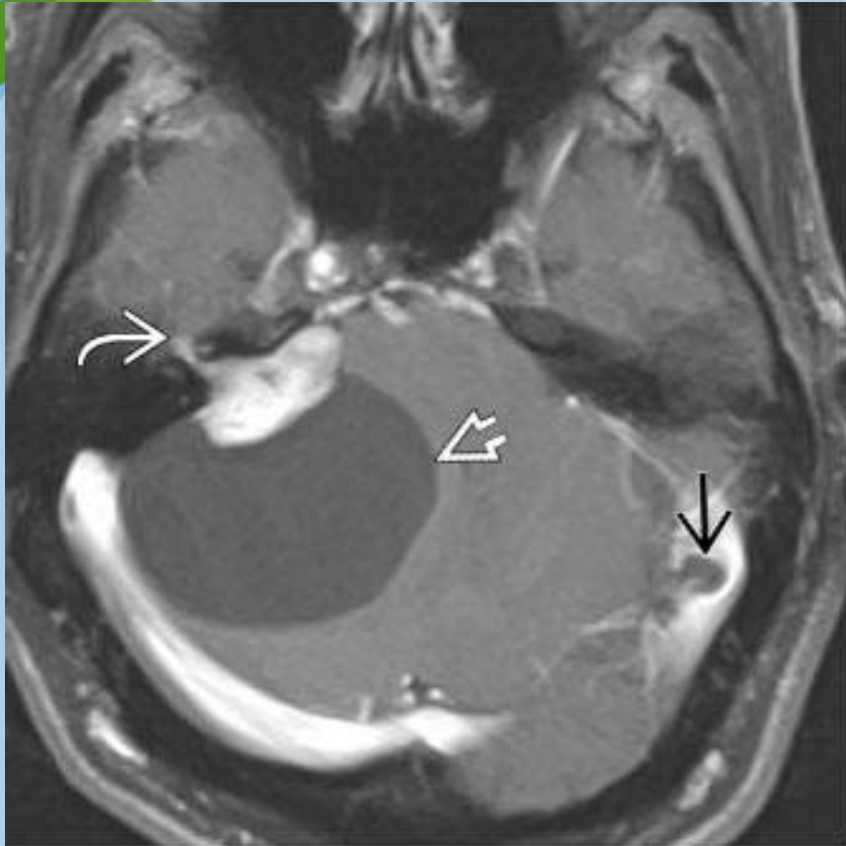
Cyst	Location
Arachnoid	Middle cranial fossa
Choroid plexus	Lateral ventricle (atria)
Colloid	Third ventricle (foramen of Monro)
Craniopharyngioma (with enlarged PVSs)	Suprasellar
Dermoid	Sellar, parasellar, frontonasal (midline)
Enlarged PVS	Basal ganglia/midbrain
Epidermoid	Cerebellopontine angle cistern
Ependymal	Lateral ventricle
Hydatid	Parietal lobe
Meningioma (with trapped CSF)	Convexity or planum sphenoidale
Neurenteric	Prepontine
Neurocysticercosis	Convexity or basal subarachnoid spaces
Neuroglial	Frontal lobe
Pineal	Pineal gland
Pituitary adenoma (with enlarged PVSs)	Parasellar
Porencephalic	Cerebral hemispheres
Rathke cleft	Sellar or suprasellar
Schwannoma (with arachnoid cyst)	Cerebellopontine angle cistern

蛛网膜囊肿



Anne G. Osborn, MD Radiology: 2006; 239: 650-663

facial schwannoma

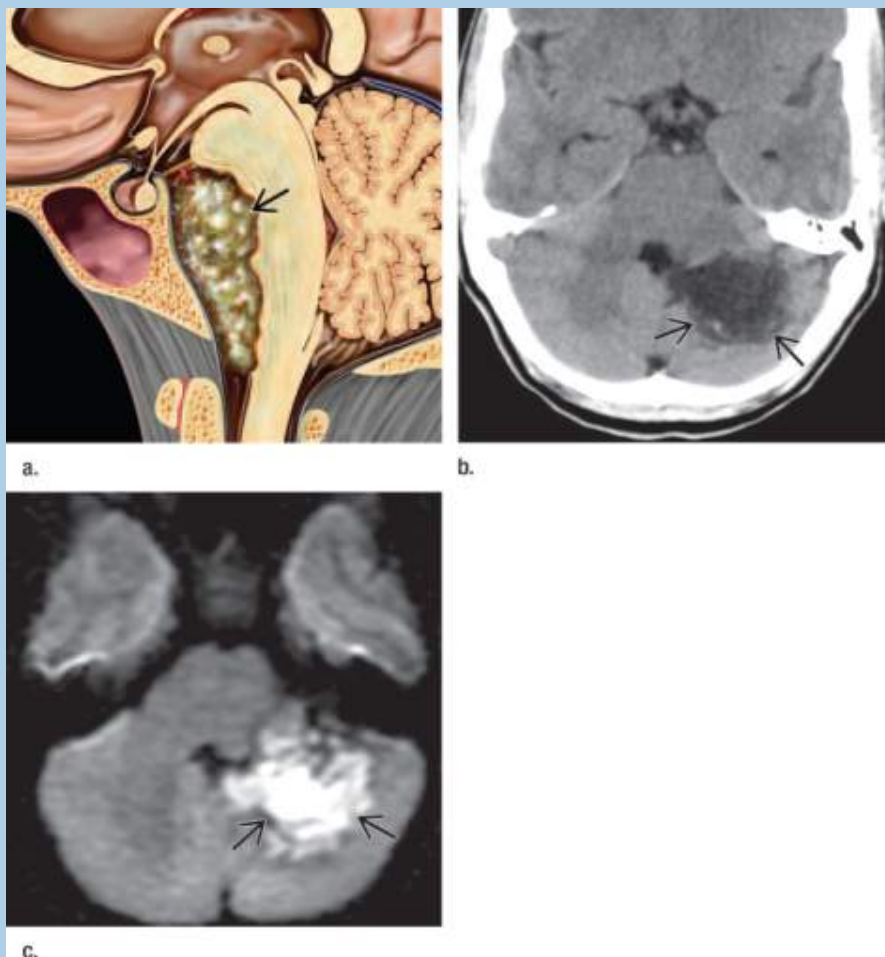


a.

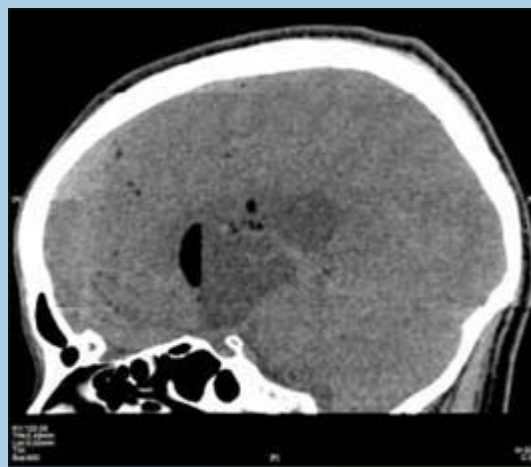
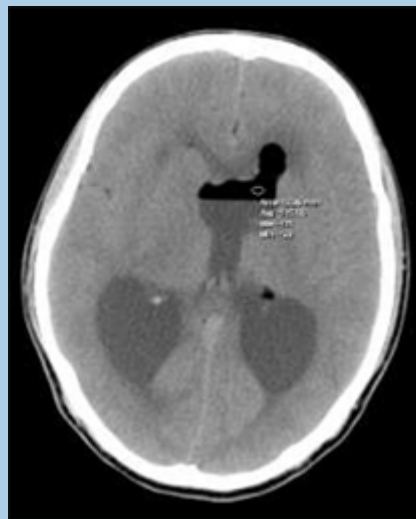
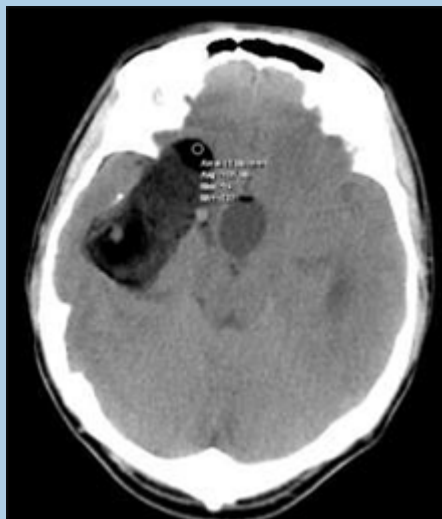


b.

表皮样囊肿(epidermoid cyst)

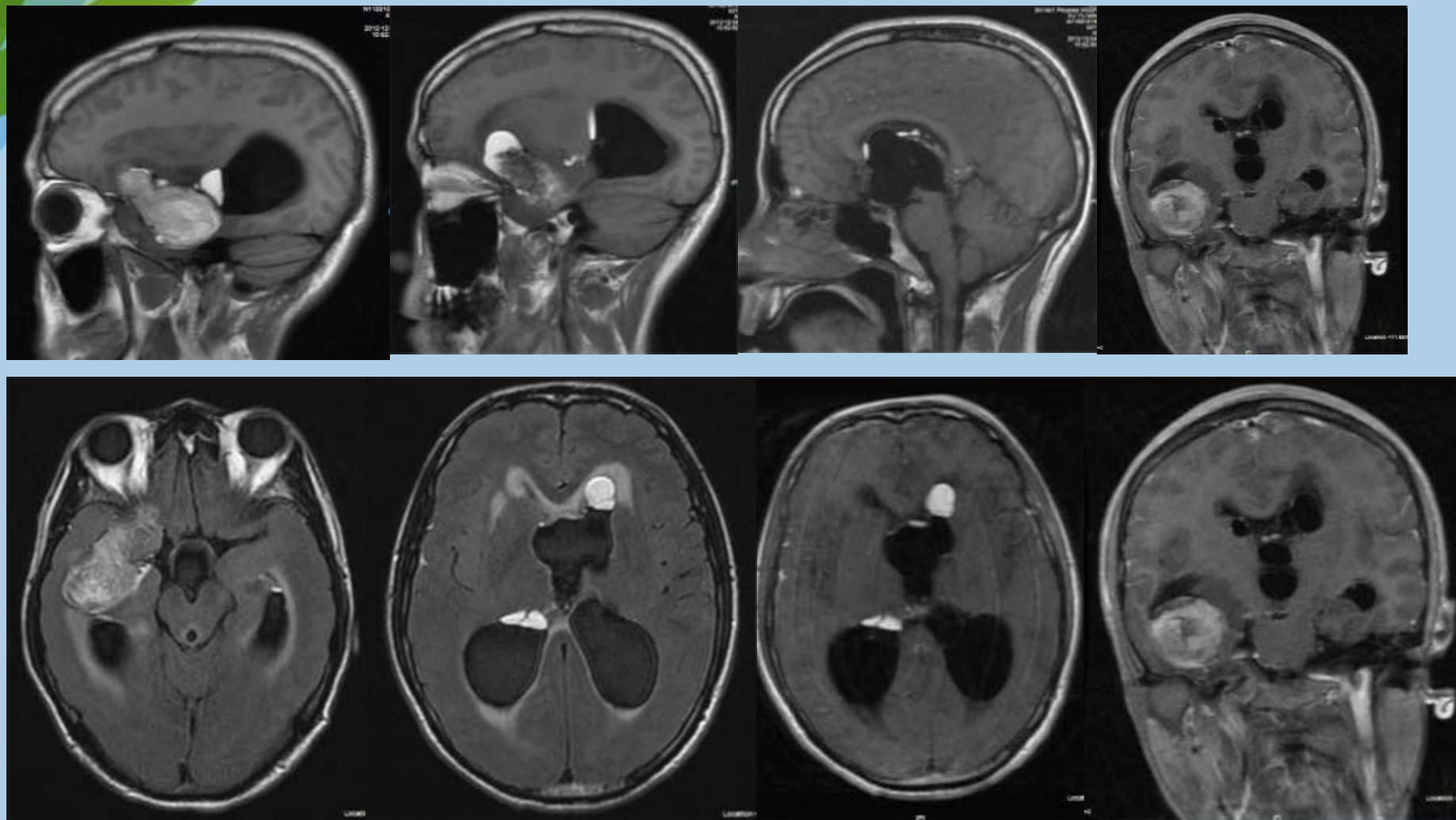


皮样囊肿 (dermoid syst)



手术证实皮样囊肿破裂

皮样囊肿 (dermoid syst)

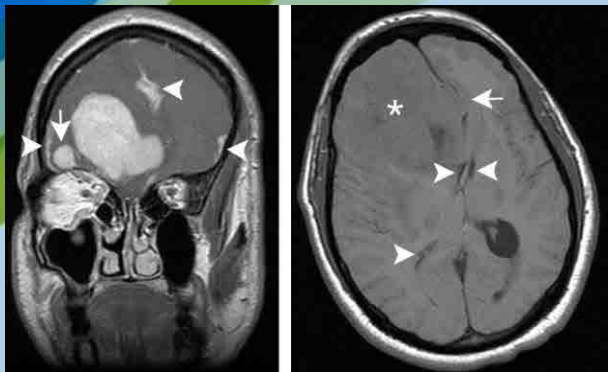


手术证实皮样囊肿破裂

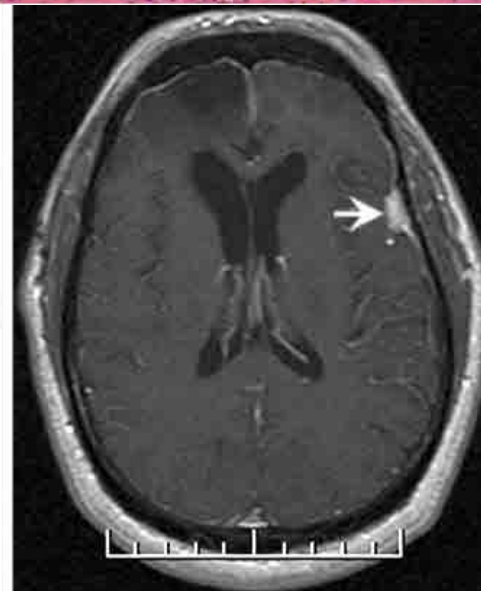
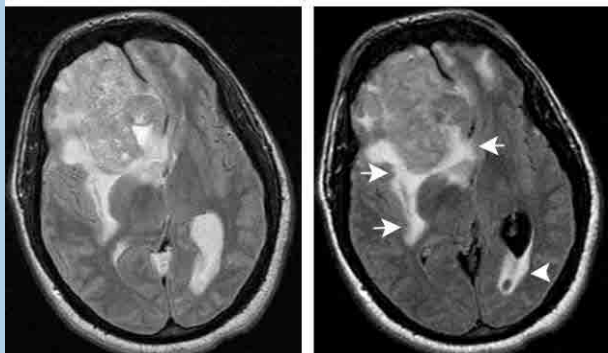
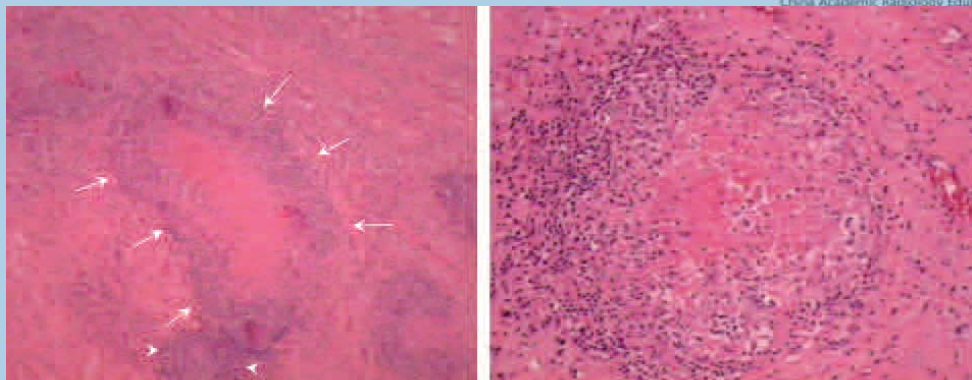
四、脑膜病理性强化常见原因

- 特发性颅内或脊髓硬脑膜炎 (Idiopathic cranial or spinal pachymeningitis)
- 颅内低压 (Intracranial hypotension)
- 自发性低血压 (Spontaneous hypotension)
- 脑脊液引流后颅内低压 (Hypotension occurring after spinal fluid drainage)
- 感染 (Infection)
- 莱姆病 (Lyme disease)
- 梅毒 (Syphilis)
- 结核分枝杆菌 (*Mycobacterium tuberculosis*)
- 霉菌感染 (Fungal infection)
- 囊虫病 (Cysticercosis)
- 人T淋巴细胞白血病 (Human T-cell lymphotropic virus I)
- 假单胞菌属引起的外耳坏死性炎症 (Malignant external necrotizing otitis caused by *Pseudomonas* species)
- 系统性自身免疫性疾病或血管炎 (Systemic autoimmune diseases and vasculitides)
- 韦格纳肉芽肿病 (Wegener granulomatosis)
- 风湿性关节炎 (Rheumatoid arthritis)
- 结节病 (Sarcoidosis)
- 肖格伦综合征 (Sjogren syndrome)
- 颞动脉炎 (Temporal arteritis)
- 手术后 (post-operation)83%
- 蛛网膜下腔出血后(post-SAH)
- 腰穿刺后 (post-lumber puncture)5%

四、脑膜病理性强化的常见病因



1. 2a.



特发性肥厚性硬脑脊膜炎, RadioGraphics 2005; 25:1075-1080

属于一种不明原因的炎症性疾病,

四、脑膜病理性强化的常见病因

弥漫性硬脑膜或硬膜-蛛网膜强化

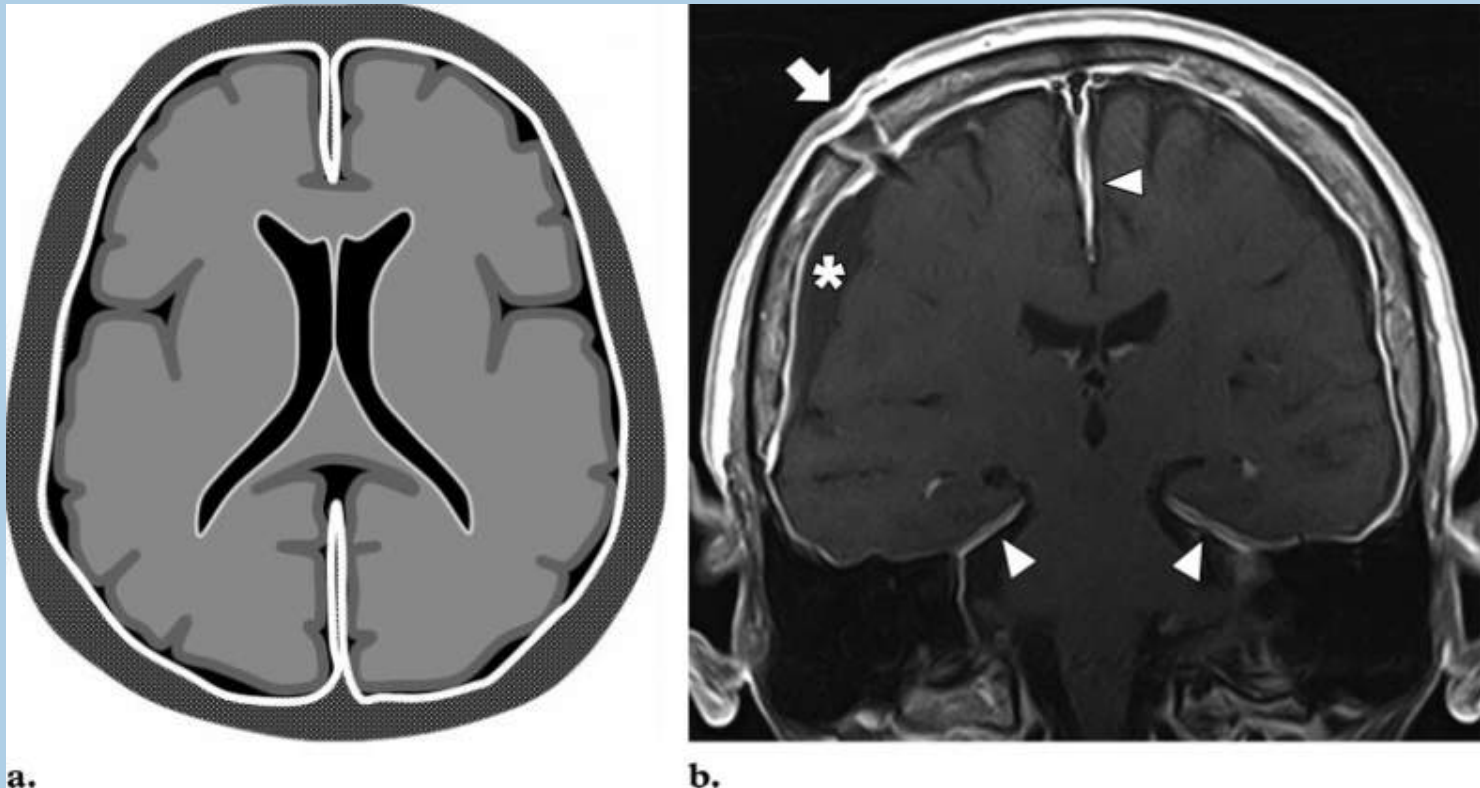
(Pachymeningeal or Dura-Arachnoid Enhancement)

因为硬脑膜内的血管不形成血脑屏障，内源性或外源性物质，如血清蛋白，纤维蛋白原，含铁血黄素容易漏进或漏出正常的硬脑膜。

RadioGraphics 2007; 27:525-551

四、脑膜病理性强化的常见病因

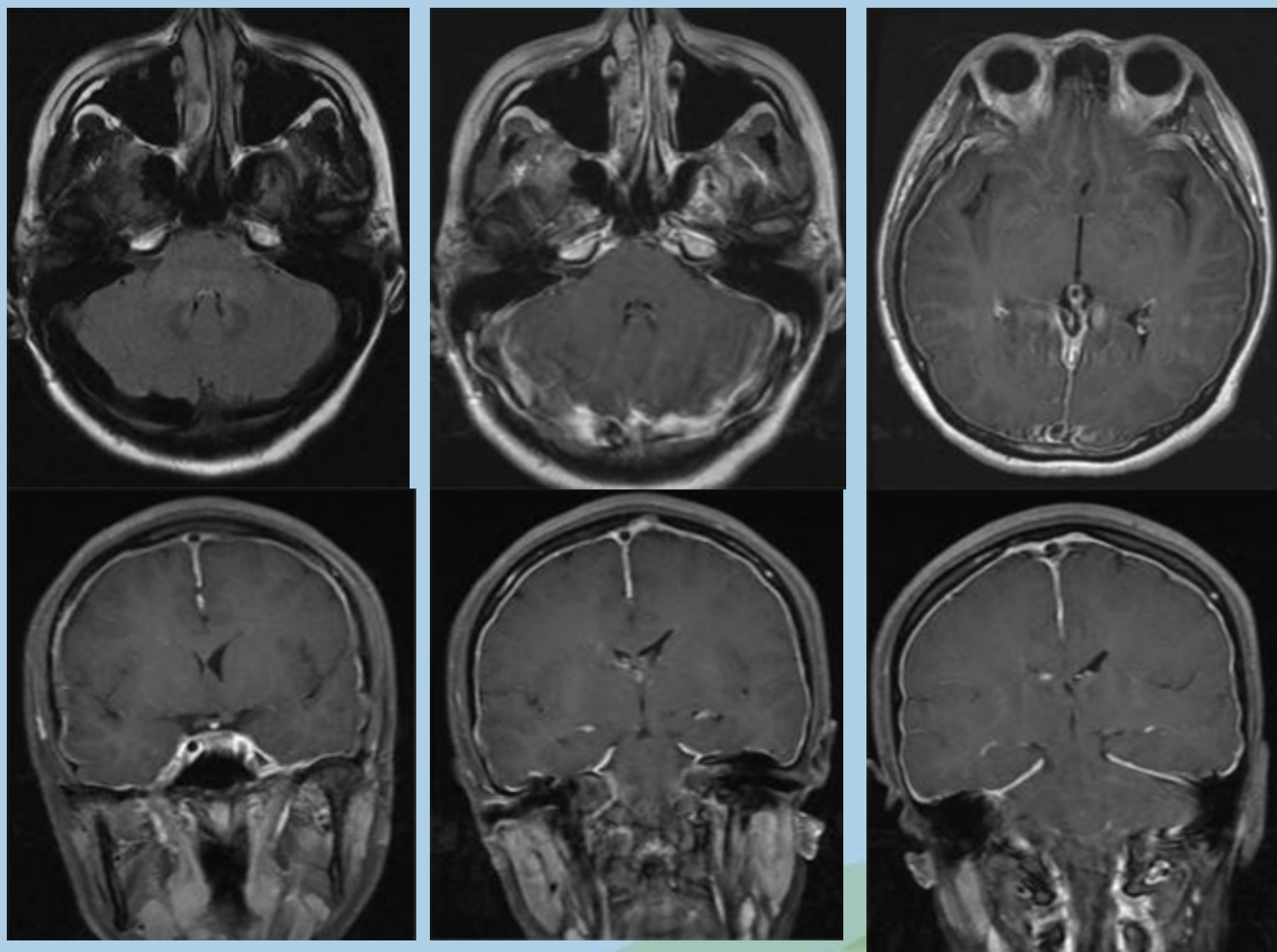
手术后脑膜强化大多数表现为硬膜-蛛网膜型或软膜-蛛网膜型



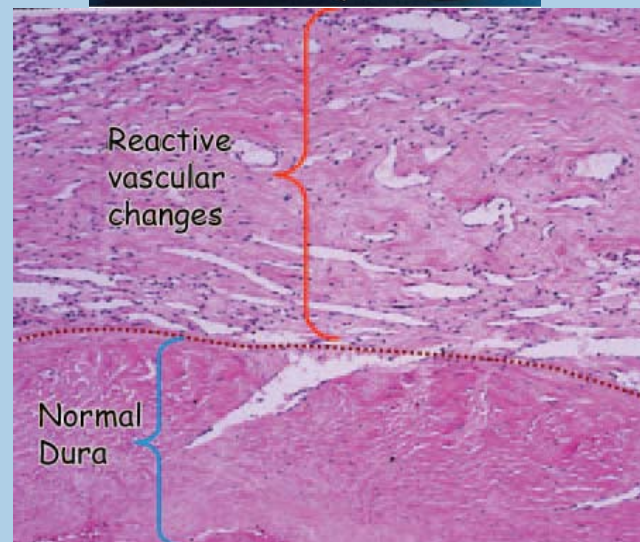
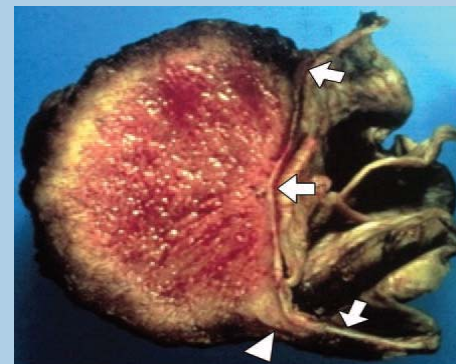
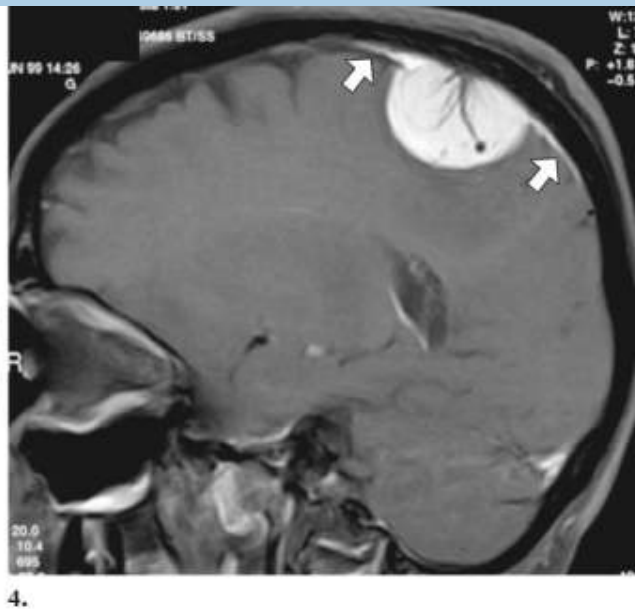
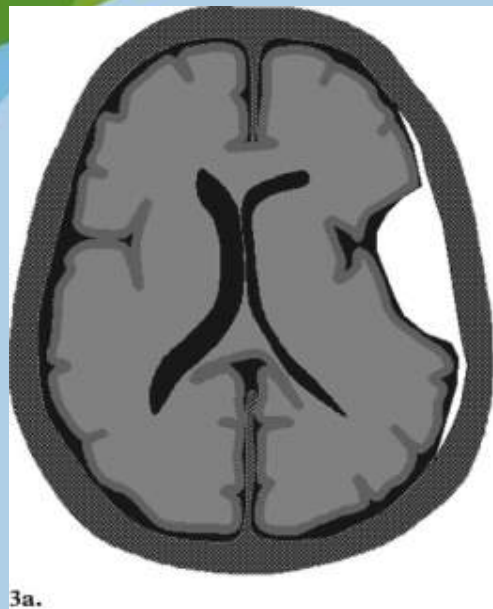
Pure dural enhancement, without pial or subarachnoid involvement, will not fill in the sulci or basilar cisterns.

低颅压综合征

脑脊液压力下降，可以是继发于蛛网膜下腔静脉内容量增加，导致静脉充血，硬脑膜间质水肿。



脑膜瘤引起的硬脑膜强化

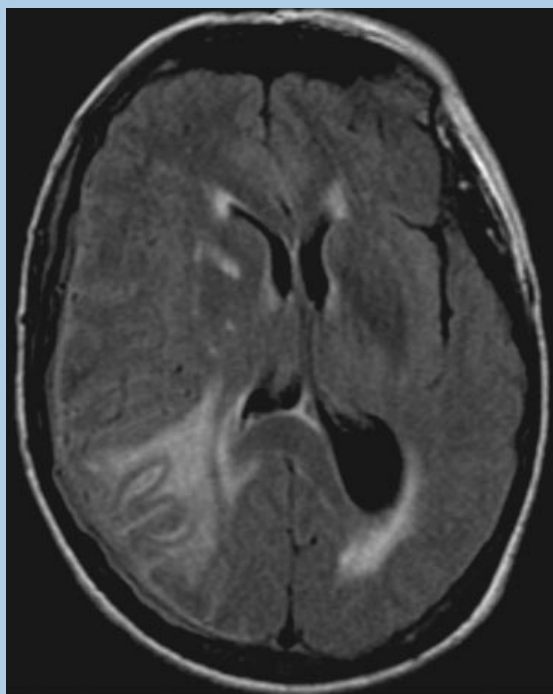


(HE染色x 250)，下部正常脑膜含有大量胶原纤维，上部脑膜瘤临近的硬脑膜组织反应性血管充血，连接组织疏松，血管内血流缓慢，硬脑膜水肿。

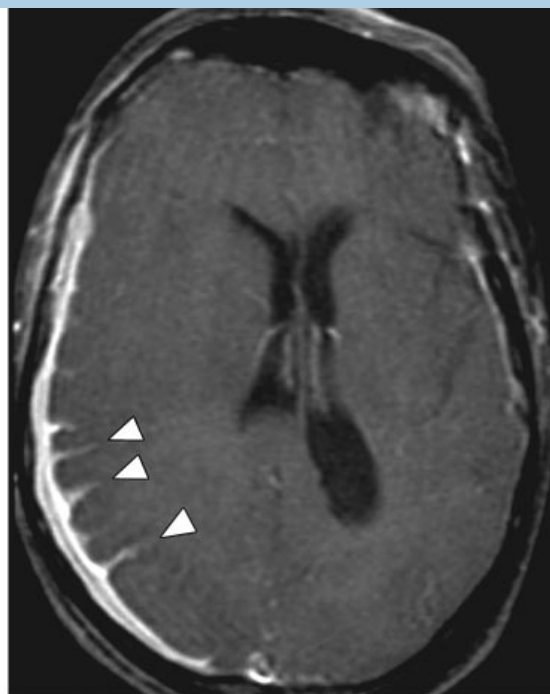
软脑膜型—软脑膜-蛛网膜型强化

软脑膜深入到脑沟或蛛网膜下腔

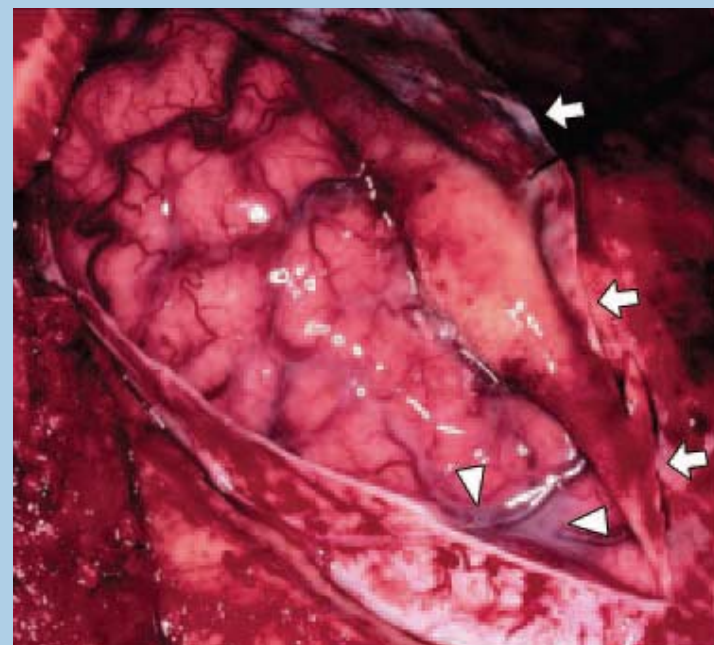
(Mixed pachymeningeal and leptomeningeal enhancement in dural lymphoma)



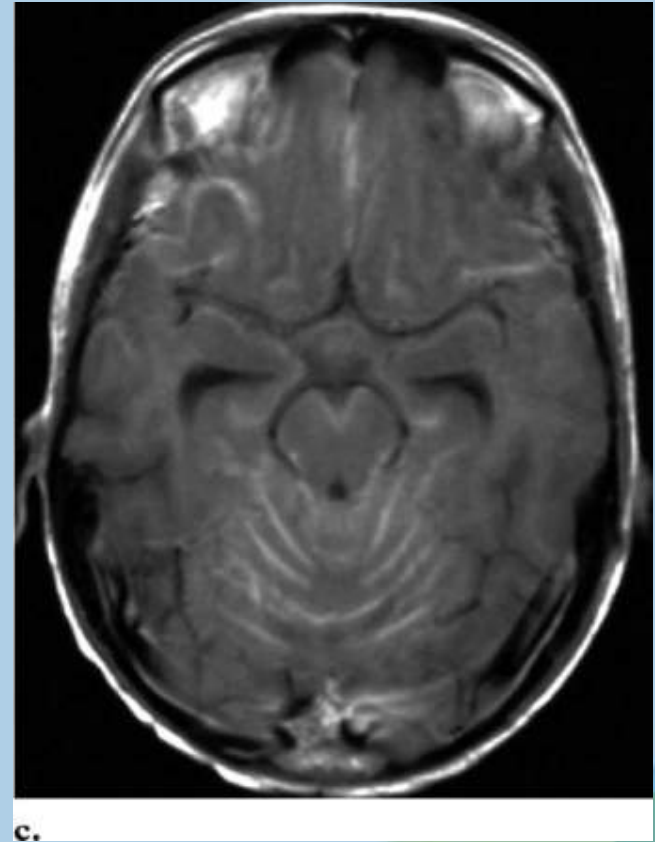
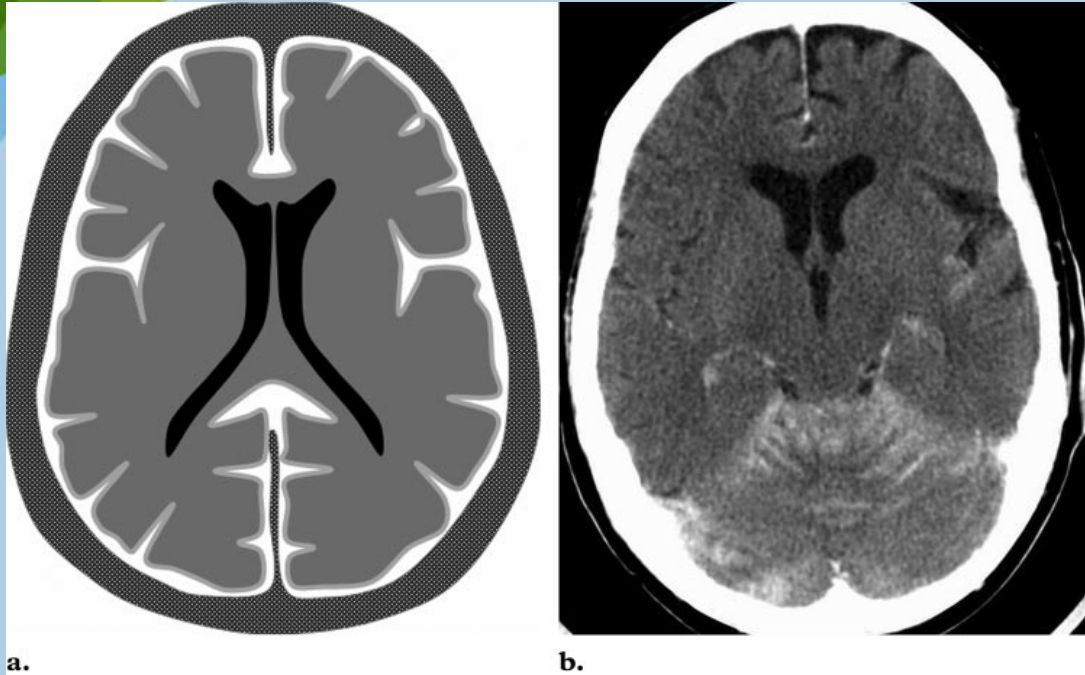
6a.



6b.

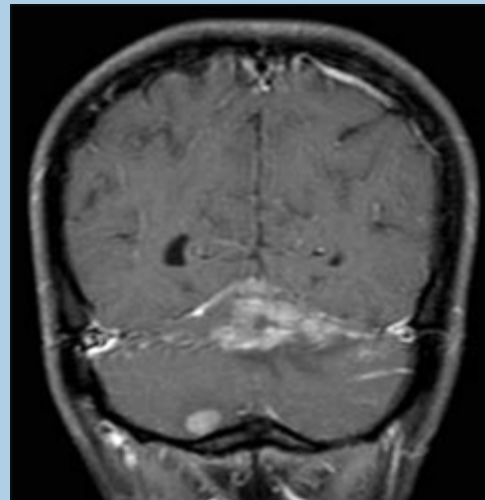
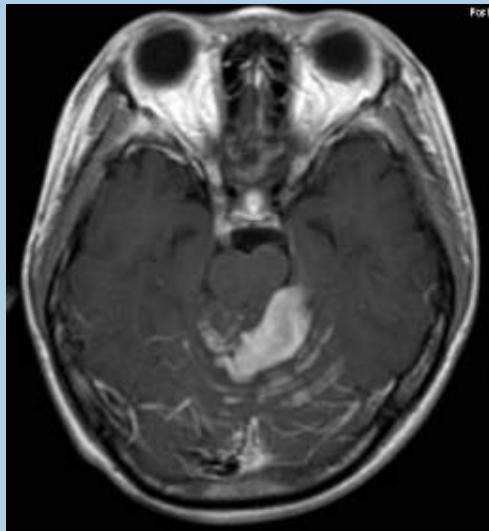
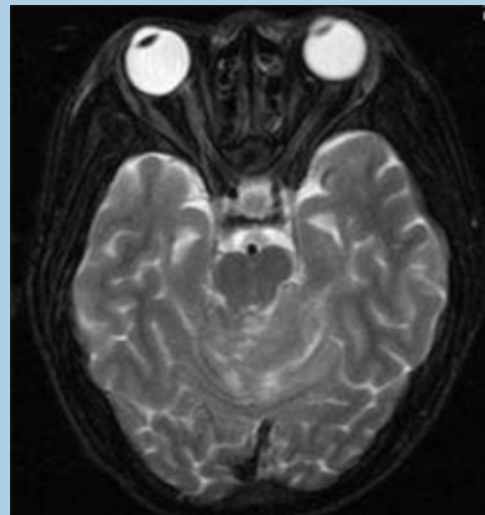
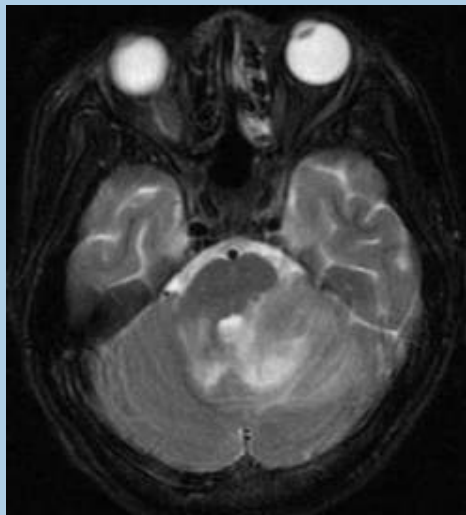


癌性脑膜炎



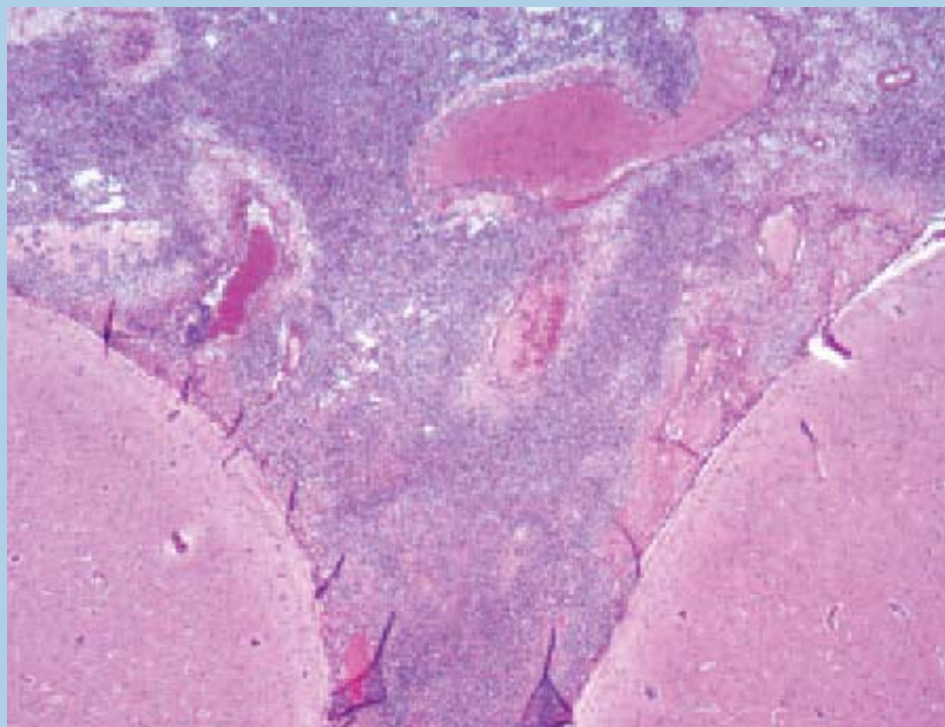
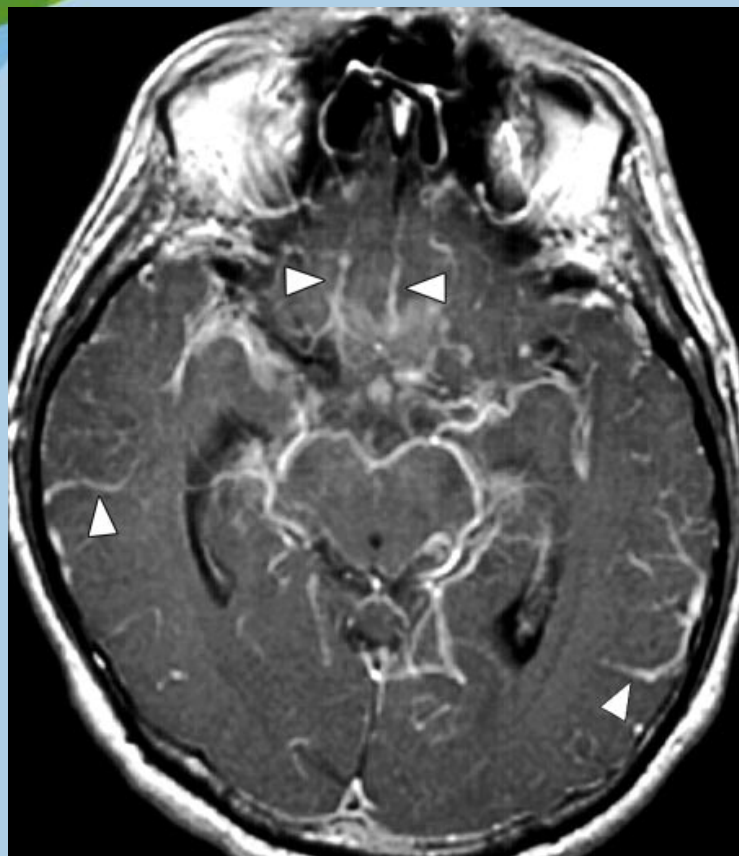
Pia-arachnoid leptomeningeal enhancement

非何杰金氏淋巴瘤转变为白血病，干细胞移植术后5m



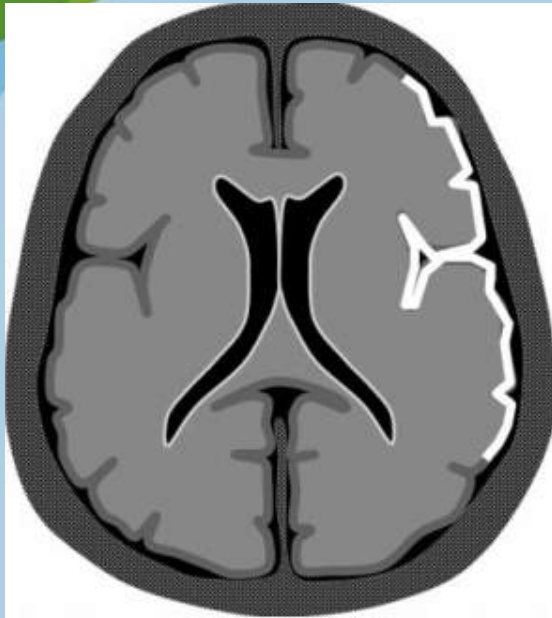
细菌或病毒性脑膜炎

a. 脑膜无血脑屏障, b. 细菌释放糖蛋白及分解产物进入蛛网膜下腔

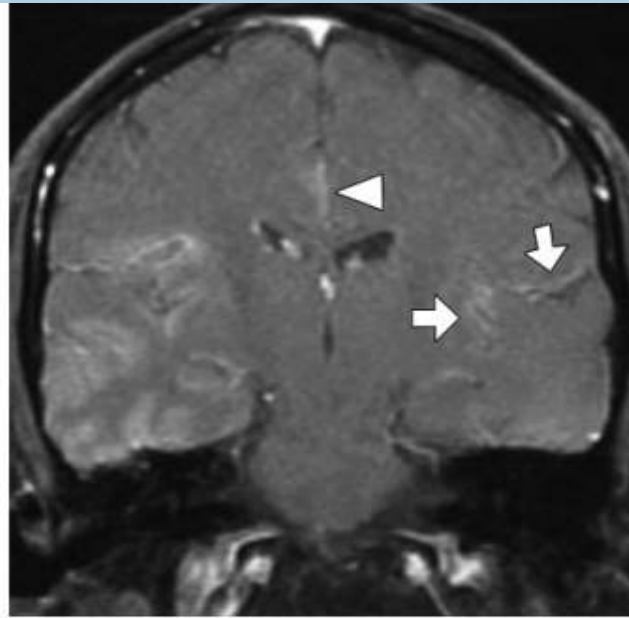


肺炎链球菌脑炎, HE X400

病毒感染



a.



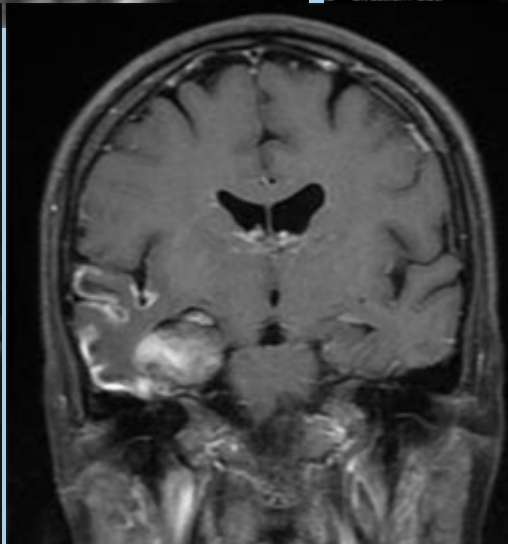
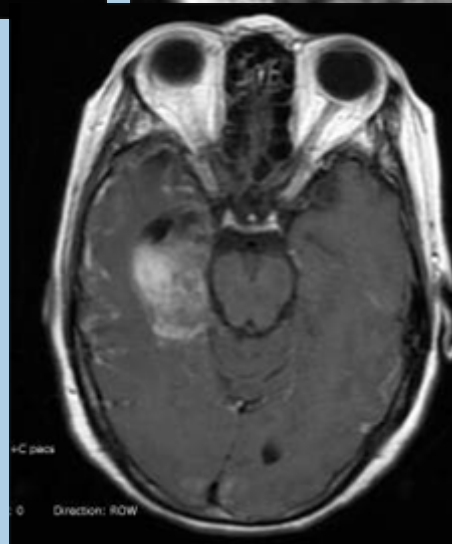
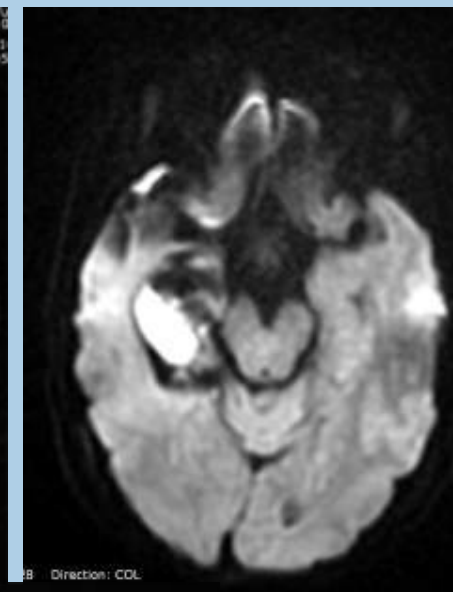
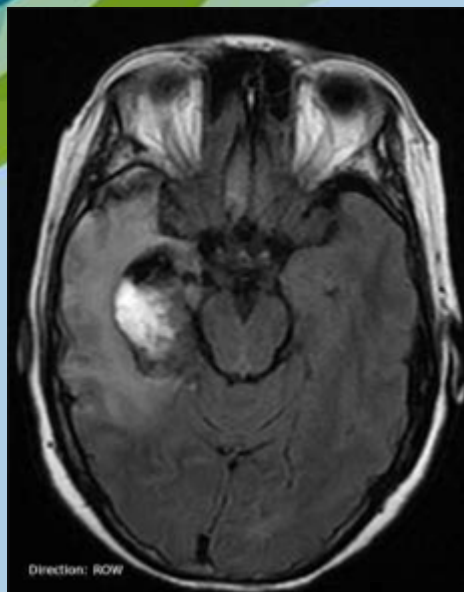
b.



单纯性疱疹脑炎

RadioGraphics 2007; 27:525-551

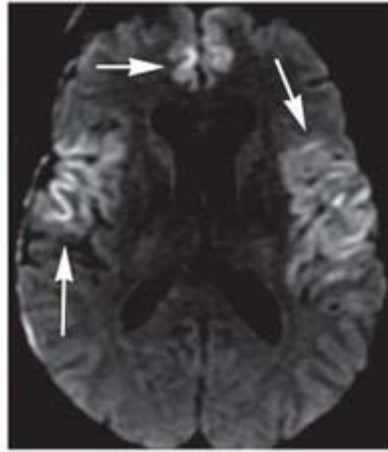
单纯疱疹病毒脑炎



脑囊虫病



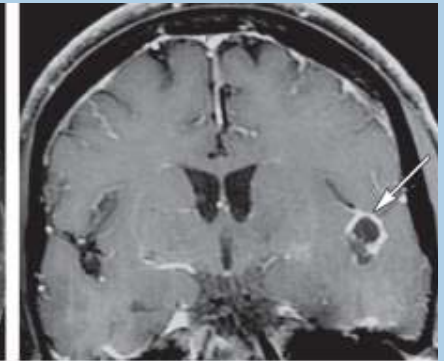
13a.



13b.



2a



12b

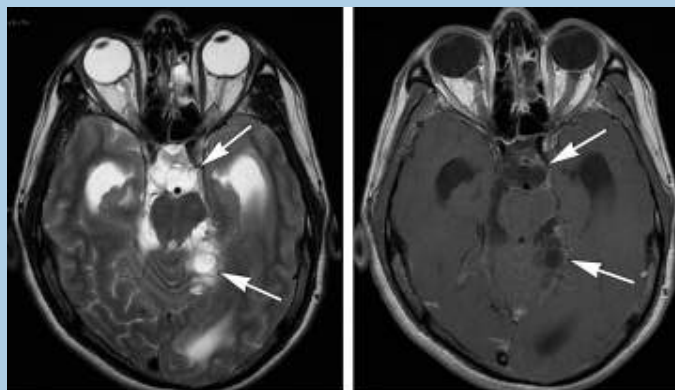


13c.

Vasculitis due to subarachnoid colloidal vesicular neurocysticercosis in a 68-year-old man with seizures

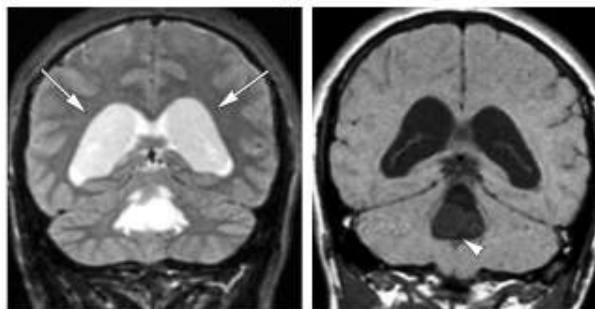
MR image shows focal zones of enhancement in the left temporal subarachnoid space (large arrows) representing arachnoiditis,

脑囊虫病



14a.

14b.



15a.

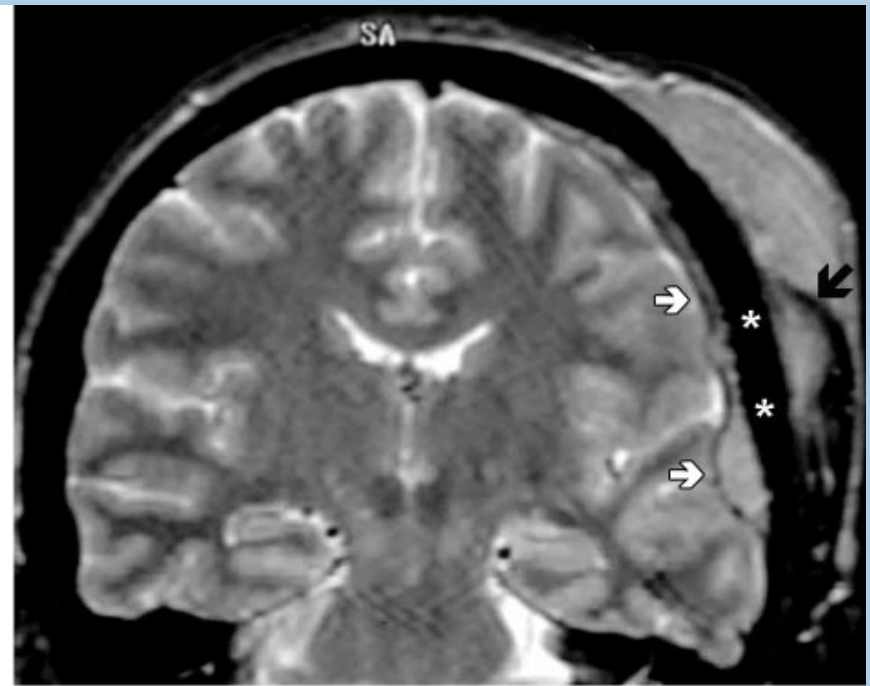
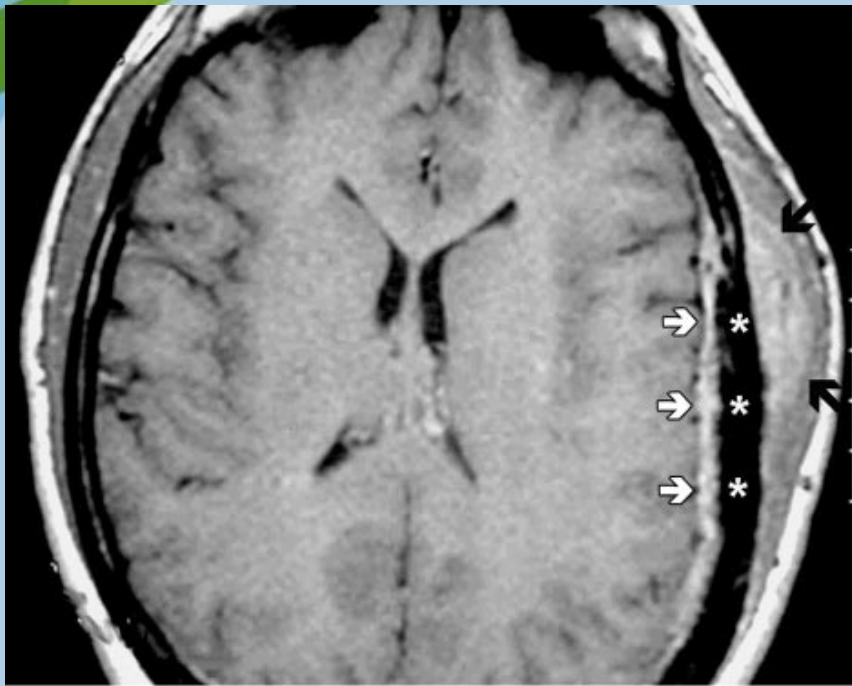
15b.

Arachnoiditis due to colloidal vesicular neurocysticercosis



16.

非何杰金氏病



a.

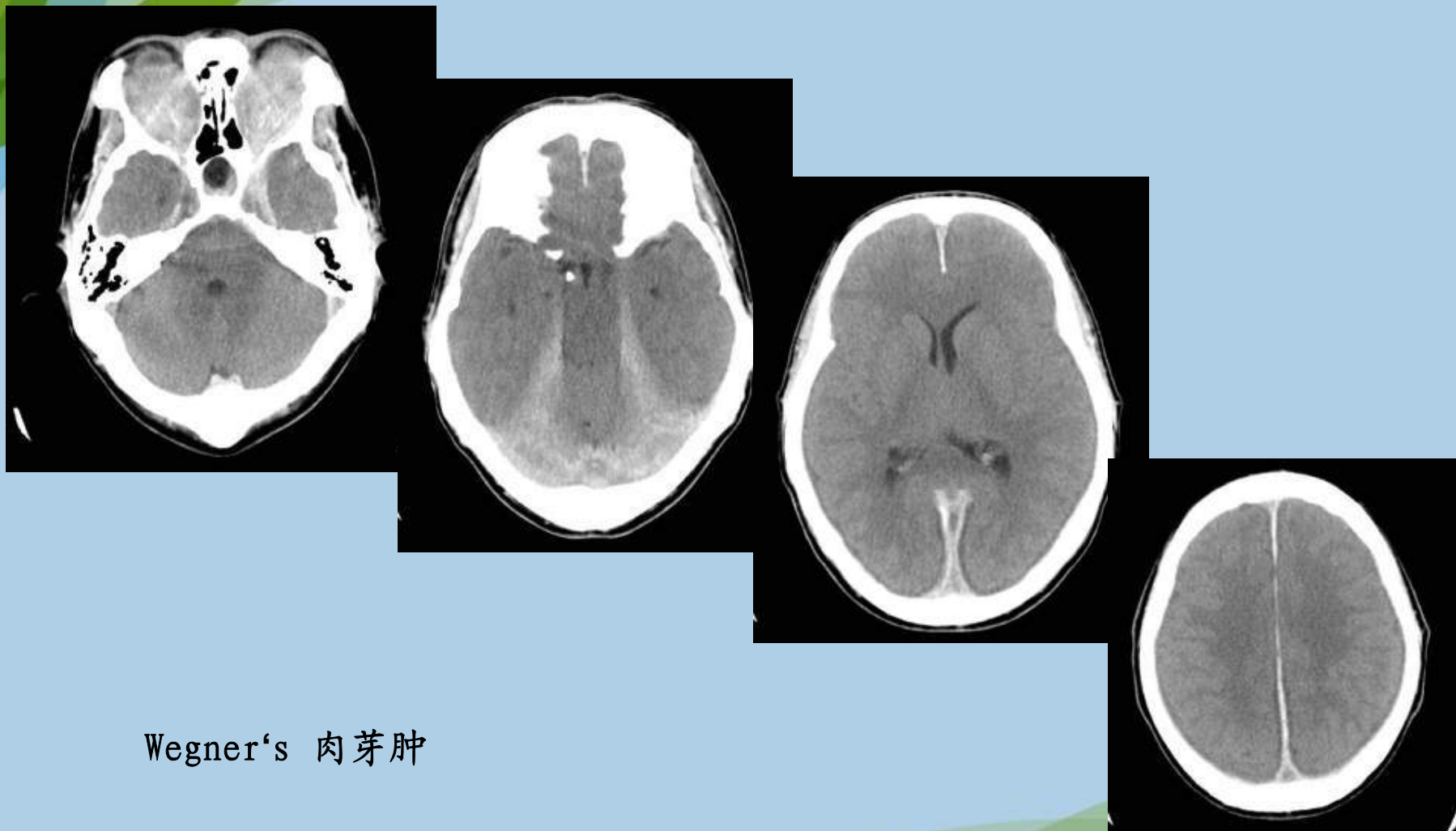
b.

Non-Hodgkin lymphoma with transcalvarial infiltration in an 18-year-old man with a left-sided calvarial mass and no other symptoms.

Wegener 肉芽肿

Wegener肉芽肿可以侵犯脑及脑膜，中枢神经形态3种形式，a. 血管炎，b. 临近结构直接侵犯，如鼻腔，副鼻窦，眼眶等。镜下含淋巴细胞，浆细胞，组织细胞，巨噬细胞等浸润。Radiology
1999; 213: 794-799

硬膜-蛛网膜模型

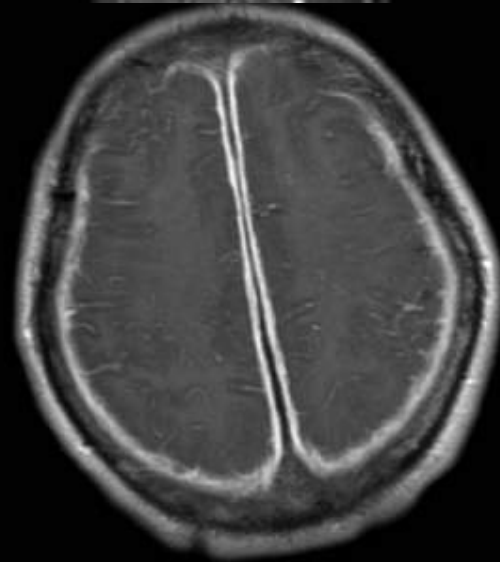
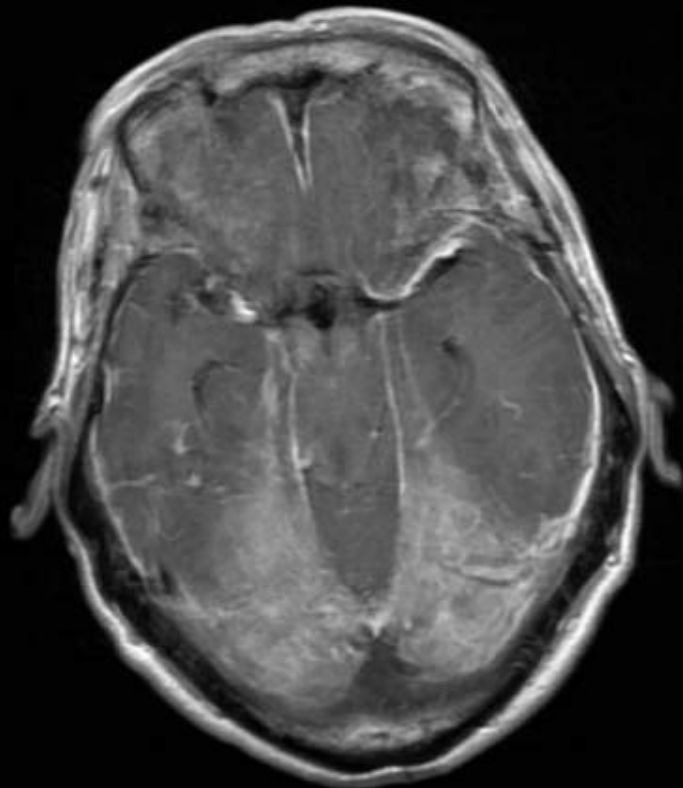
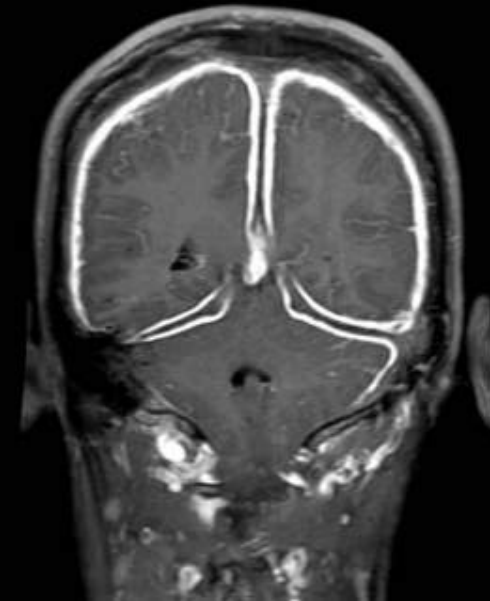
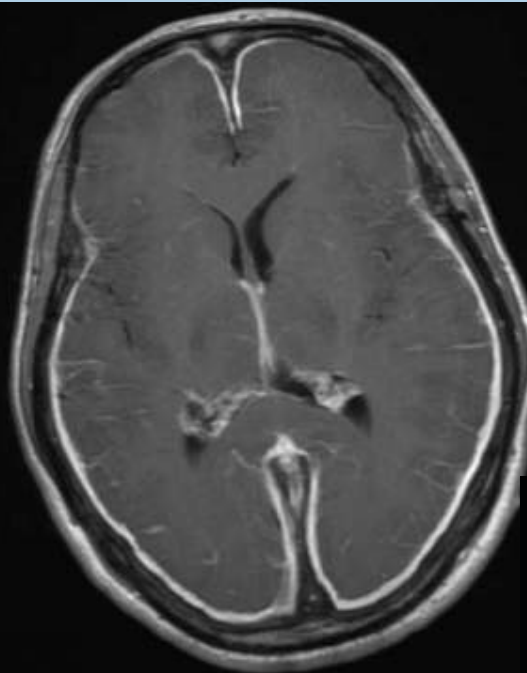
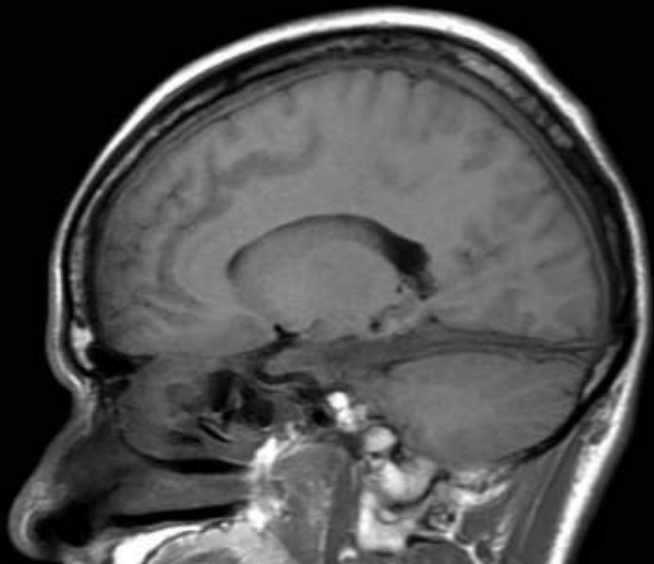


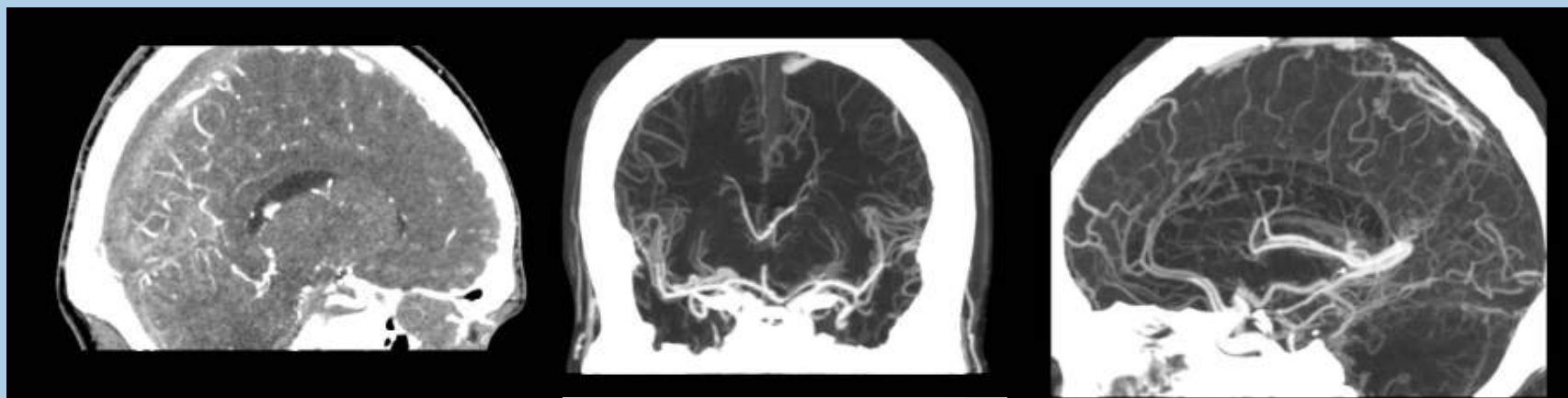
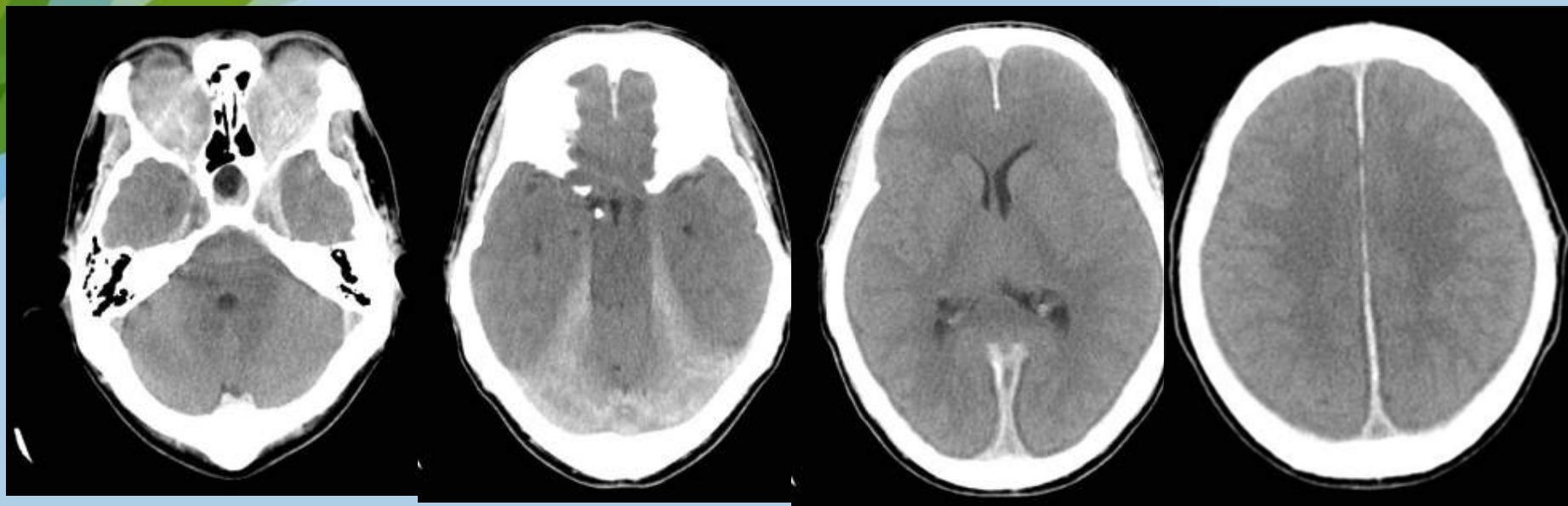
Wegner's 肉芽肿

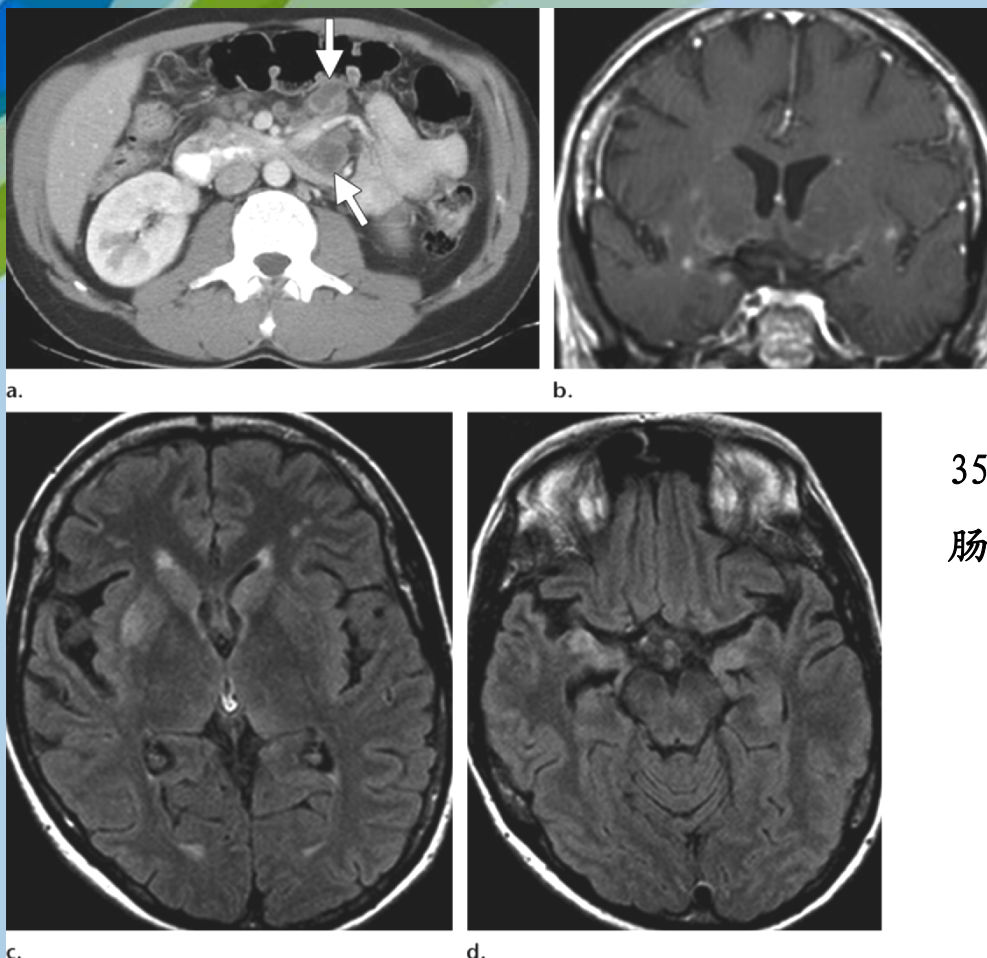
硬膜-蛛网膜模型

Wegner's 肉芽肿

[H]







35 y 男

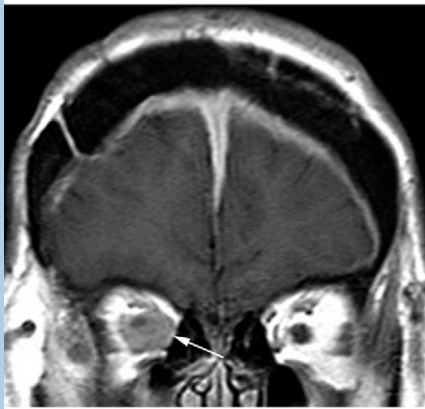
肠脂肪肉芽肿病 (Whipple disease)

a enhanced CT shows mesenteric lymphadenopathy (arrows), which has a mixed soft-tissue and fatty appearance. **b** enhanced T1WI shows an area of patchy nodular enhancement involving the temporal lobes, insular cortex, and lenticulostriate vessels. **c**, **d** **FLAIR** shows atrophy or gliosis involving the right mesial temporal lobe and an area of high signal intensity in the right putamen and left mesial temporal lobe, findings typical of Whipple disease in the brain.

Erdheim-Chester Disease



a.

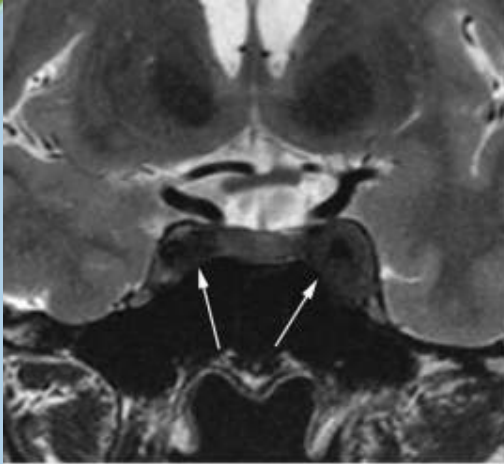


b.

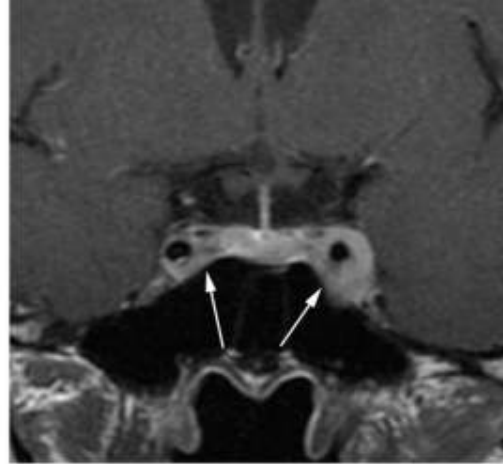
是一种病因不明罕见的非郎格罕组织细胞增生症，以泡沫样细胞侵犯组织形成脂质肉芽肿为主要特点。常侵犯骨骼，也可累及骨骼外组织，如眼眶，副鼻窦及颅底，颅脑等。现今世界范围内约有330多例报告。好发于50岁左右，男性略多。

Radiology 2010;255:586-594

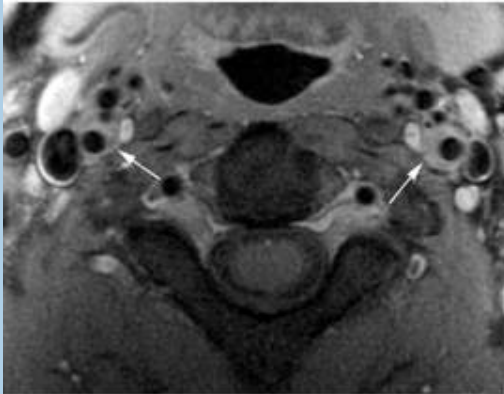
Erdheim-Chester Disease



b.

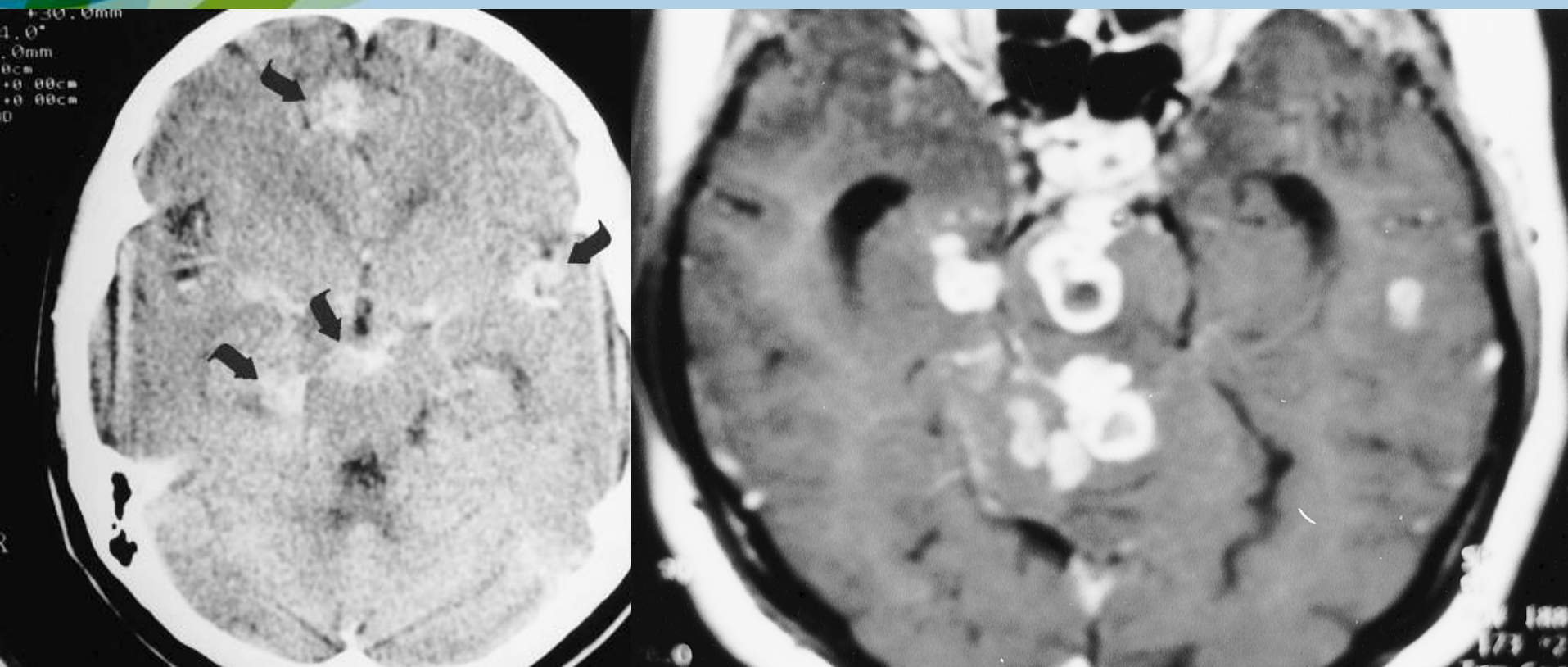


c.



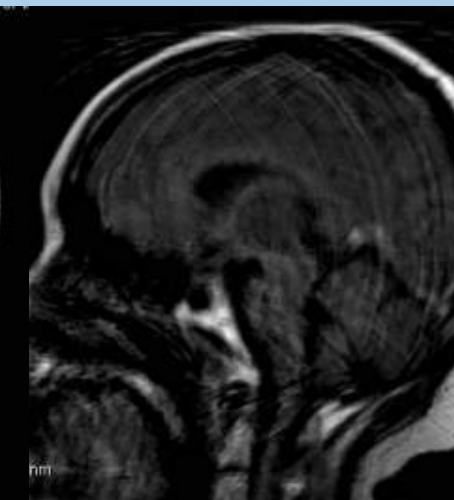
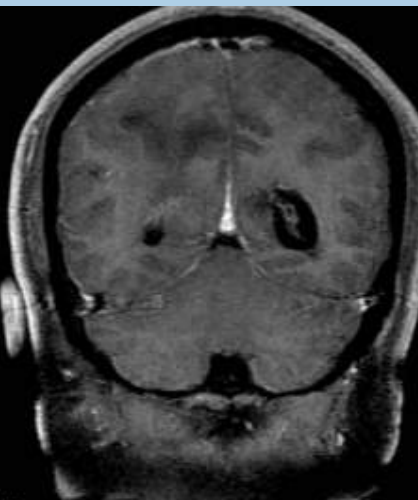
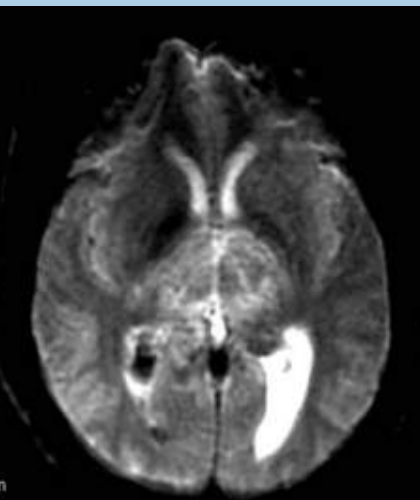
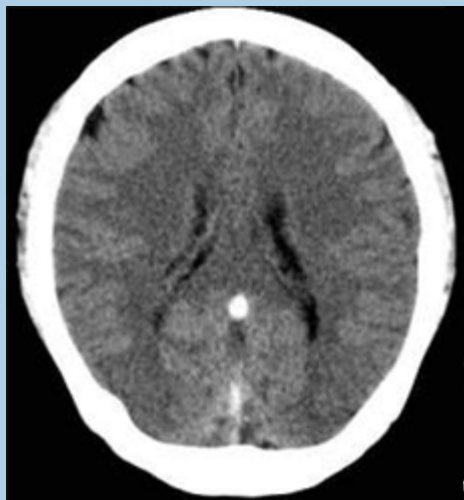
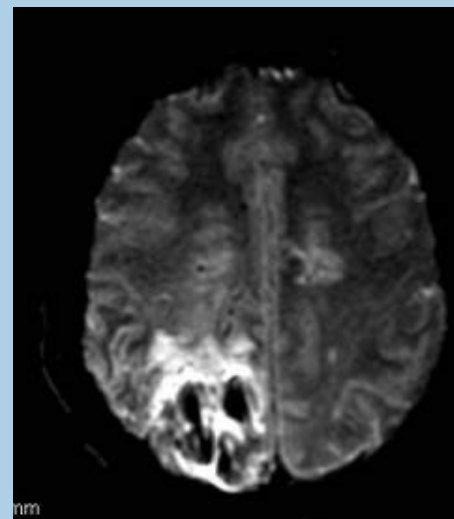
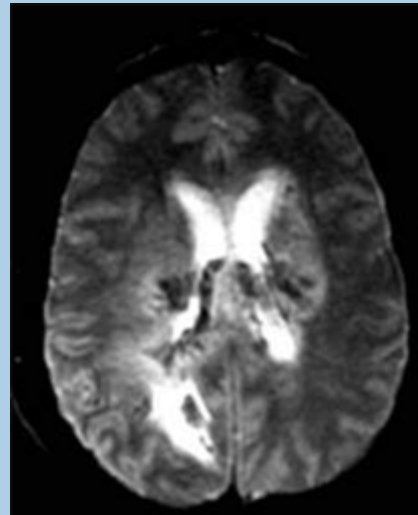
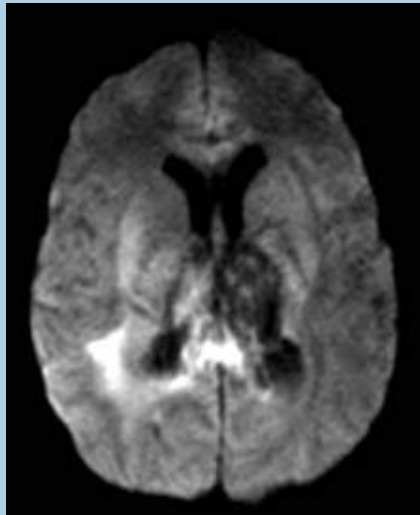
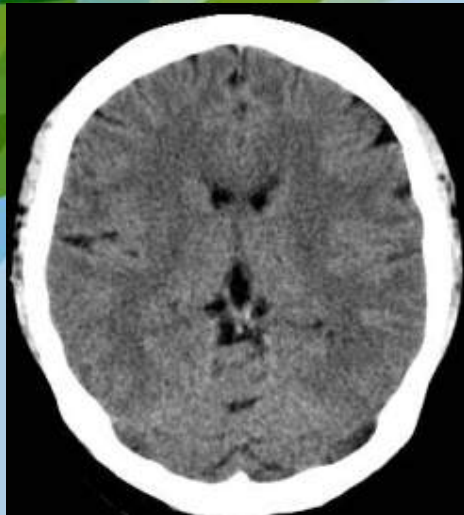
a.

MR images obtained in asymptomatic 51-year-old man with ECD.

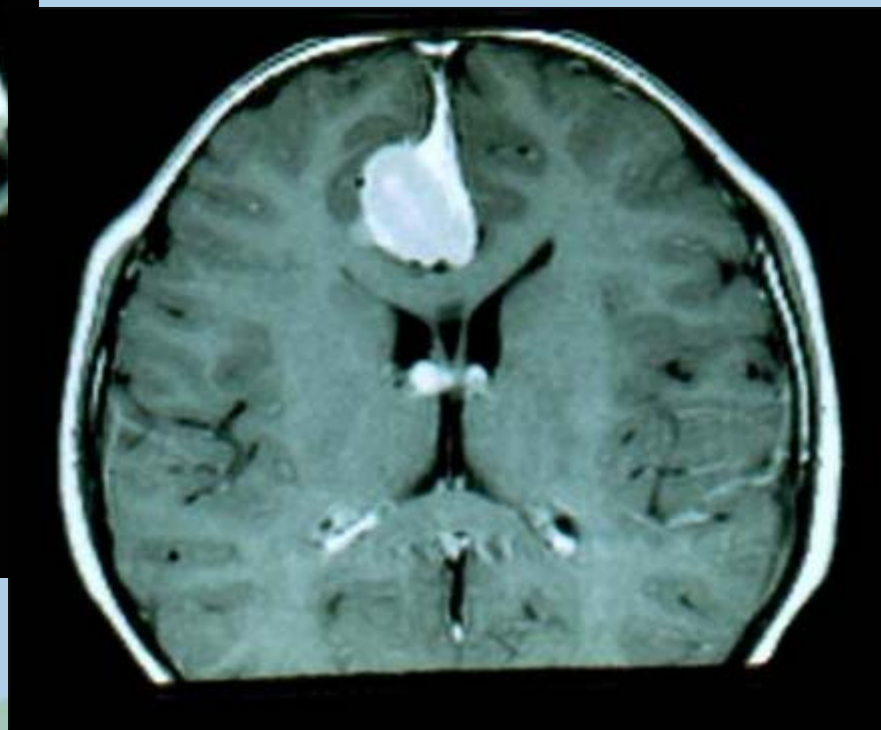


Parenchymal tuberculosis in a 28-year-old woman.
RadioGraphics 2000; 20:471–488

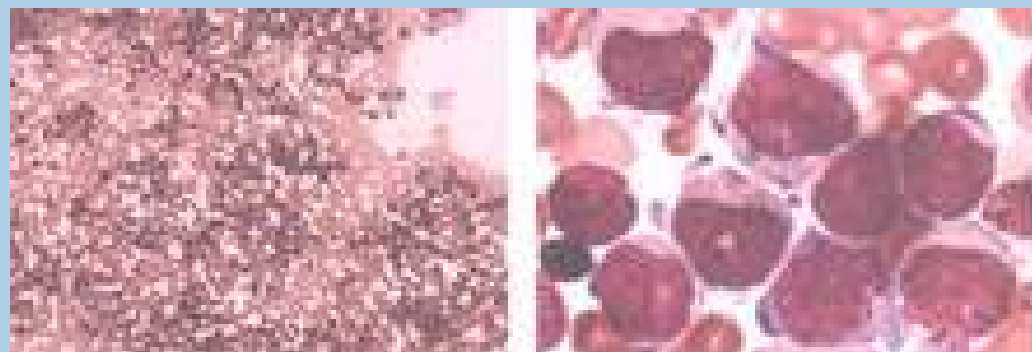
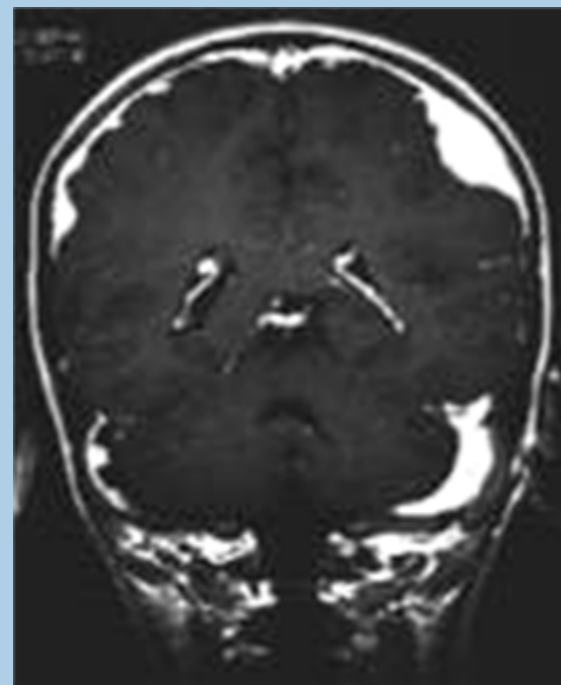
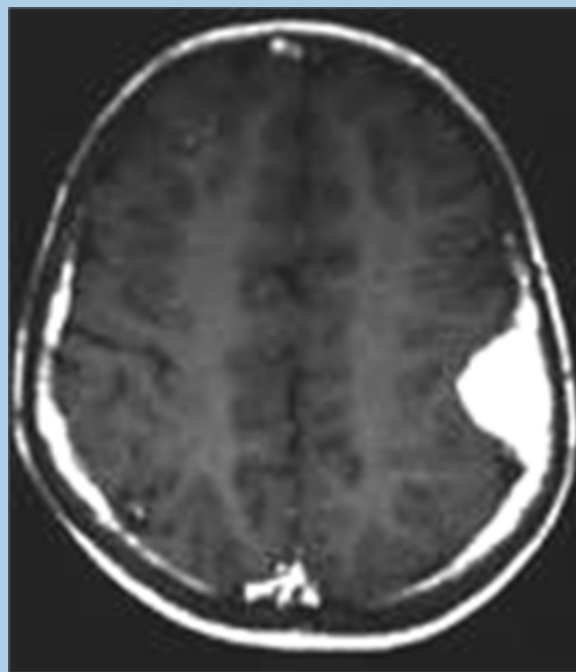
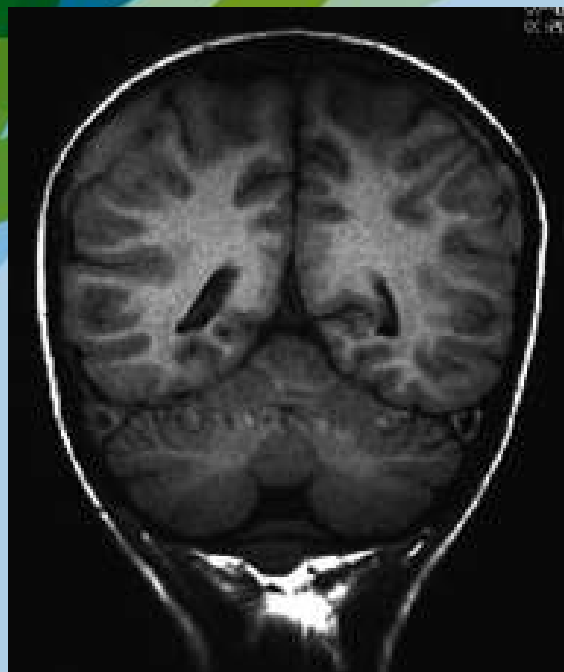
直窦血栓形成



多发性脑膜瘤

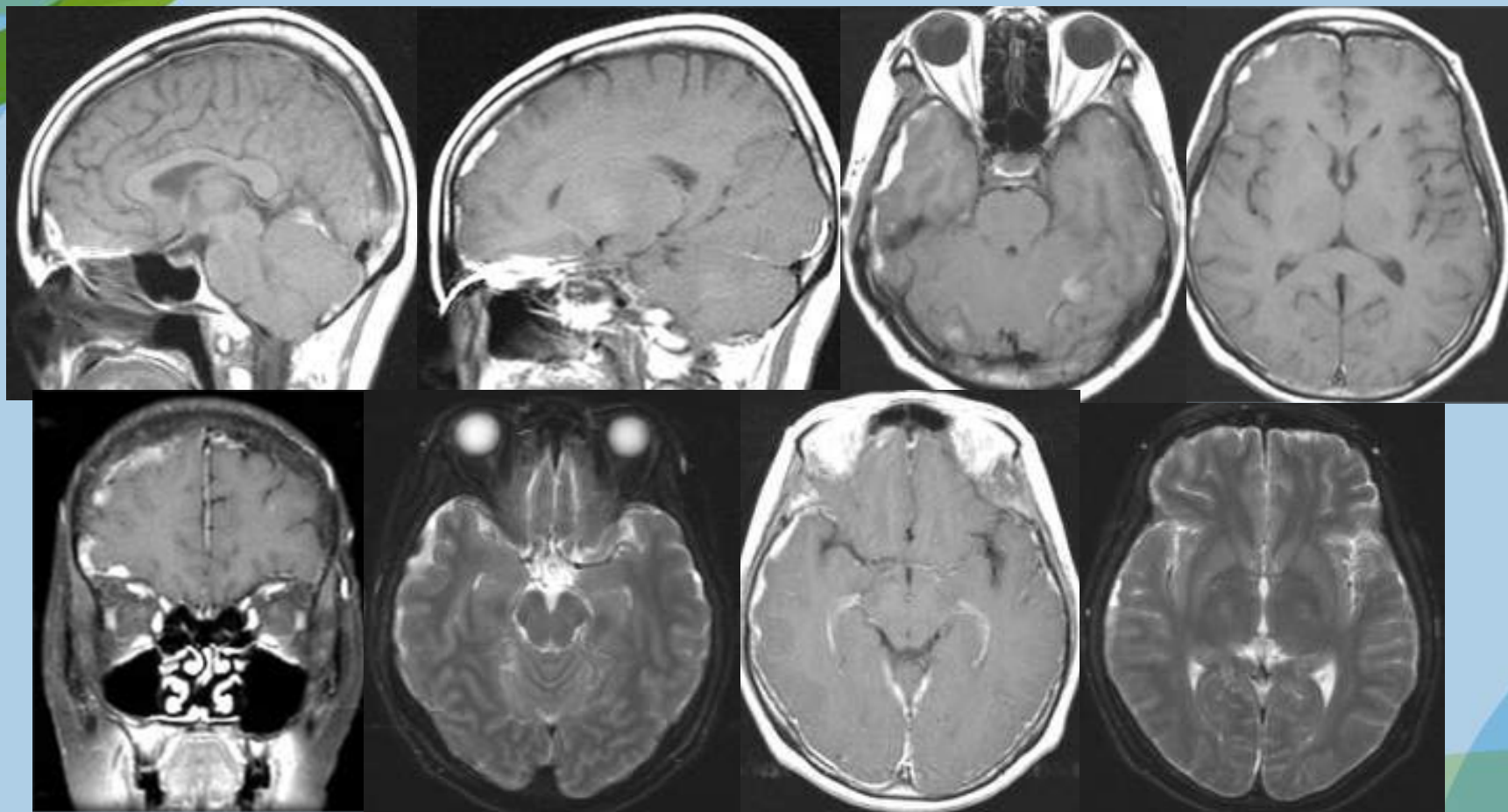


男 5, 近来头痛剧烈

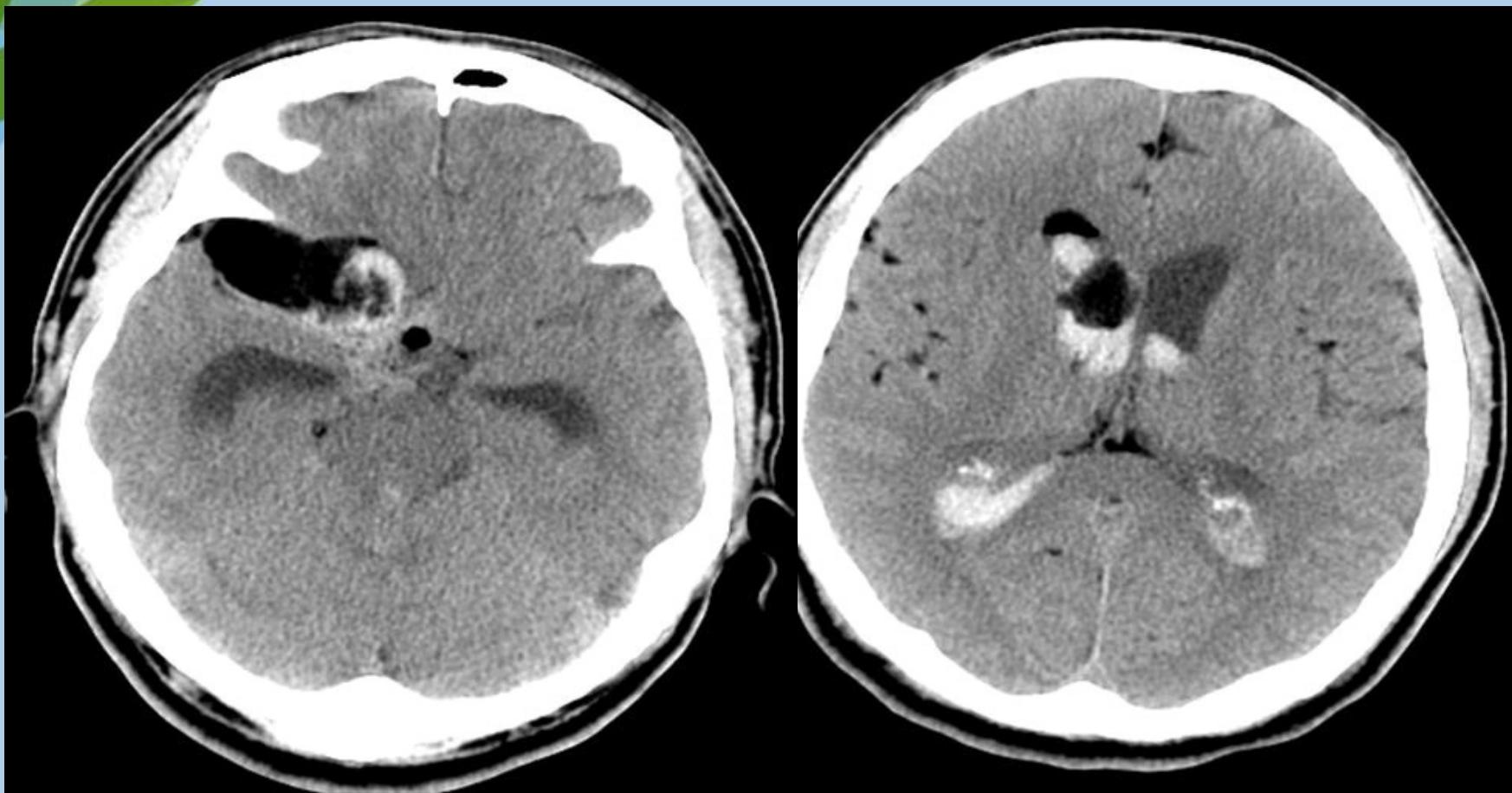


骨髓穿刺涂片

外伤导致蛛网膜下腔出血

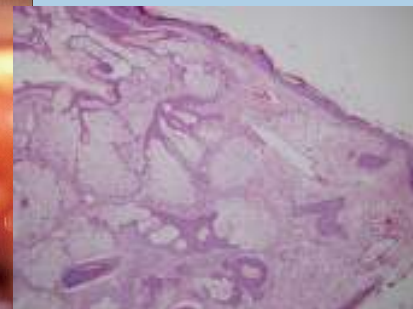
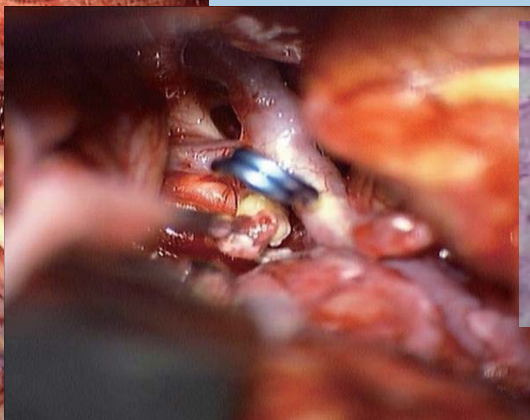
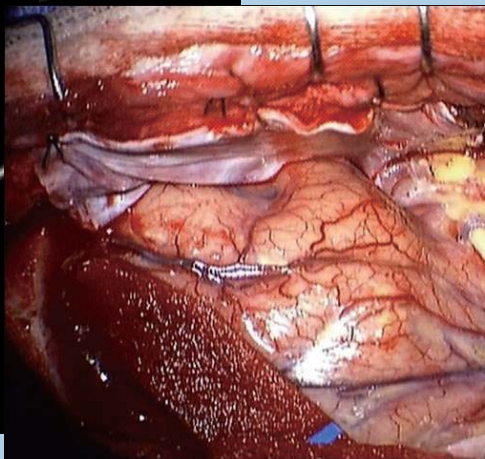
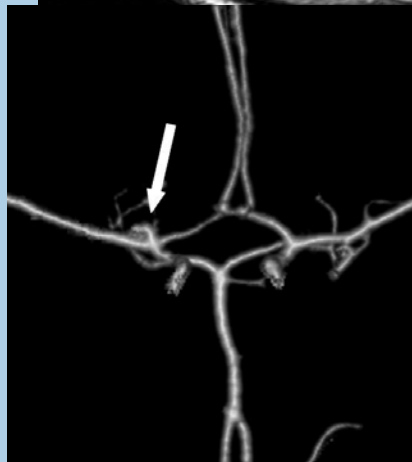
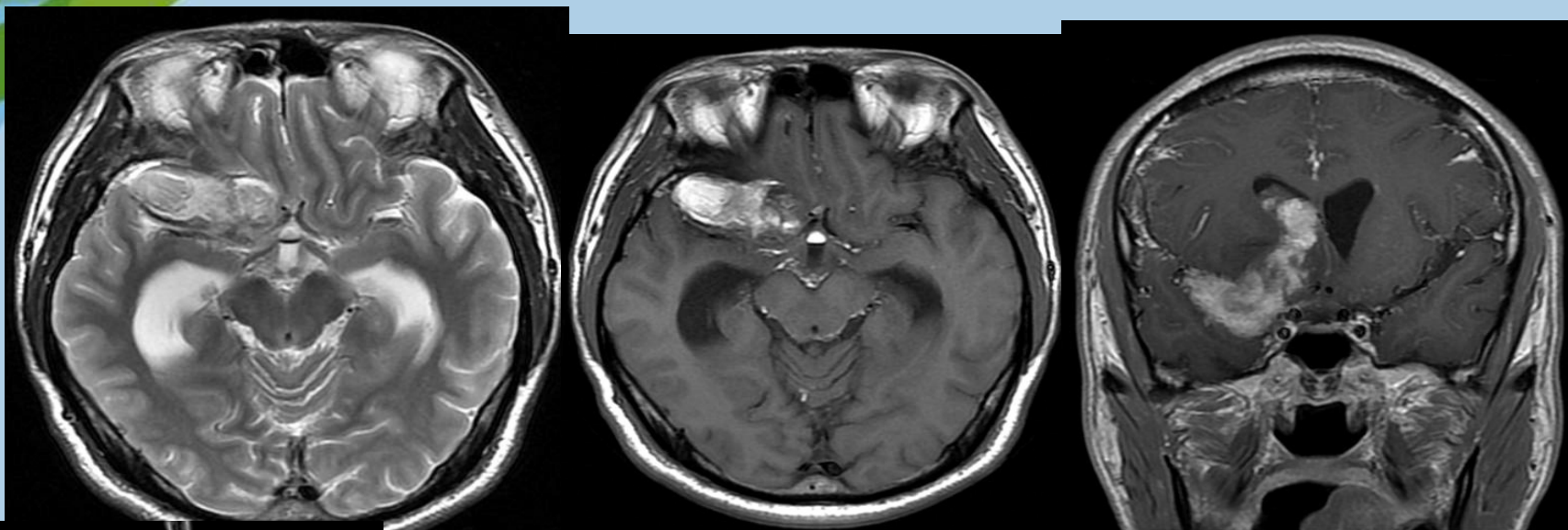


骨穿证实白血病-- AML



男性 51岁，突发剧烈头痛伴意识丧失入院，没有局部体征，既往无高血压病史，无糖尿病史。

MRI 和CTA 手术下所见 及病理切片



Ruptured Intracranial Dermoid Cyst Associated with Rupture of Cerebral Aneurysm .

Korean Neurosurg Soc 50 : 453-456, 2011

报道许多脑肿瘤与动脉瘤同时存在，然而颅内皮样囊肿伴动脉瘤的非常罕见，该文报道颅内皮样囊肿破裂伴动脉瘤破裂。

RadioGraphics 2012; 32:667–681

Intracranial arterial aneurysms (IAAs) account for at least 10%–15% of hemorrhagic strokes during the first 2 decades of life