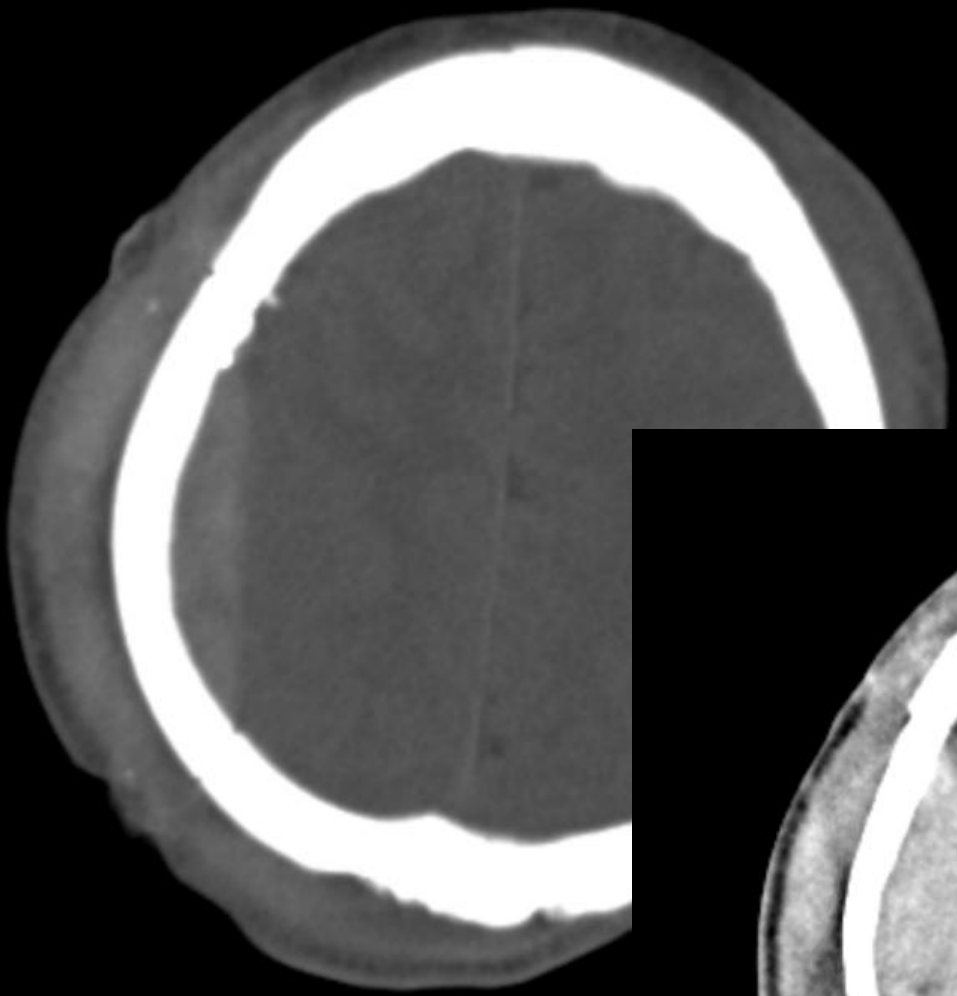
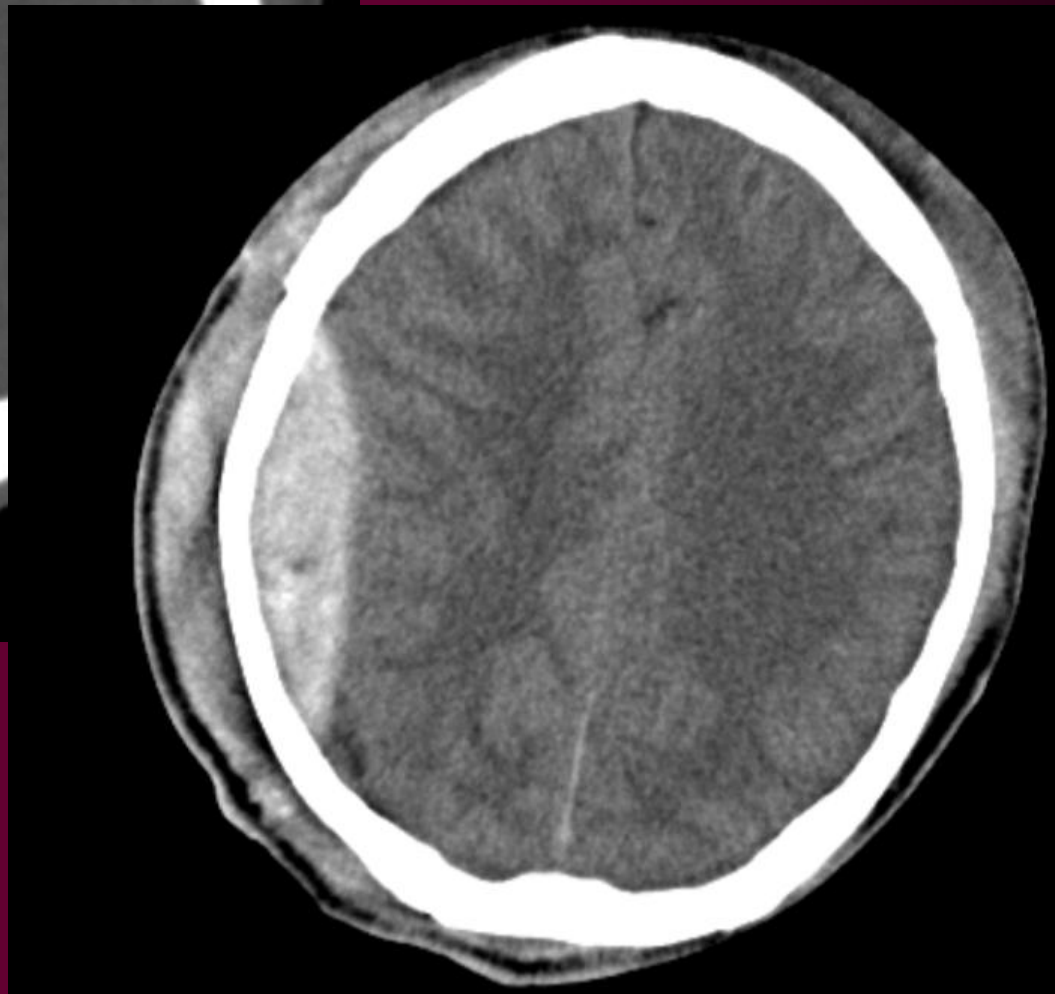
颅脑外伤影像学诊断

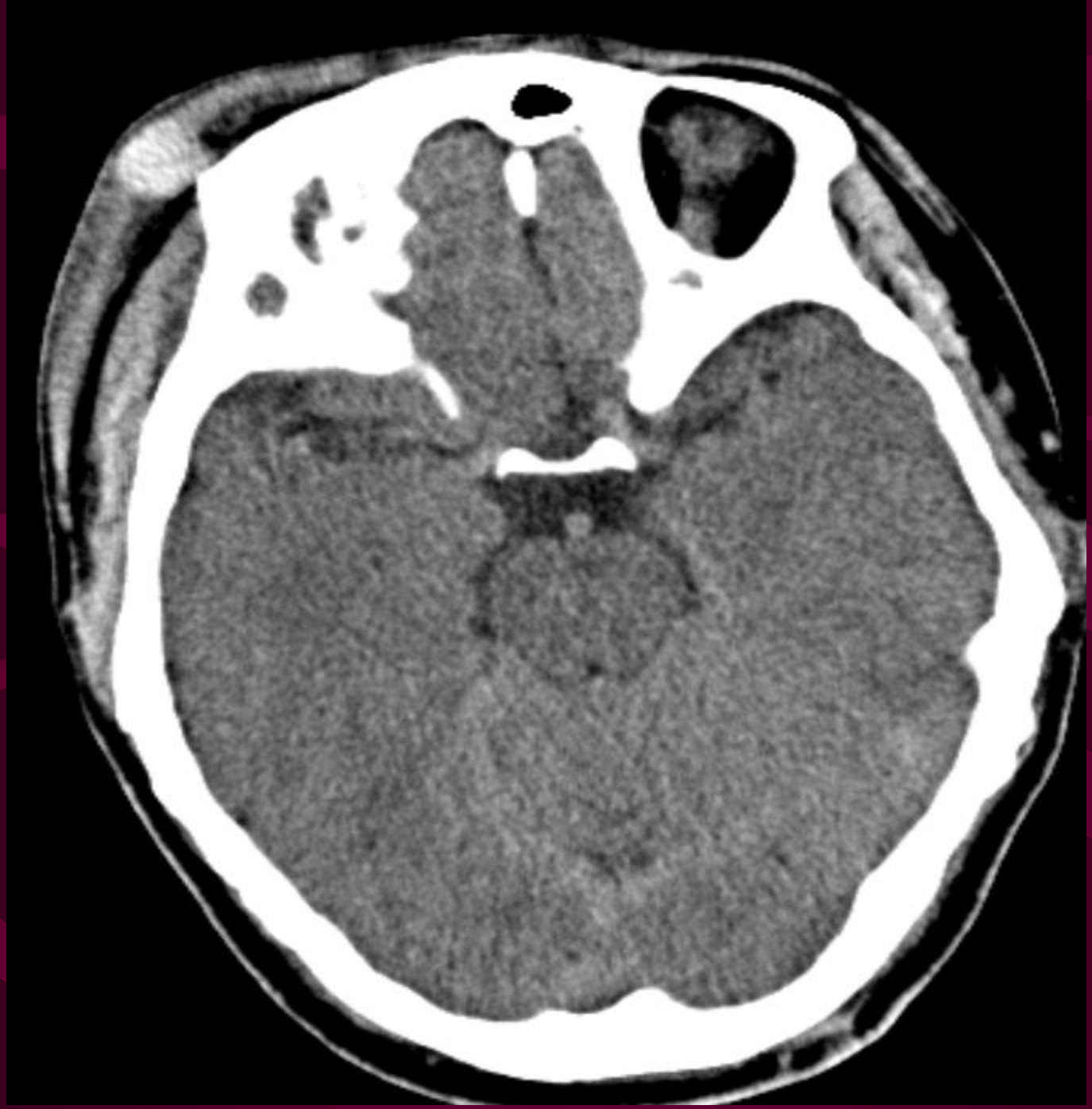
川北医学院 翟昭华

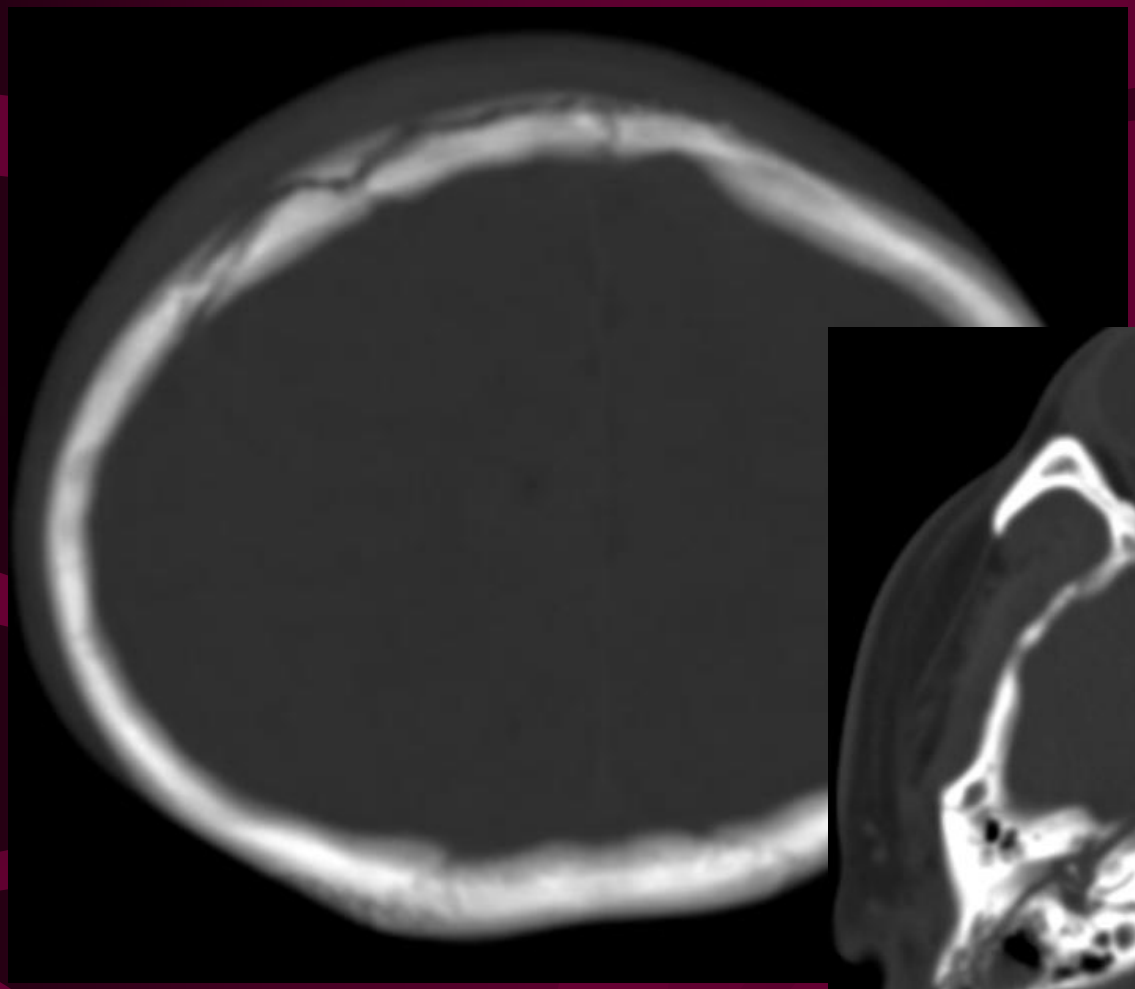
头皮血肿
颅骨骨折

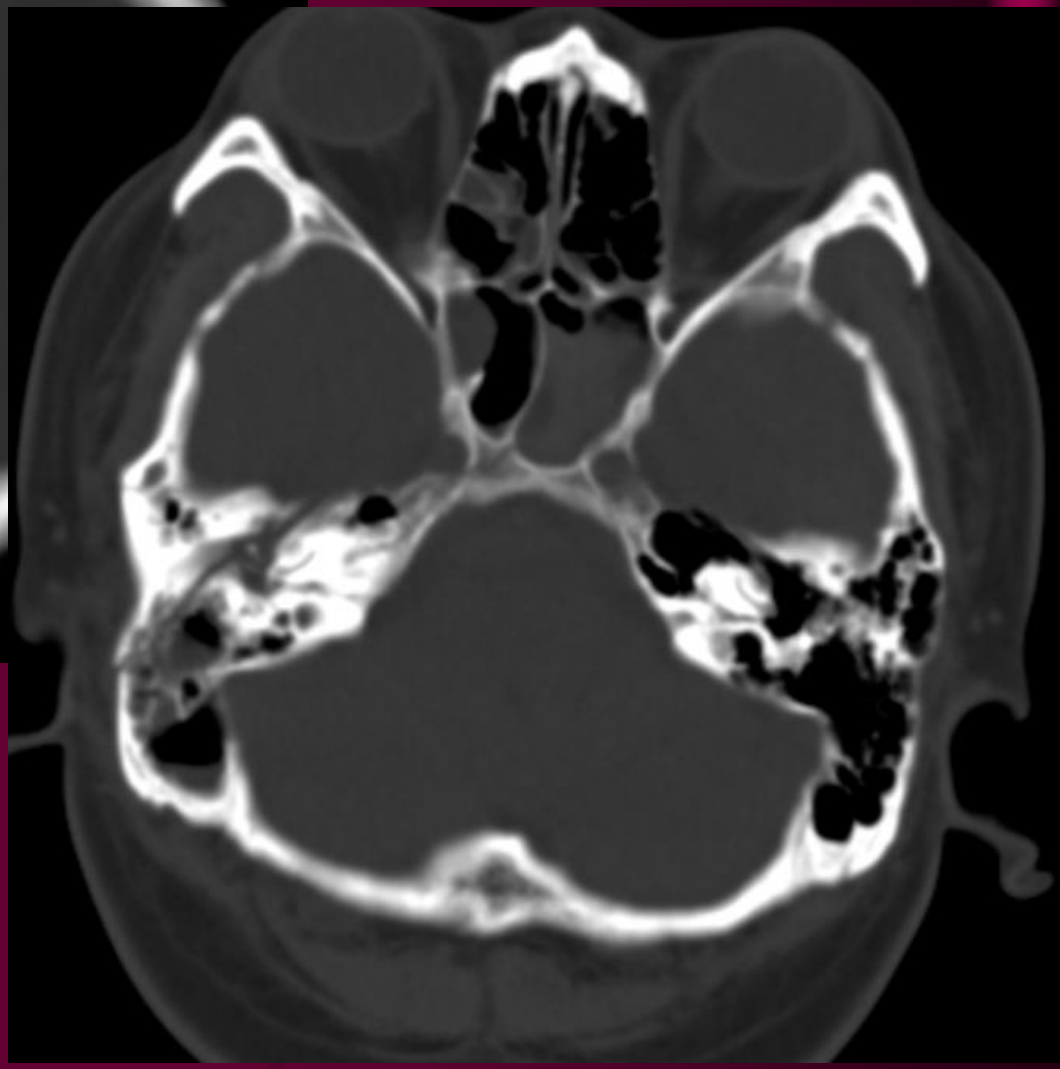




硬膜外血肿软组织肿胀

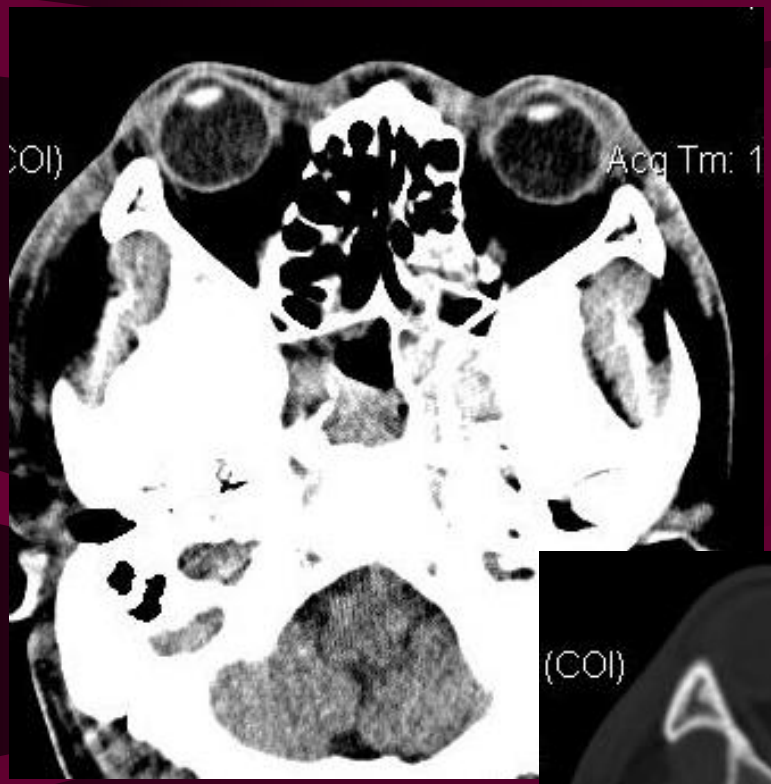


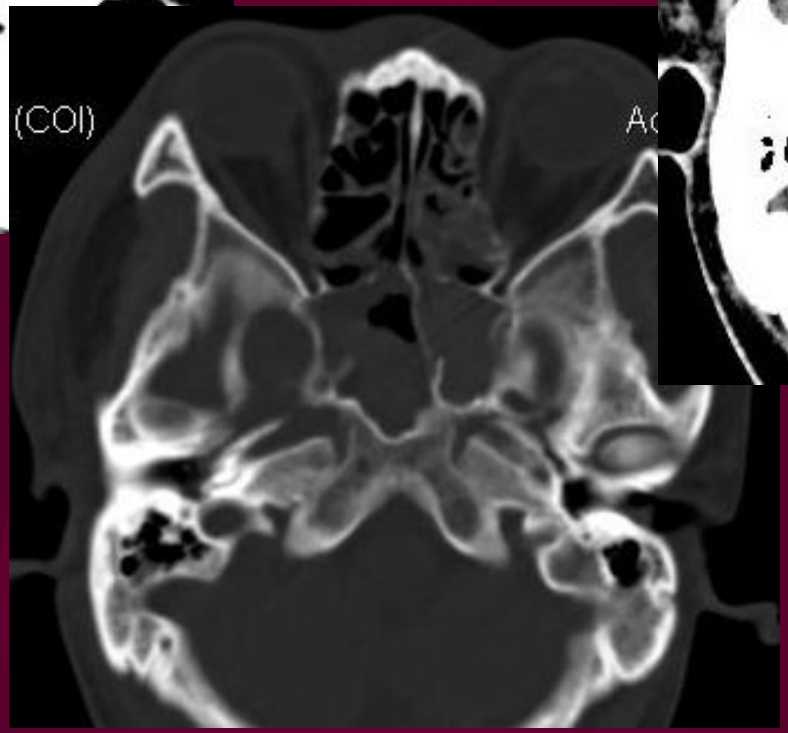


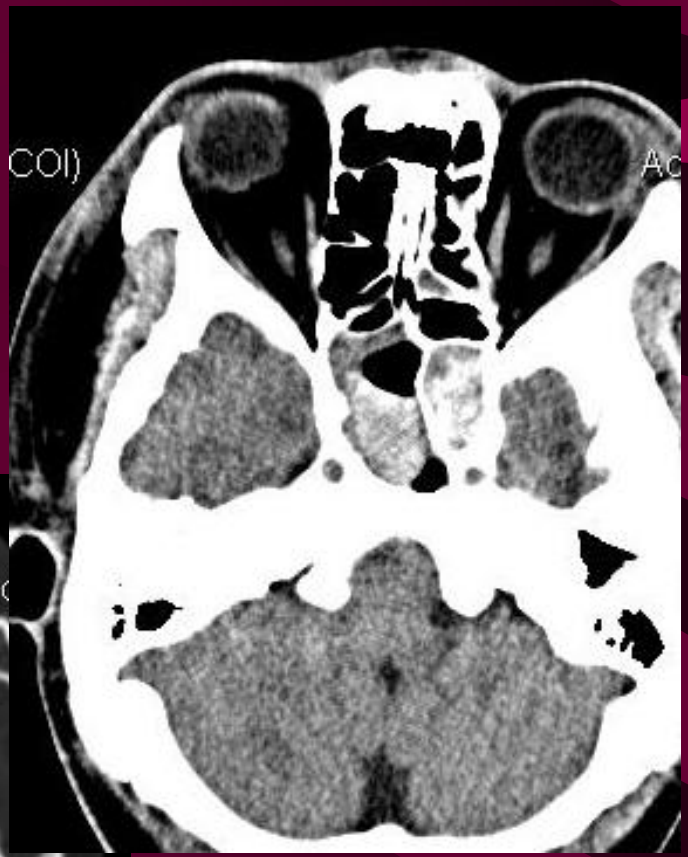


骨折

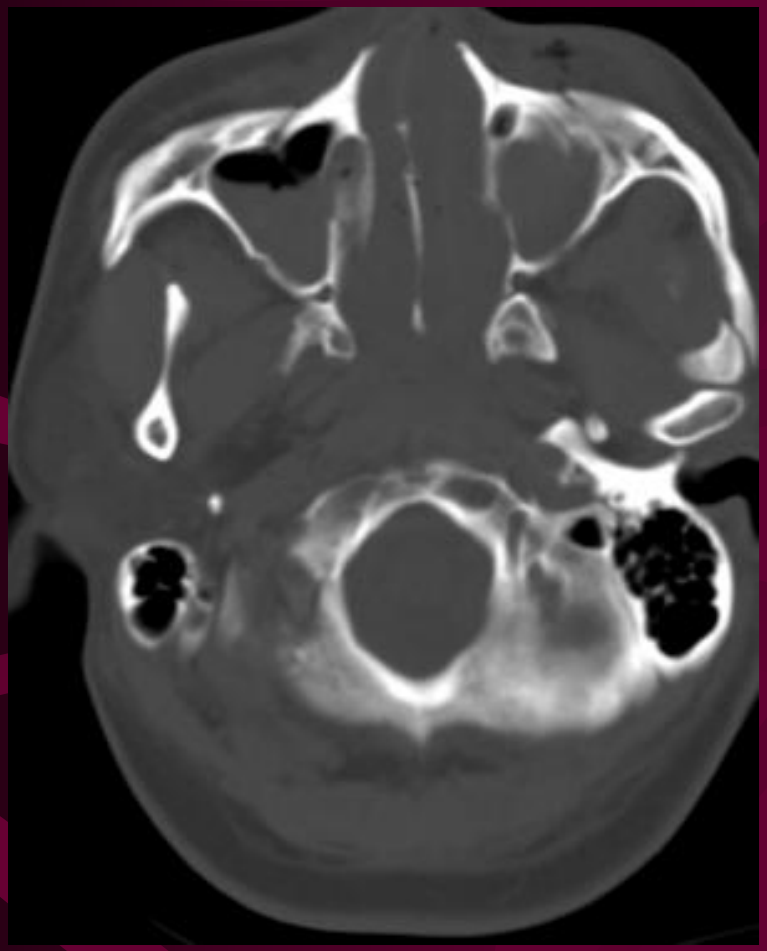
颅底骨折

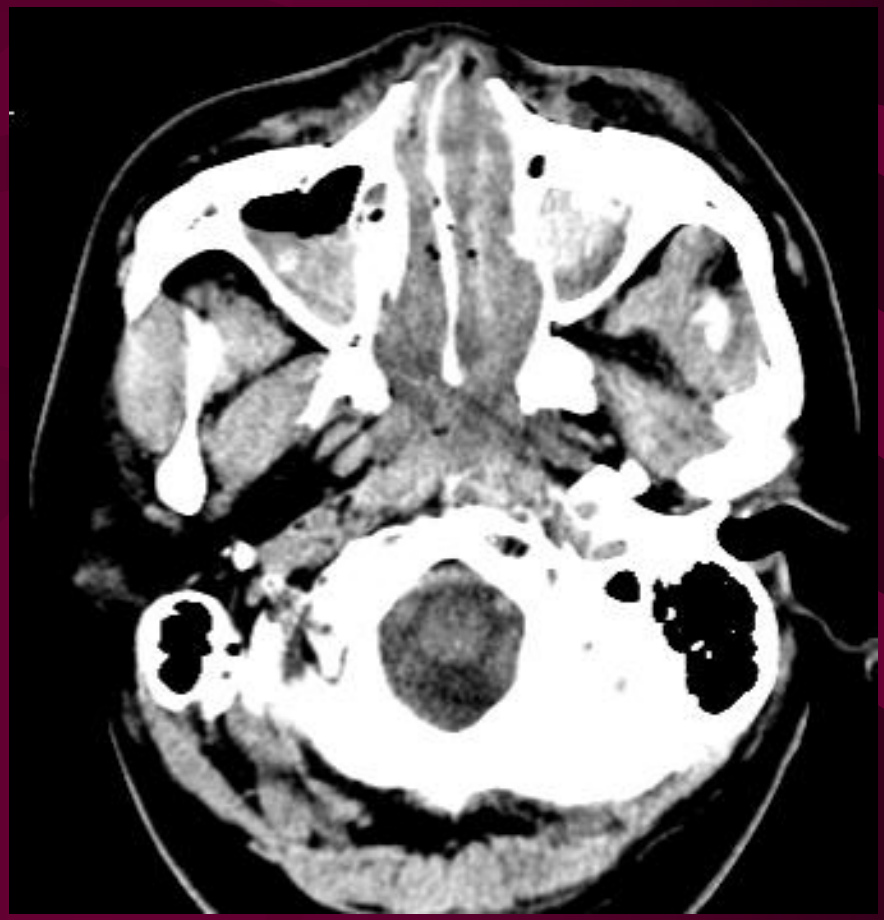




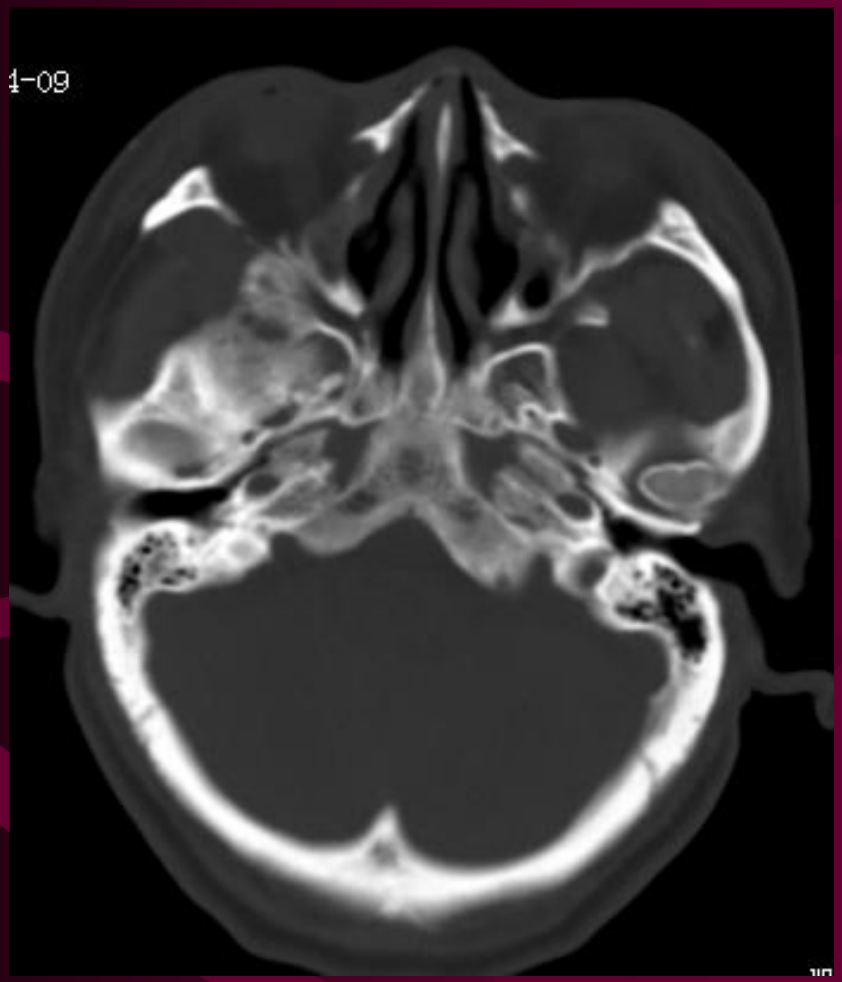


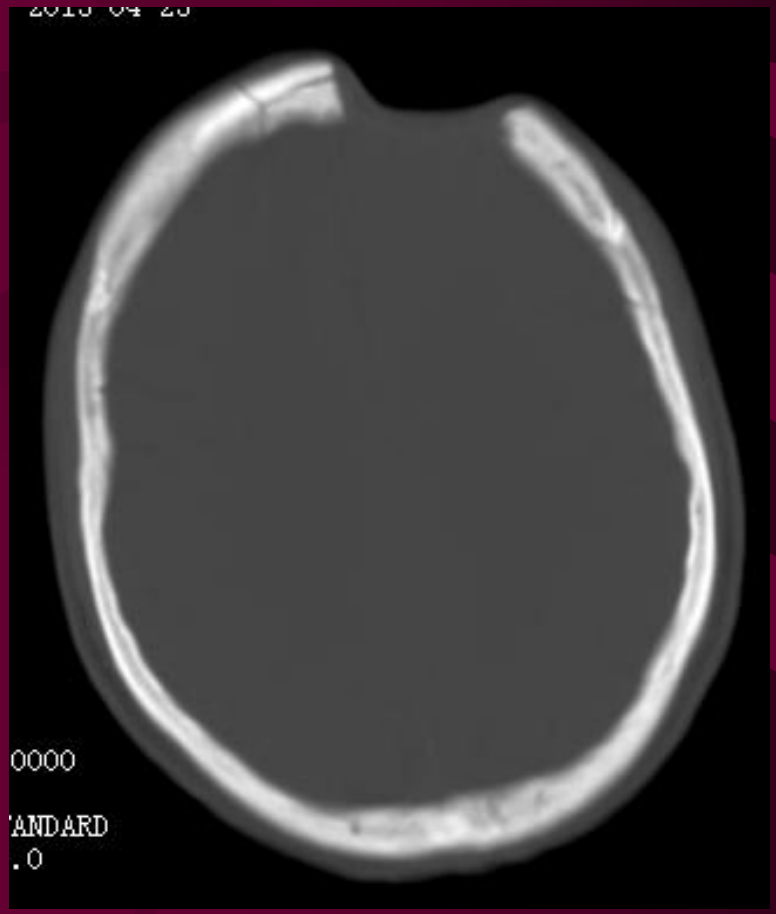
颅底骨折





骨折与骨逢的鉴别





硬膜外血肿

血液聚集在颅骨内板与硬膜之间。

多数硬膜外血肿是由于骨折损伤血管和硬脑膜动脉出血所致。

病　理

- 位于头颅直接损伤部位
- 颅骨骨折或局部暂时变形使脑膜血管破裂
- 脑膜中动脉及分支破裂占70－80％，多位于颞区，也见于顶枕区
- 硬膜与颅骨粘连紧密，血肿局限
- 少数原因为损伤板障静脉、静脉窦和蛛网膜颗粒
- 多数不伴脑实质损伤

平片和血管造影表现

1、平片可显示骨折，骨折线通过血管沟则提示其下方或附近有血肿

2、脑血管造影：

血管内造影剂外溢；

脑膜中动脉或上矢状窦移位；

颅骨内板下方的无血管区；

血肿顶部动脉内凸征；

占位表现。

硬膜外血肿－CT表现

1、常位于颅骨骨折部位，特别是骨折通过脑膜中动脉或静脉窦的区域

2、颅骨内板下方梭形高密度影，边界锐利 CT值40－100HU

血肿范围一般不越过颅缝，如骨折跨越骨缝，血肿可跨颅缝

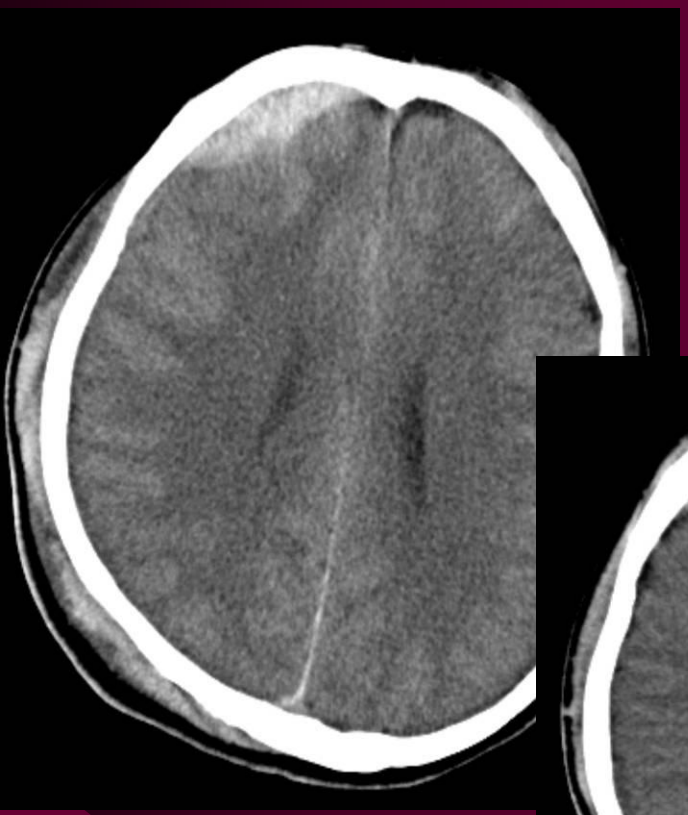
硬膜外血肿—CT表现

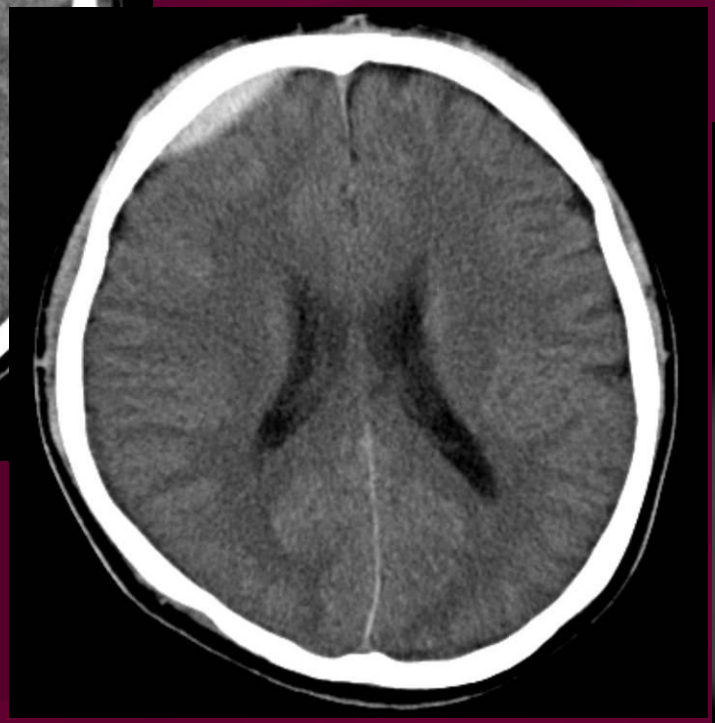
3、占位效应较轻

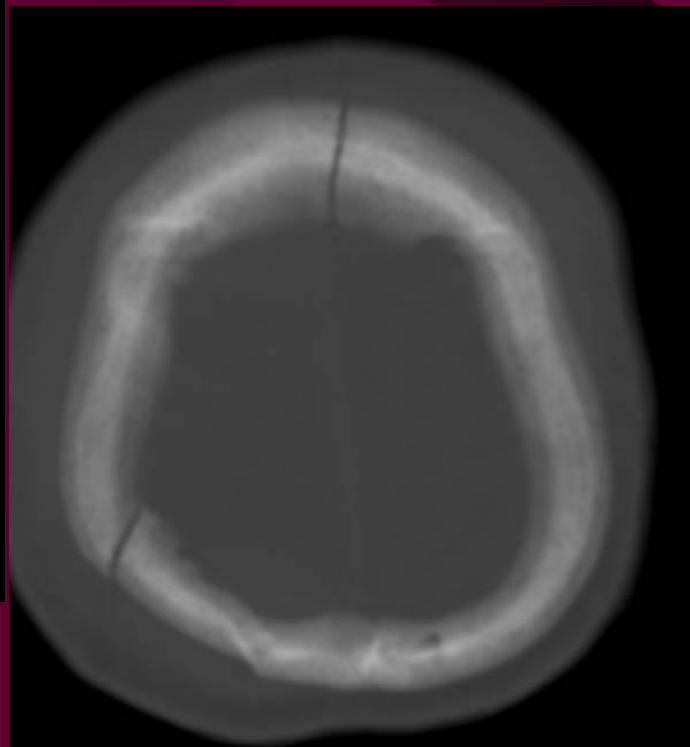
4、慢性血肿需增强扫描

5、上矢状窦、枕窦和横窦损伤的硬膜外血肿，需冠状面扫描

硬膜外血肿－CT表现







川北医学院附属医院

CT 检查申请单

姓名 性别 年龄 科别 床号 门诊号 住院号 X线号

CT号 住址 工作单位 职业

临床症状和体征：

临床诊断 检查部位及要求

其他相关检查

X—光

B超

AFP

其他

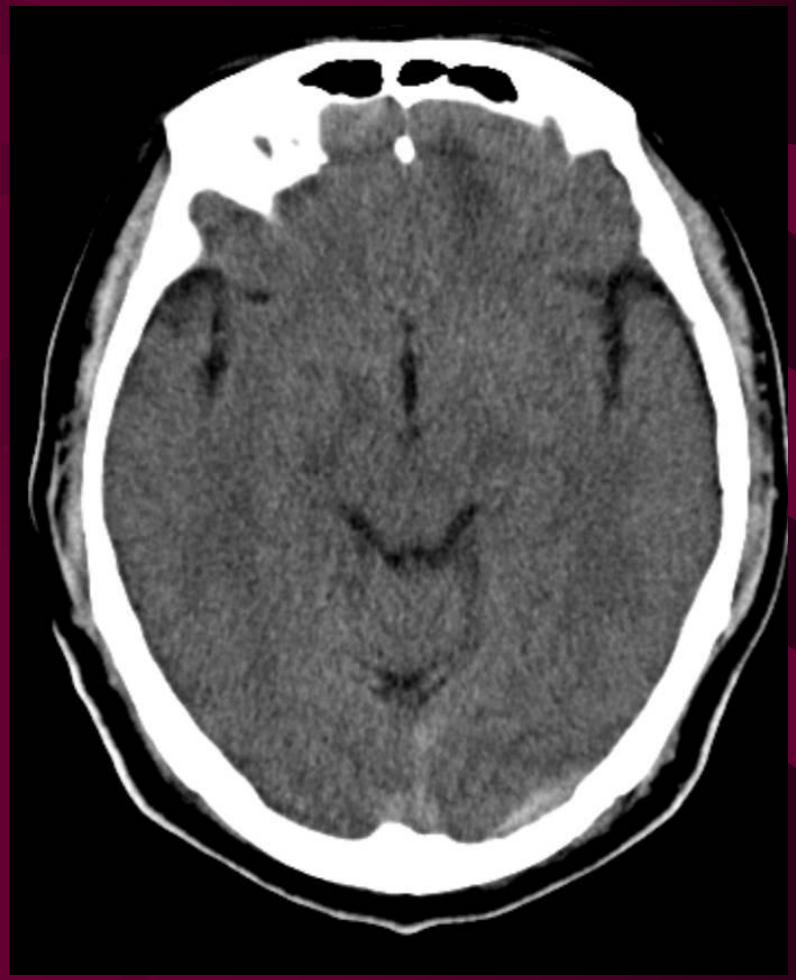
医师

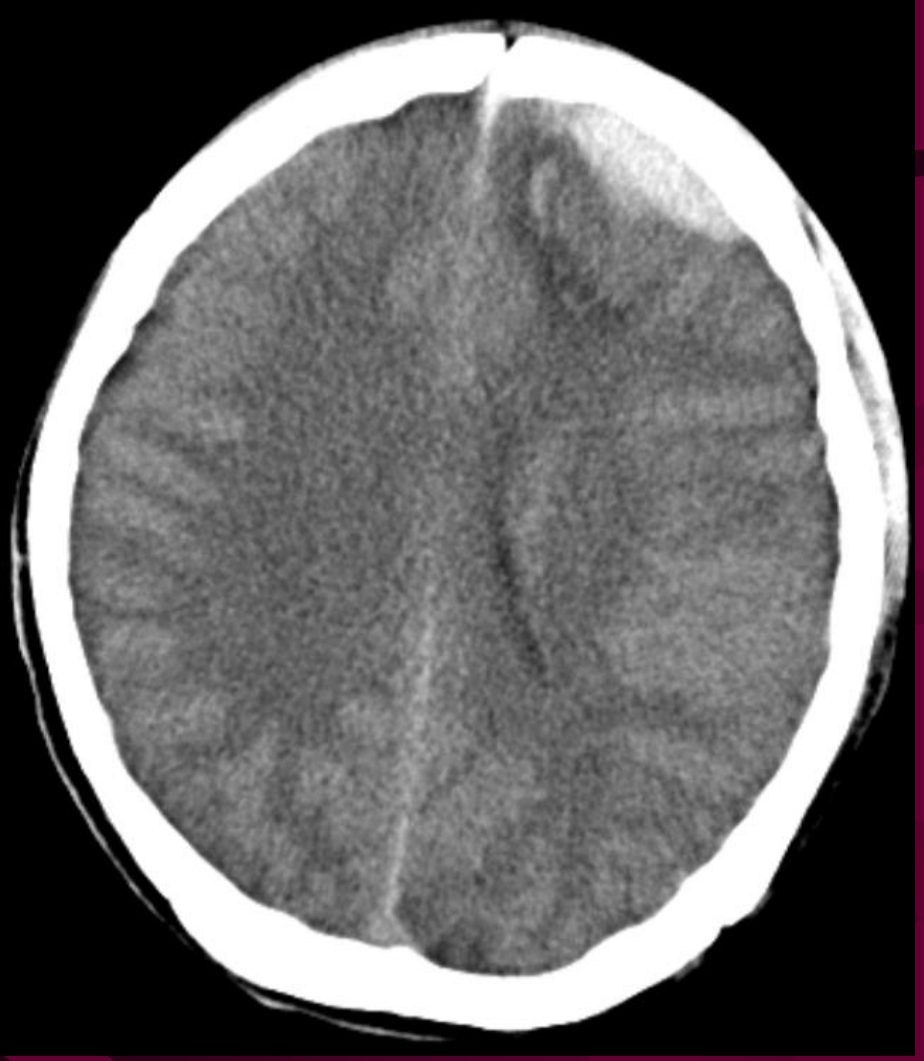
扫描摄影记录

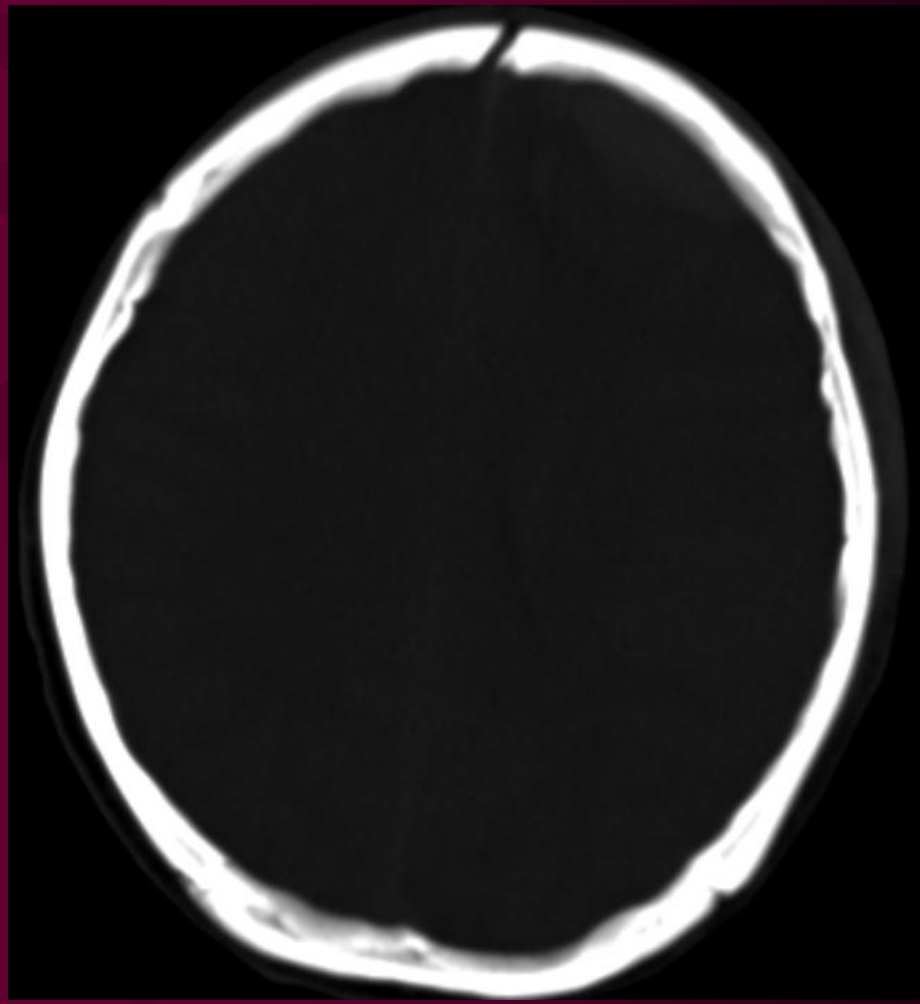
磁盘号 C— 层 C+ 层

扫描者

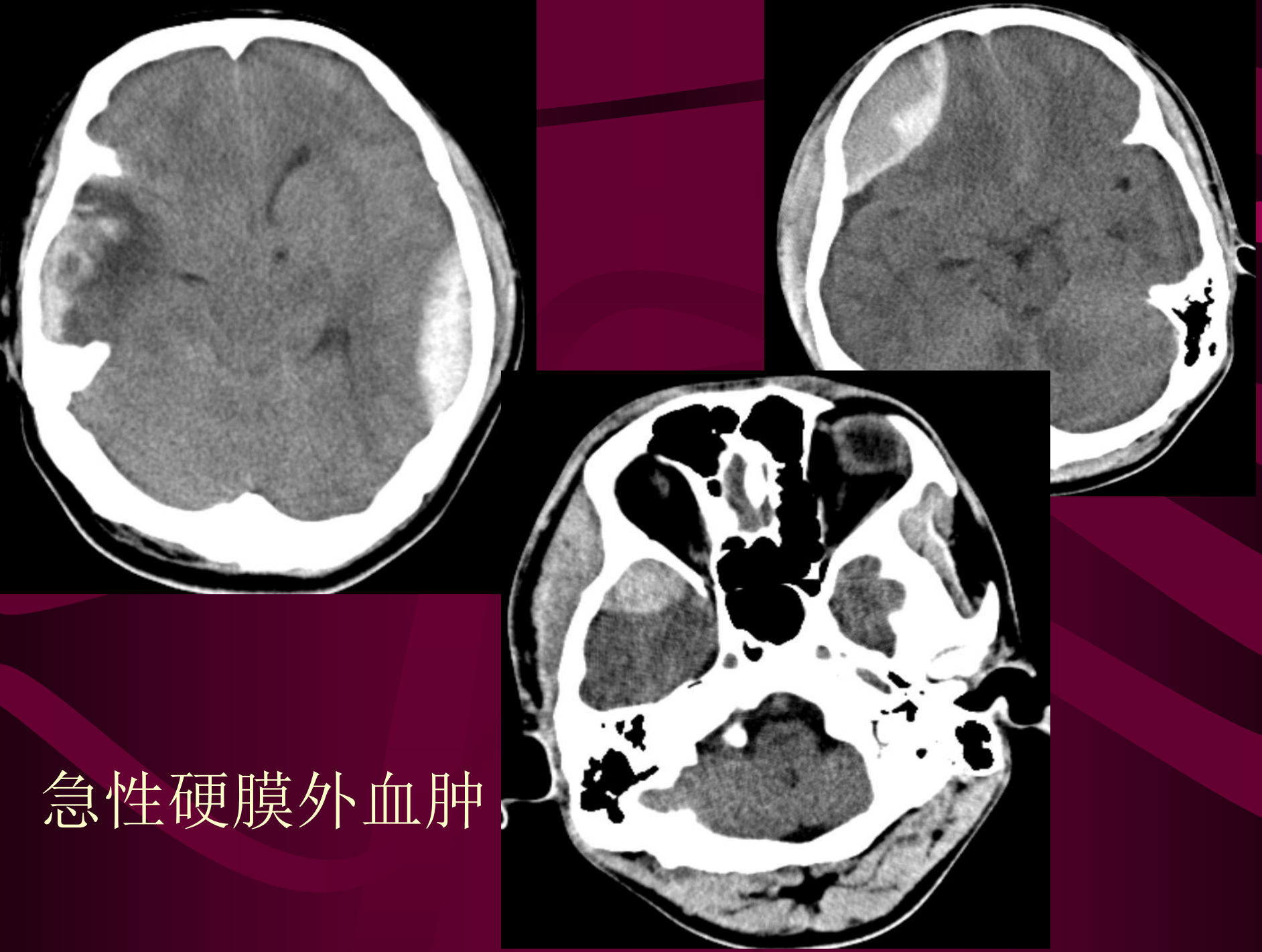
摄影者



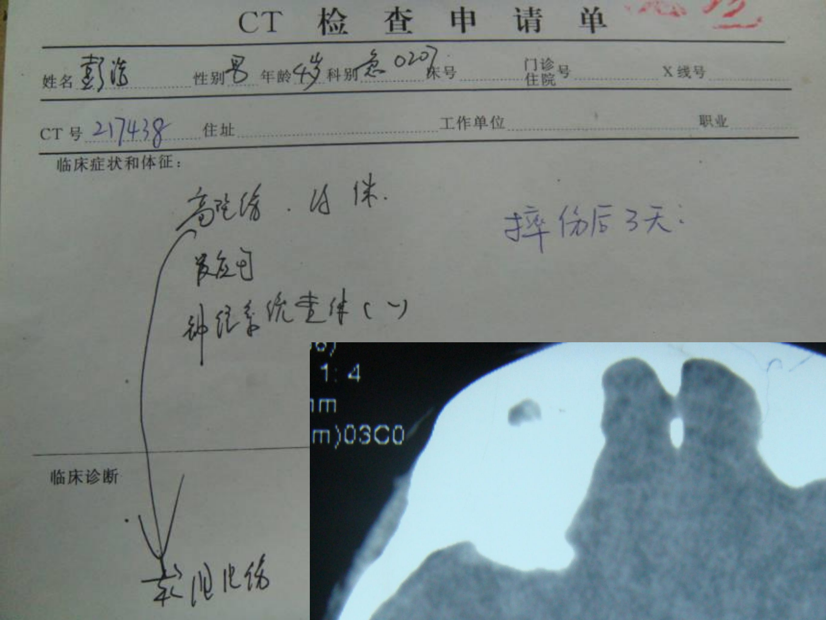




硬膜外血肿



急性硬膜外血肿



CT 检 查 申 请 单

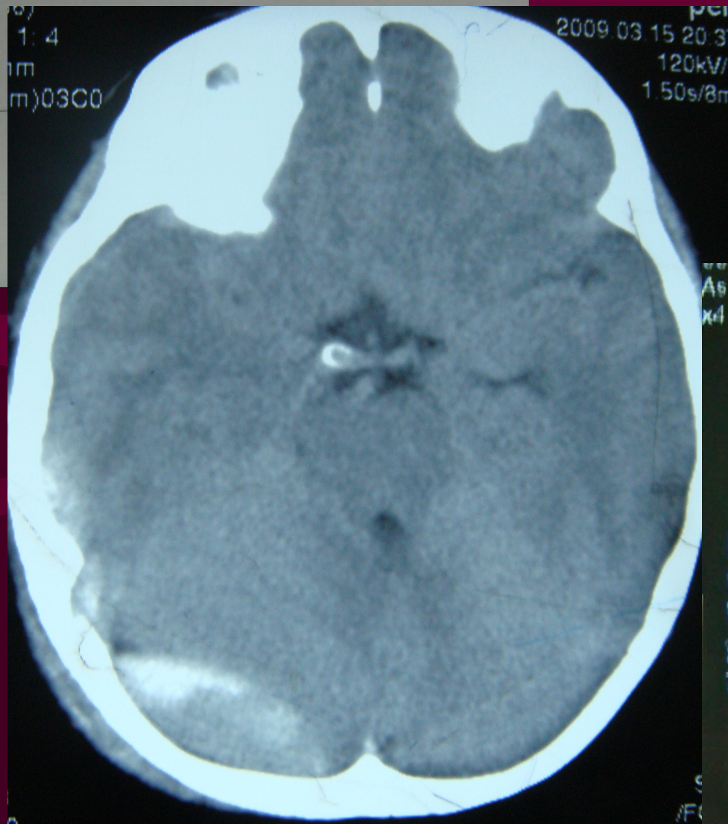
姓名 彭浩　性别 男　年龄 45岁　科别　床号　门诊号/住院号　X线号

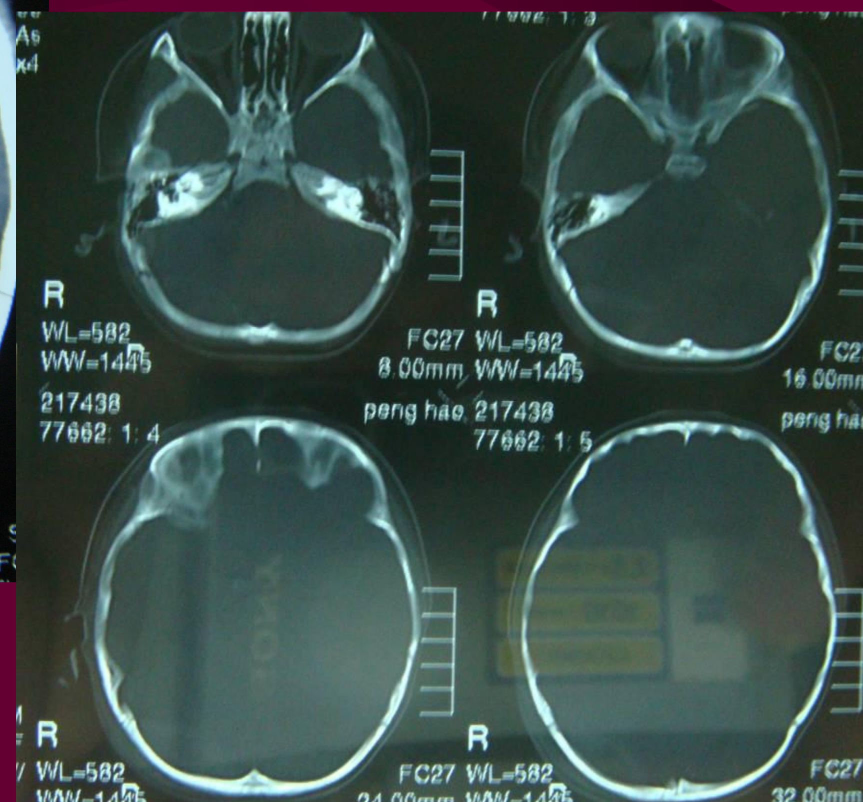
CT号 217438　住址　工作单位　职业

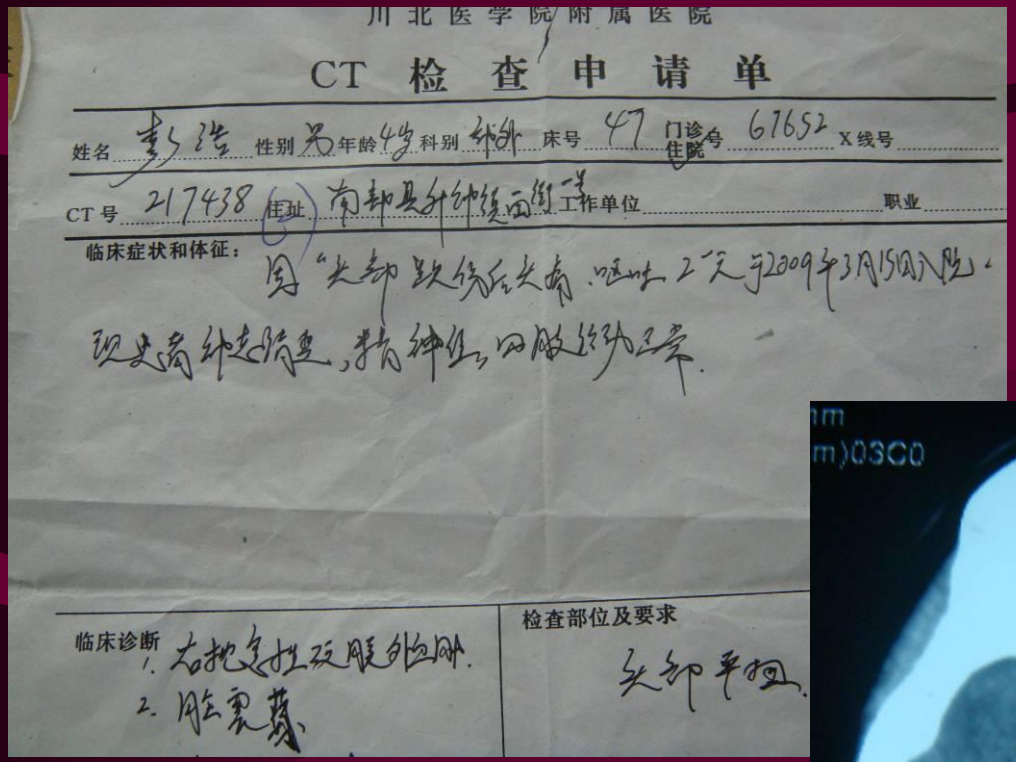
临床症状和体征：

摔伤后3天

临床诊断







川北医学院附属医院

CT 检 查 申 请 单

姓名 [illegible] 性别 男 年龄 43岁 科别 外科 床号 47 门诊住院号 67652 X线号

CT号 217438 住址 南部县外伤急诊科 工作单位 职业

临床症状和体征：

因"头部外伤后头晕、呕吐2"于2009年3月15日入院。

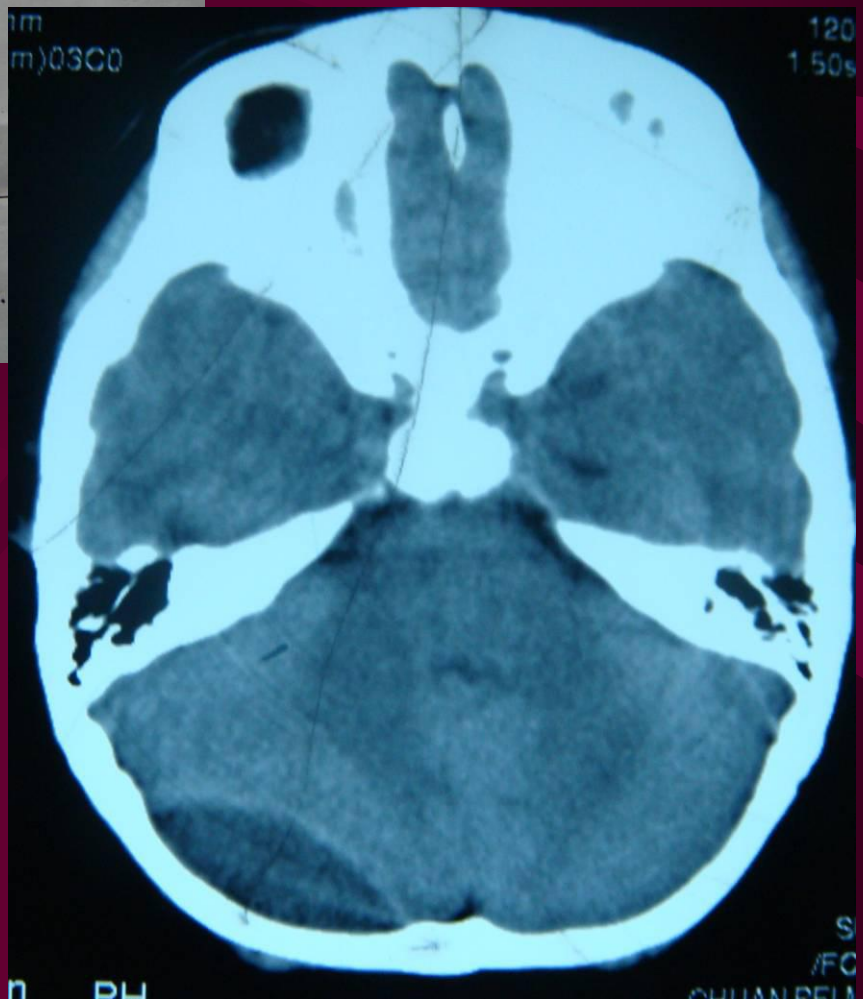
现头晕外伤症状，精神差，四肢活动正常。

临床诊断 1. 右枕急性硬膜外血肿

2. 脑震荡

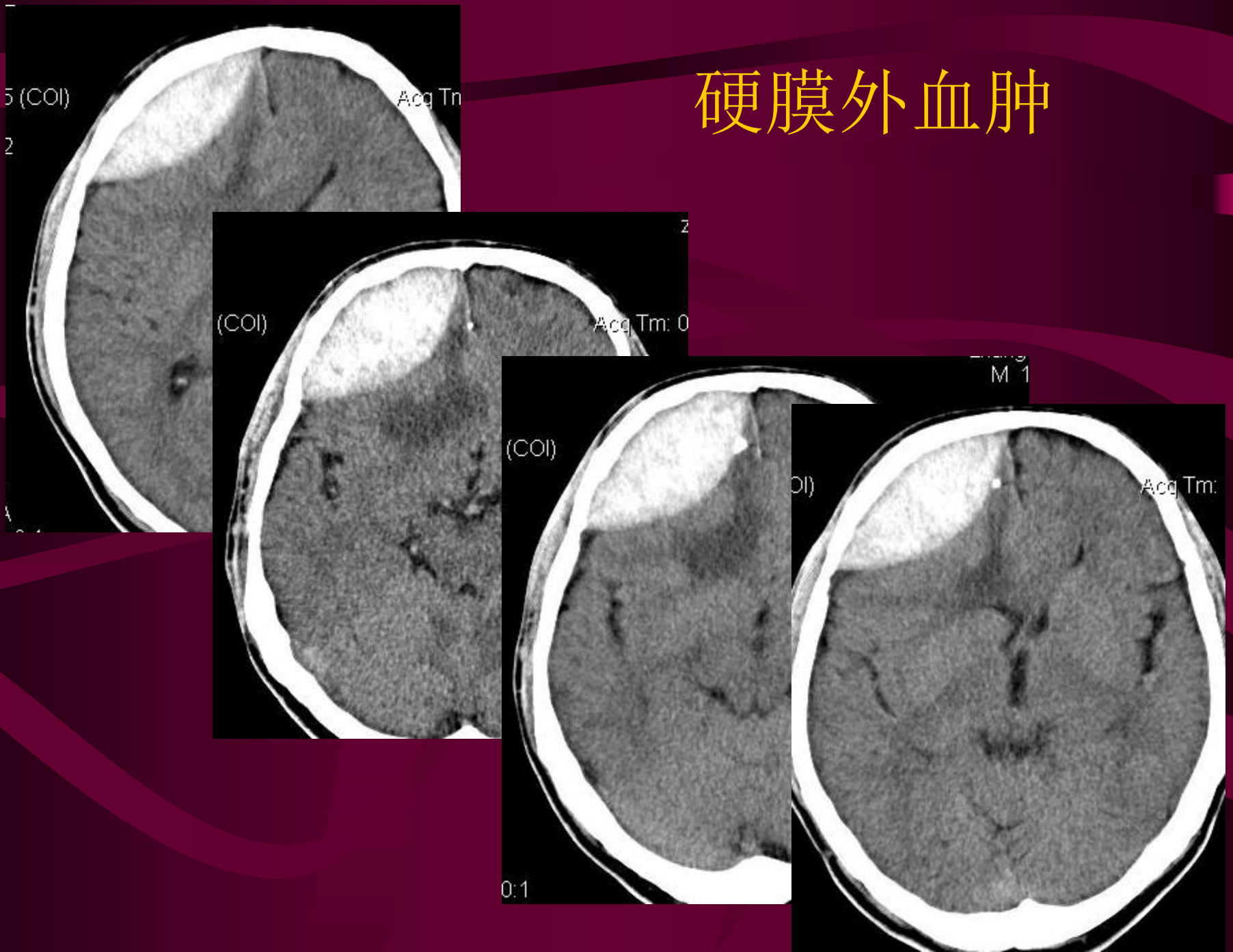
检查部位及要求

头部平扫

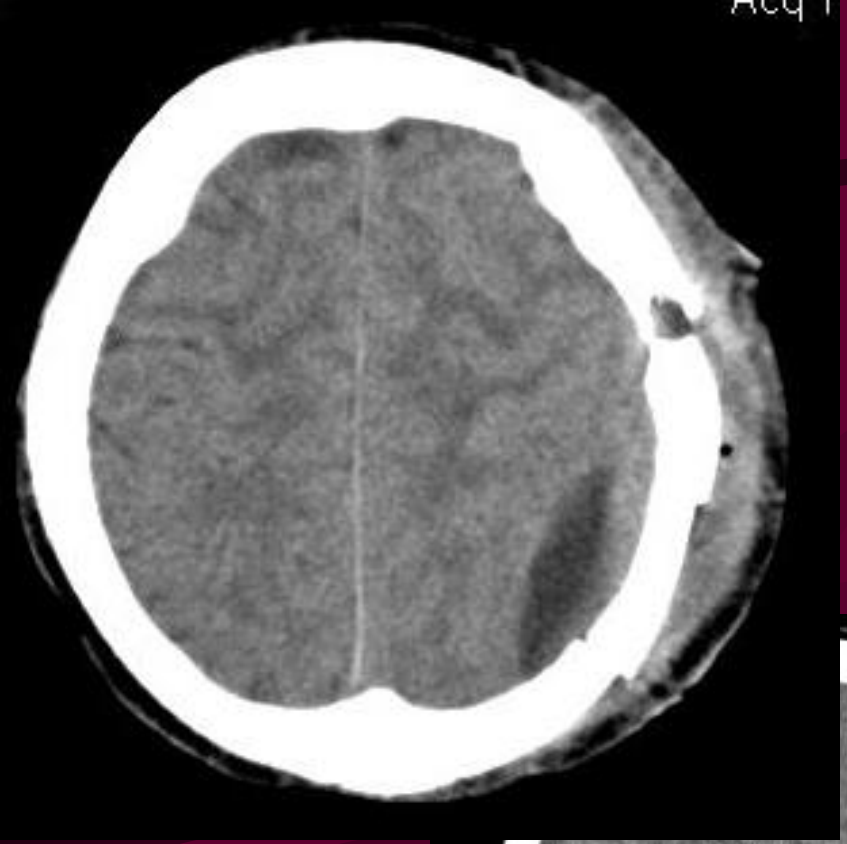


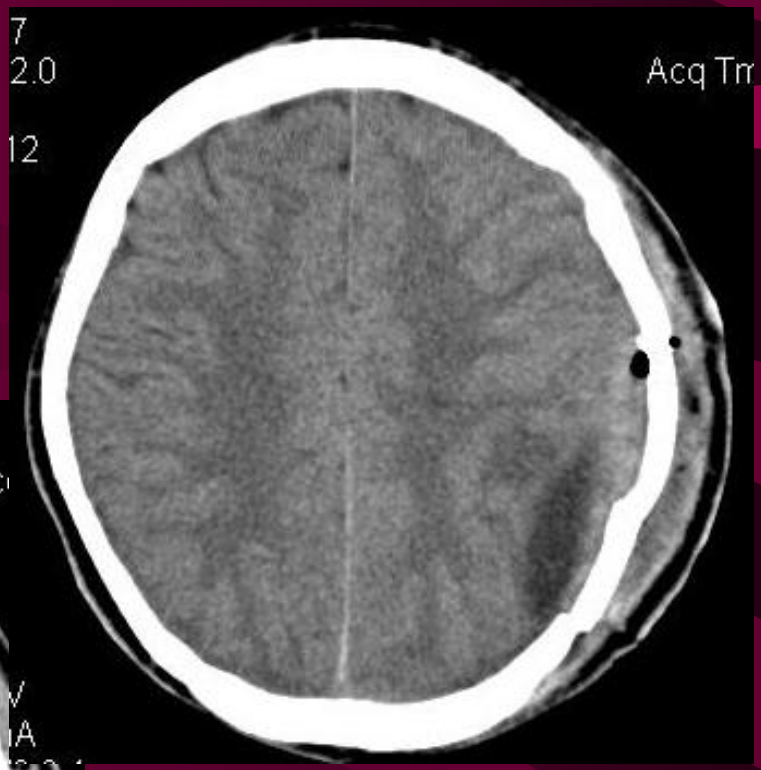
15天后

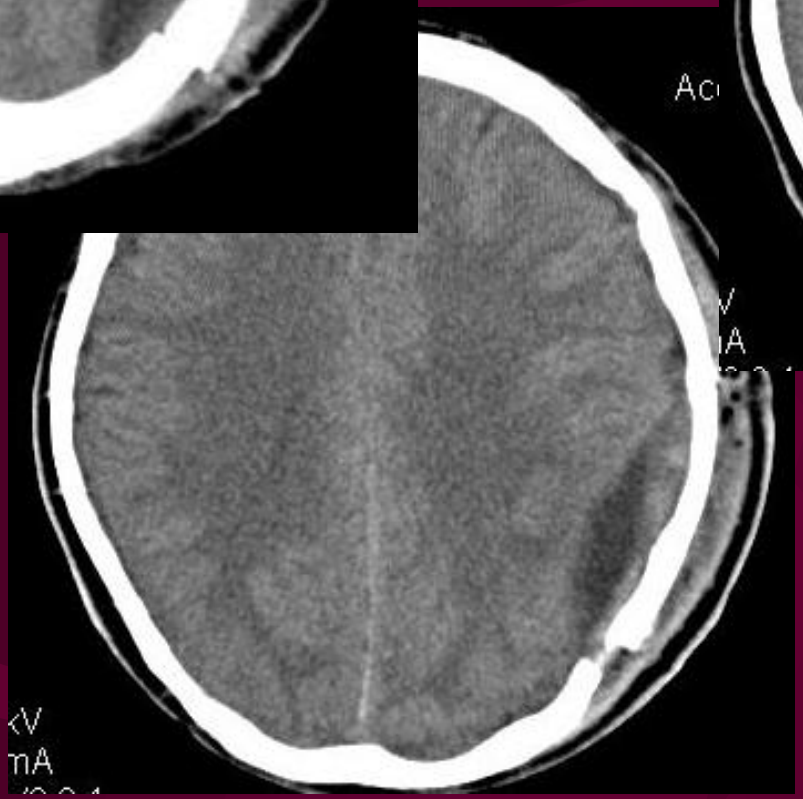
硬膜外血肿



血肿术后







硬膜外血肿—MRI表现

梭形，边界锐利

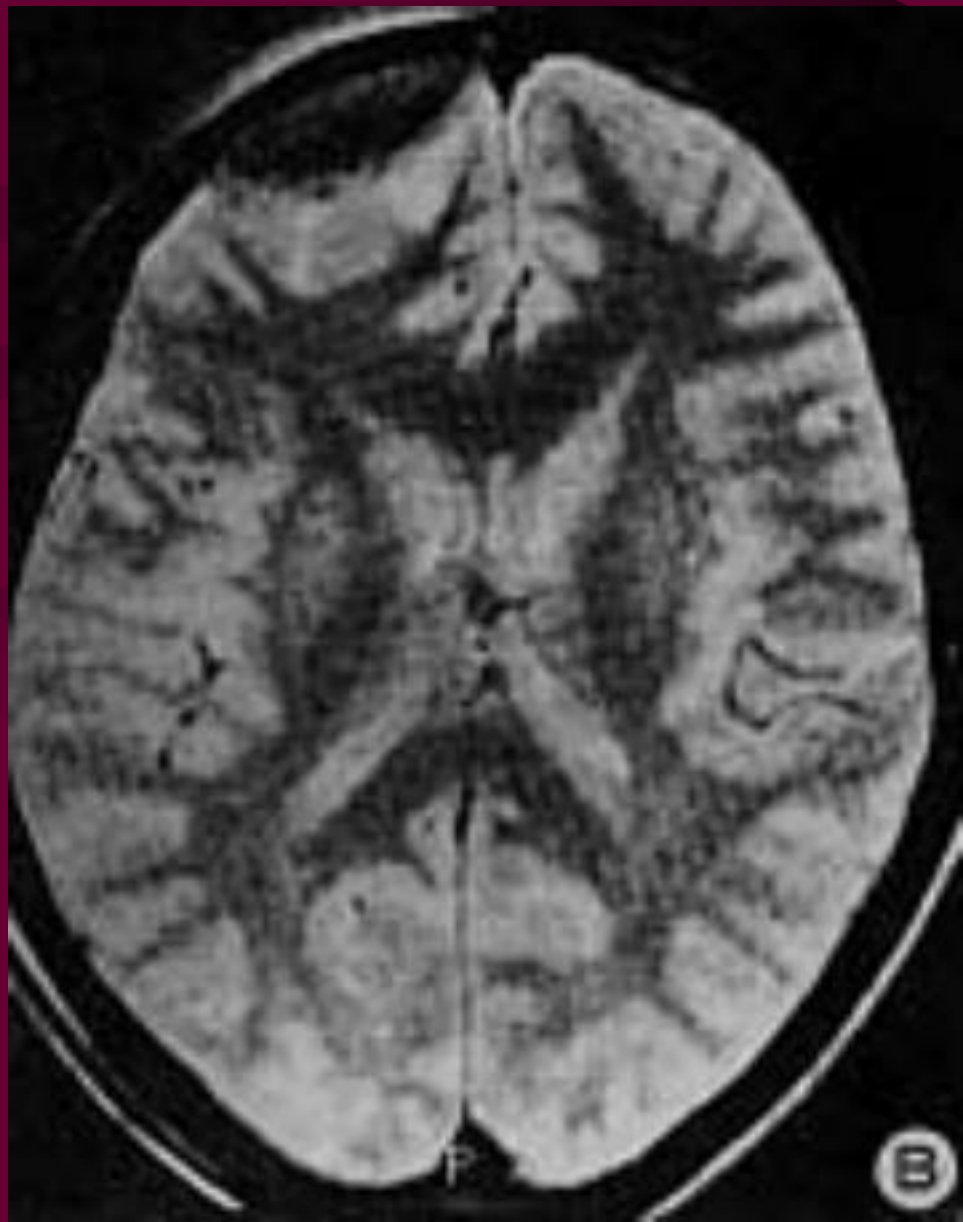
急性期：

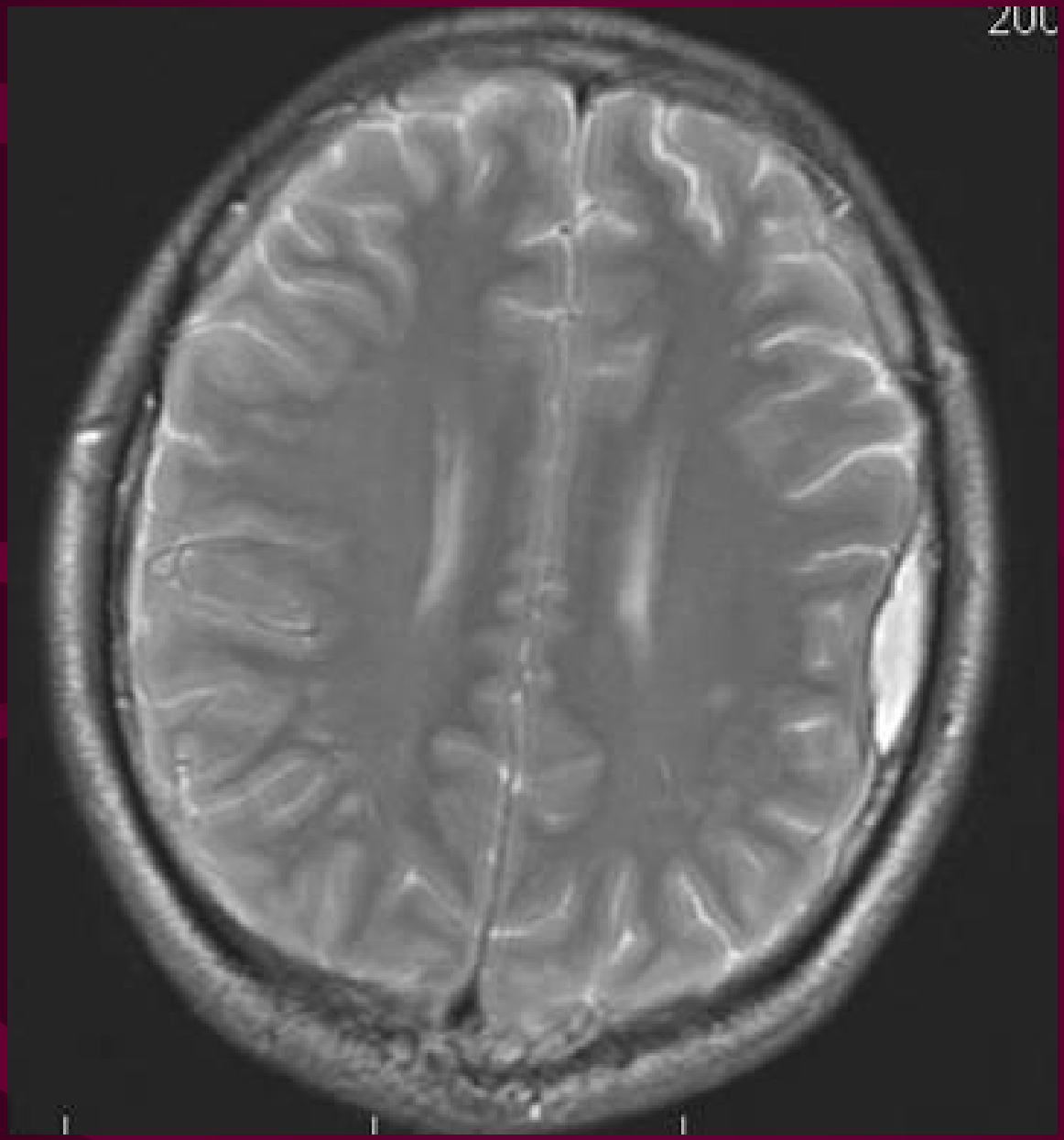
T1W等信号；

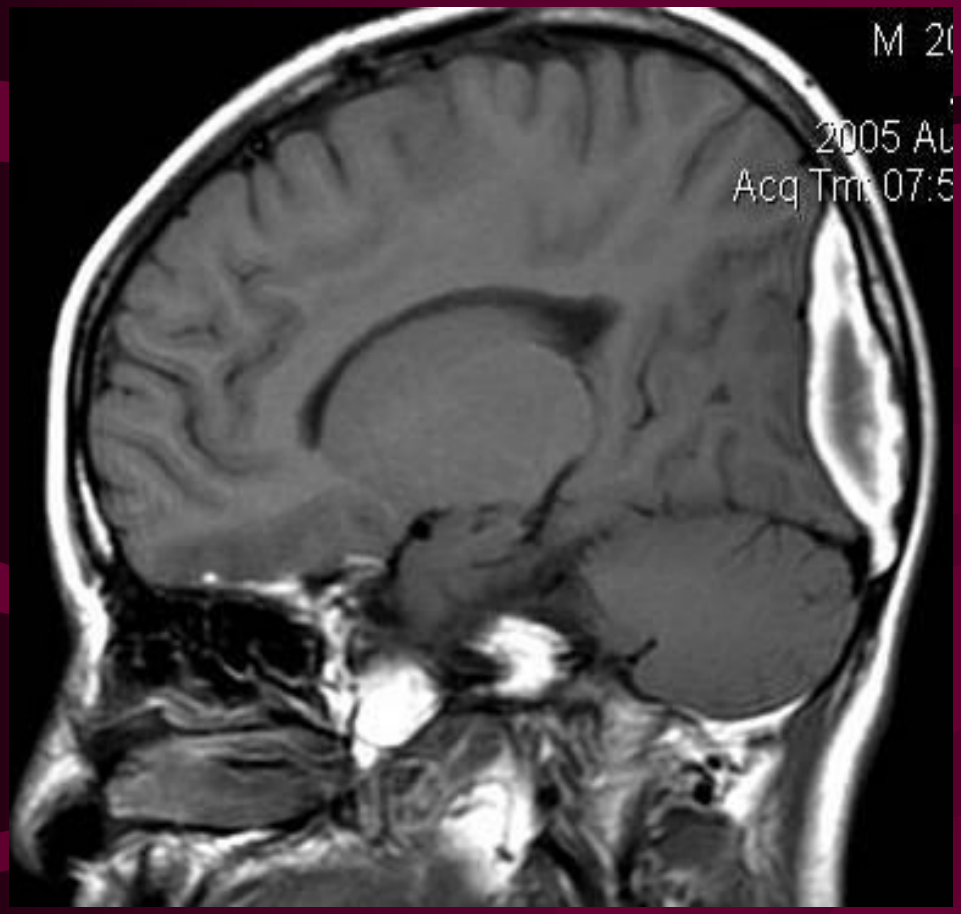
T2W低信号。

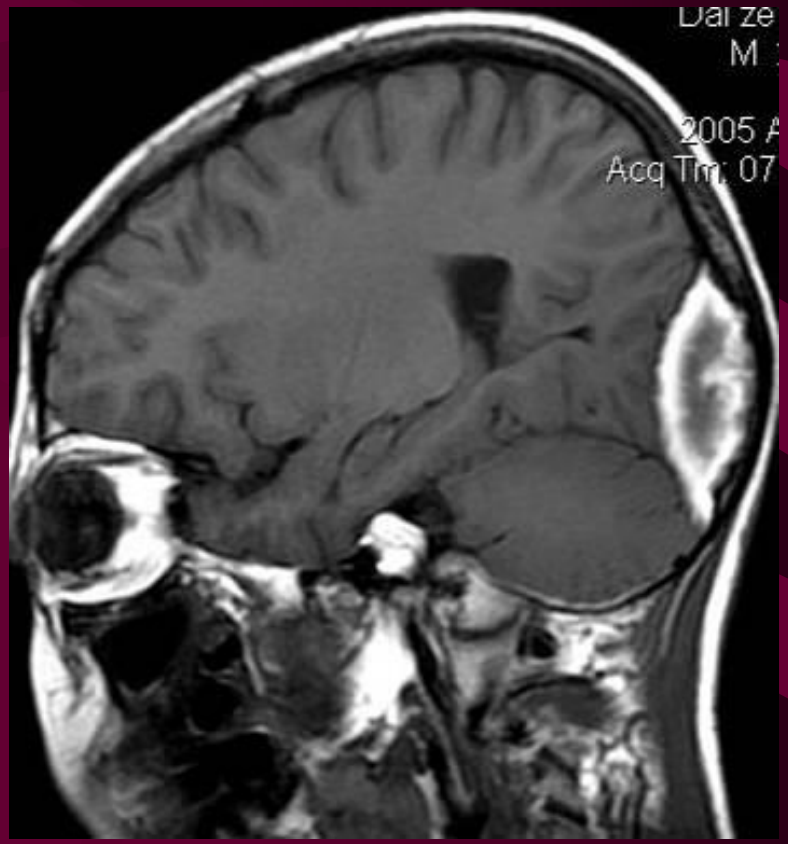
亚急性和慢性期：

T1W和T2W均为高信号。

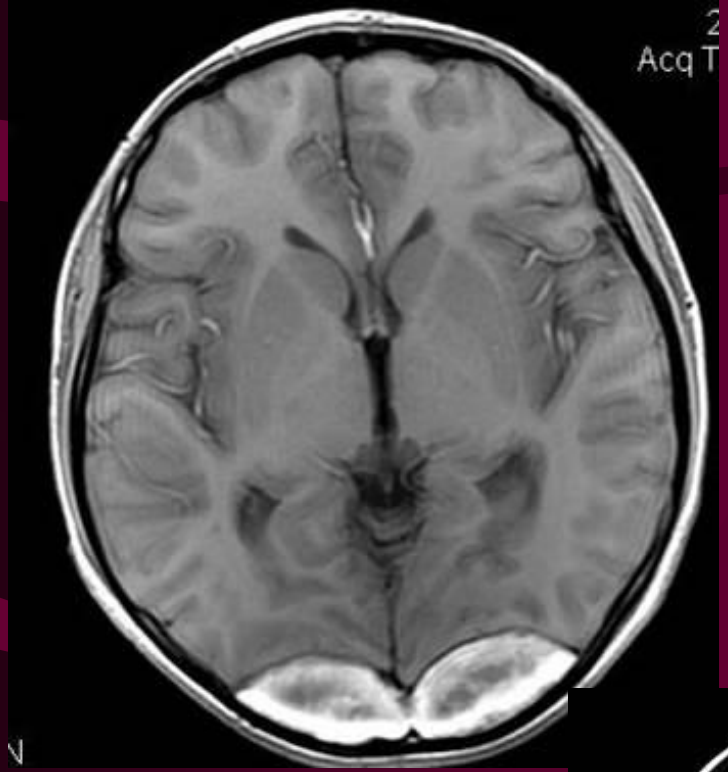


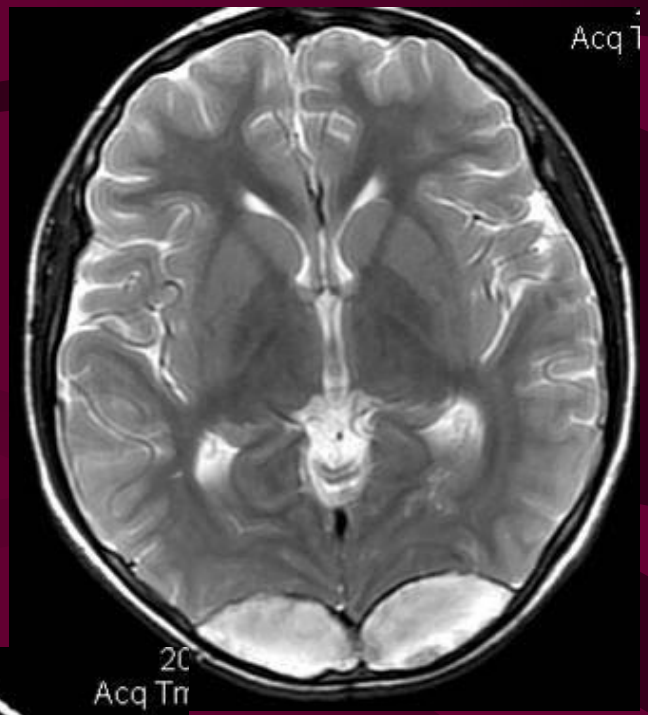


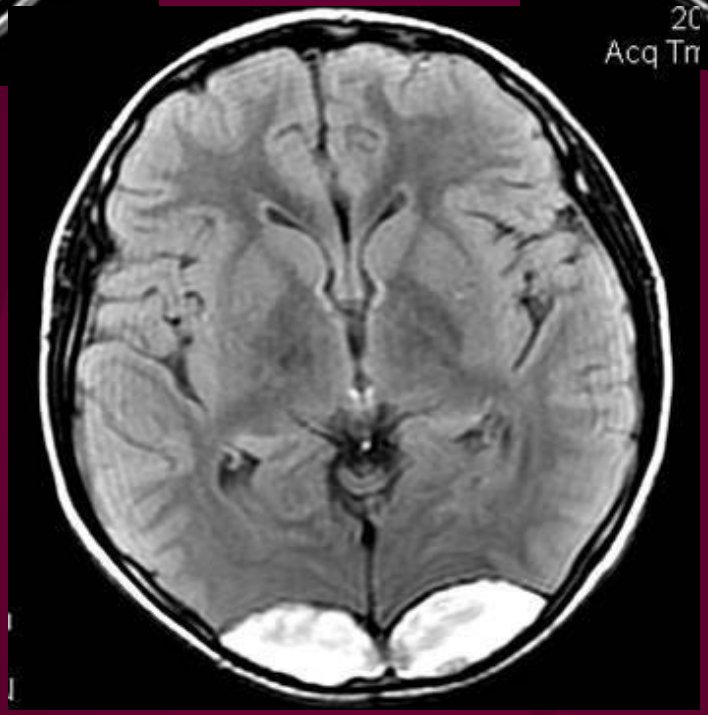




双枕叶硬膜外血肿







双枕叶硬膜外血肿

硬膜下血肿

血液聚集在硬脑膜与蛛网膜之间

多因头颅在运动中受伤

对冲性硬膜下血肿更有意义

根据血肿形成时间和临床表现分为三型

- 急性硬膜下血肿：伤后3天内，皮质撕裂或挫伤引起皮质的动脉或静脉破裂。范围广，新月型。
- 亚急性：伤后4～14天。新月型或半月型。
- 慢性：14天以后。桥静脉撕裂，血液缓慢溢入硬膜下腔。血肿常较大。

平片和血管造影表现

1、平片表现：无异常；颅内压增高

颅内钙斑的移位

2、血管造影：无血管区

脑血管移位

硬膜下血肿—CT表现

1、密度、形状

急性：新月型，高密度

亚急性：新月型或过度型，高或等密度

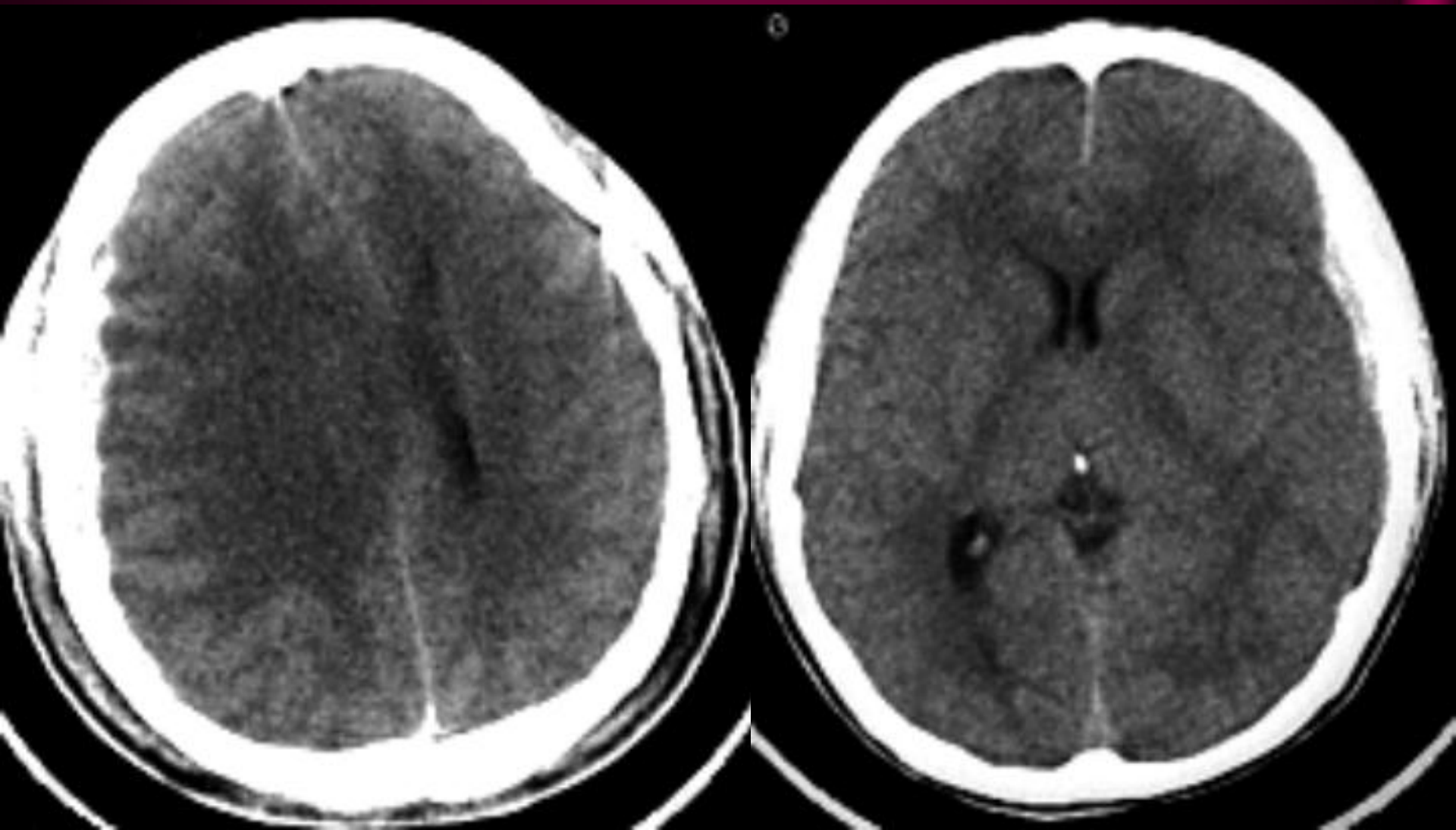
慢性：过度型，高低混合密度等密度或低密度

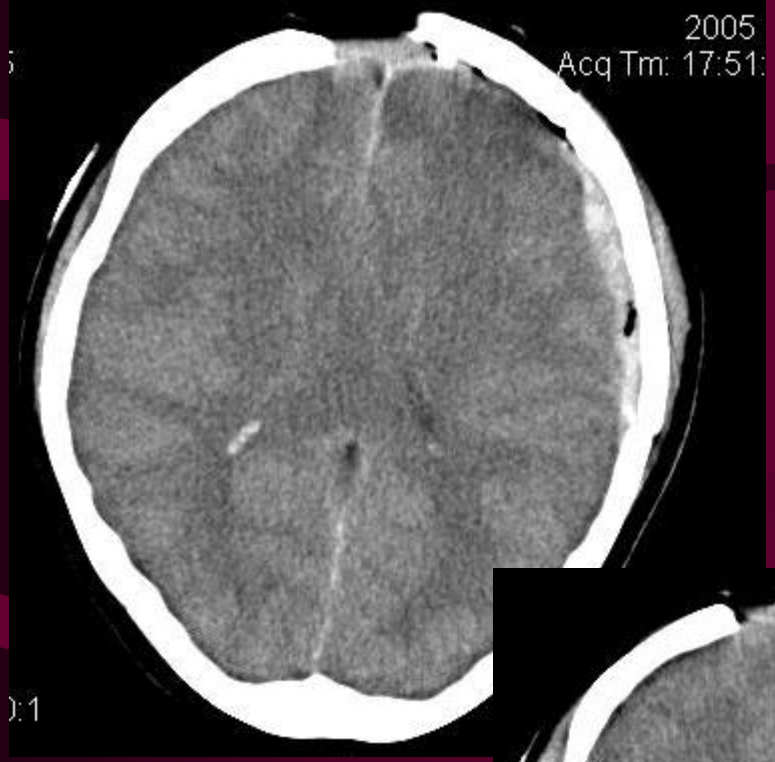
硬膜下血肿—CT表现

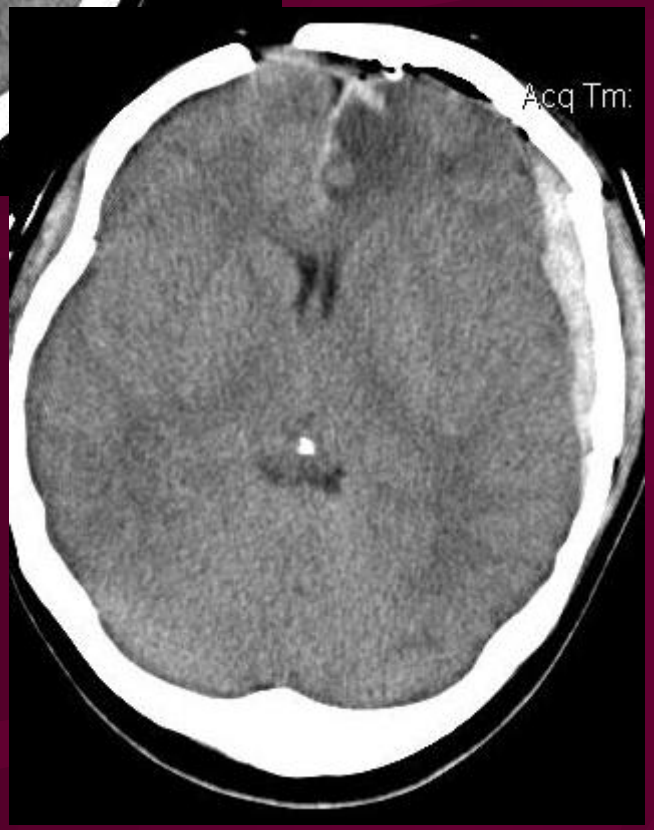
2、范围广，可跨越颅缝线，甚至覆盖整个大脑半球

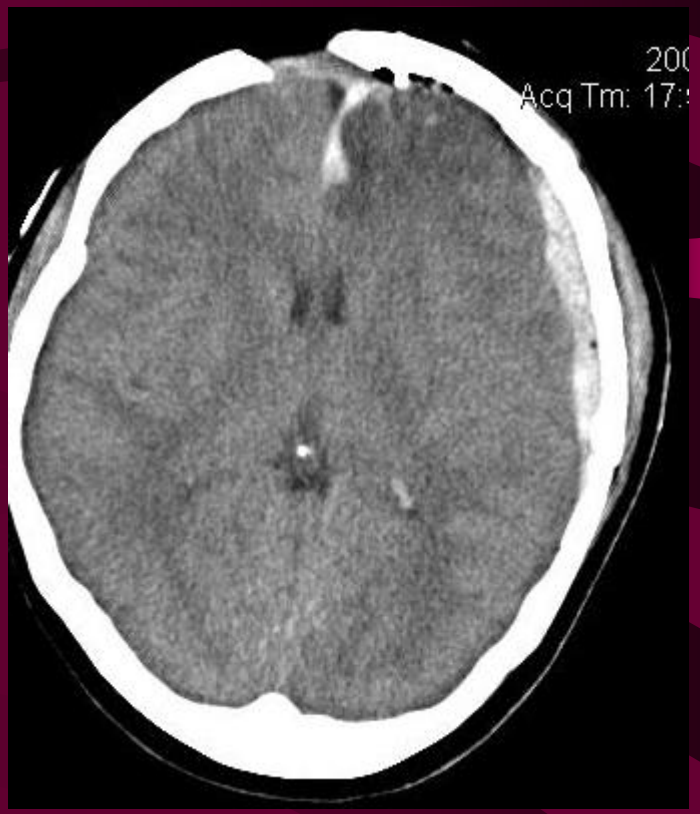
3、占位征象明显

CT表现－急性硬膜下血肿



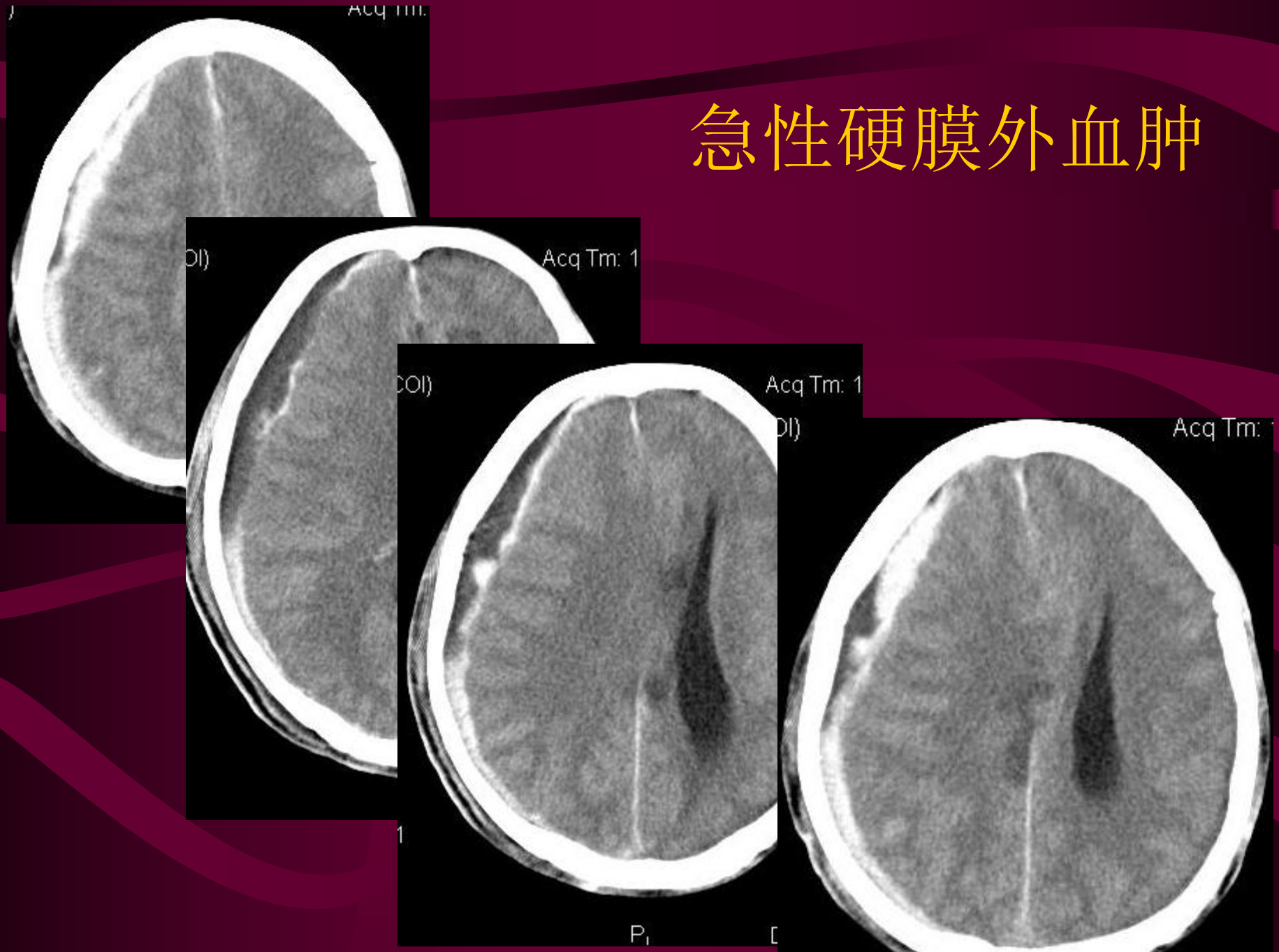


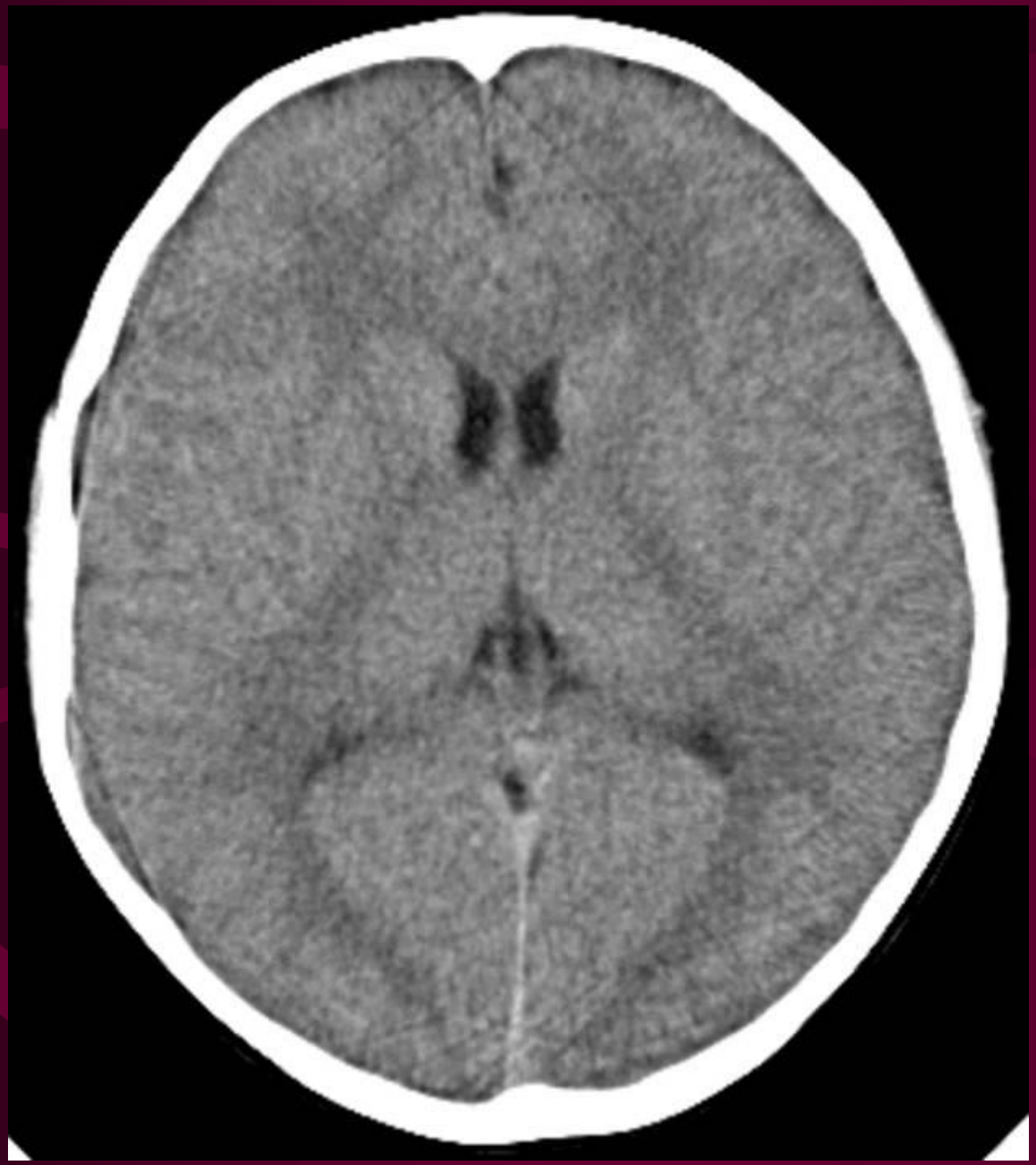




硬膜下血肿

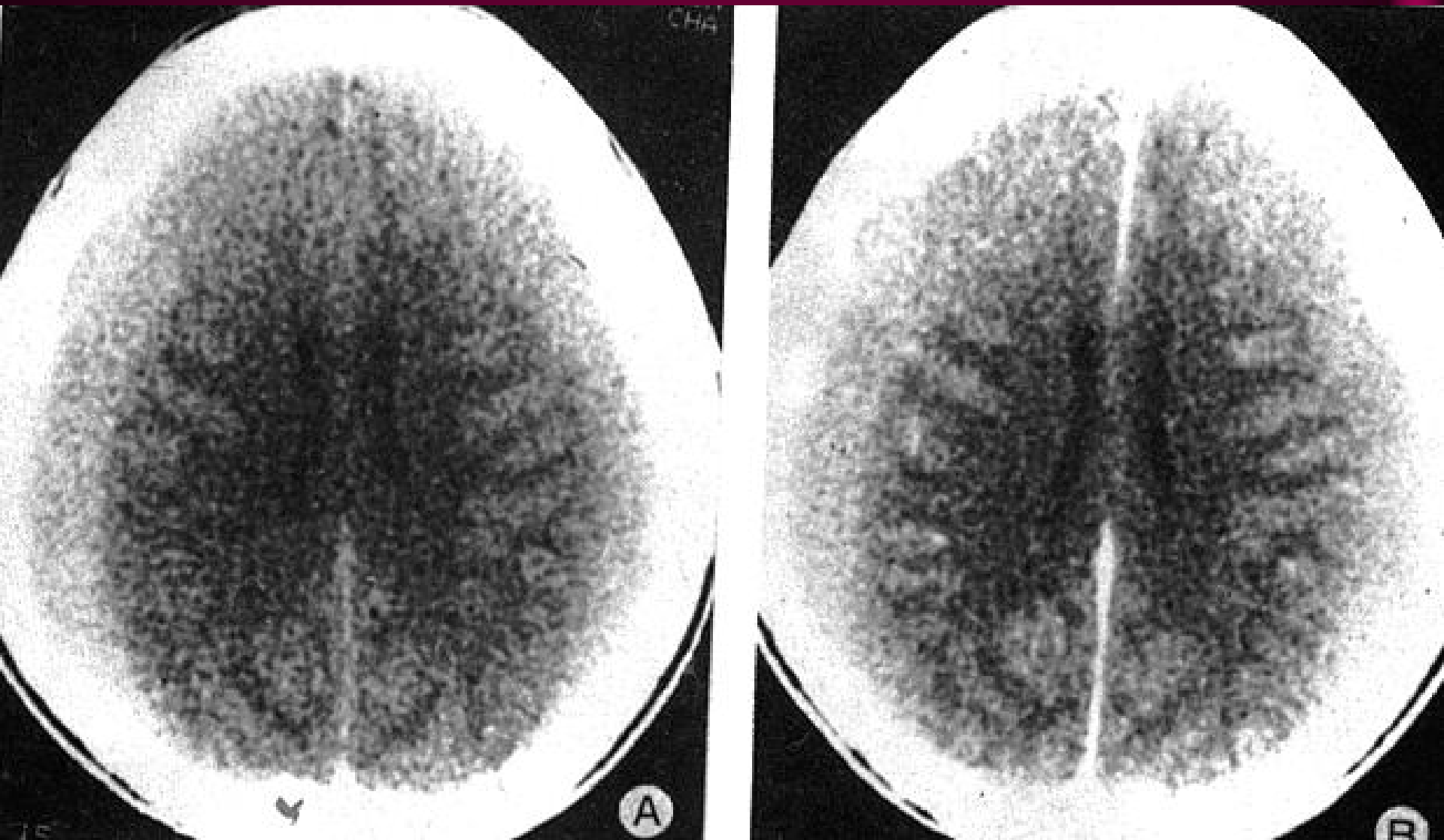
急性硬膜外血肿

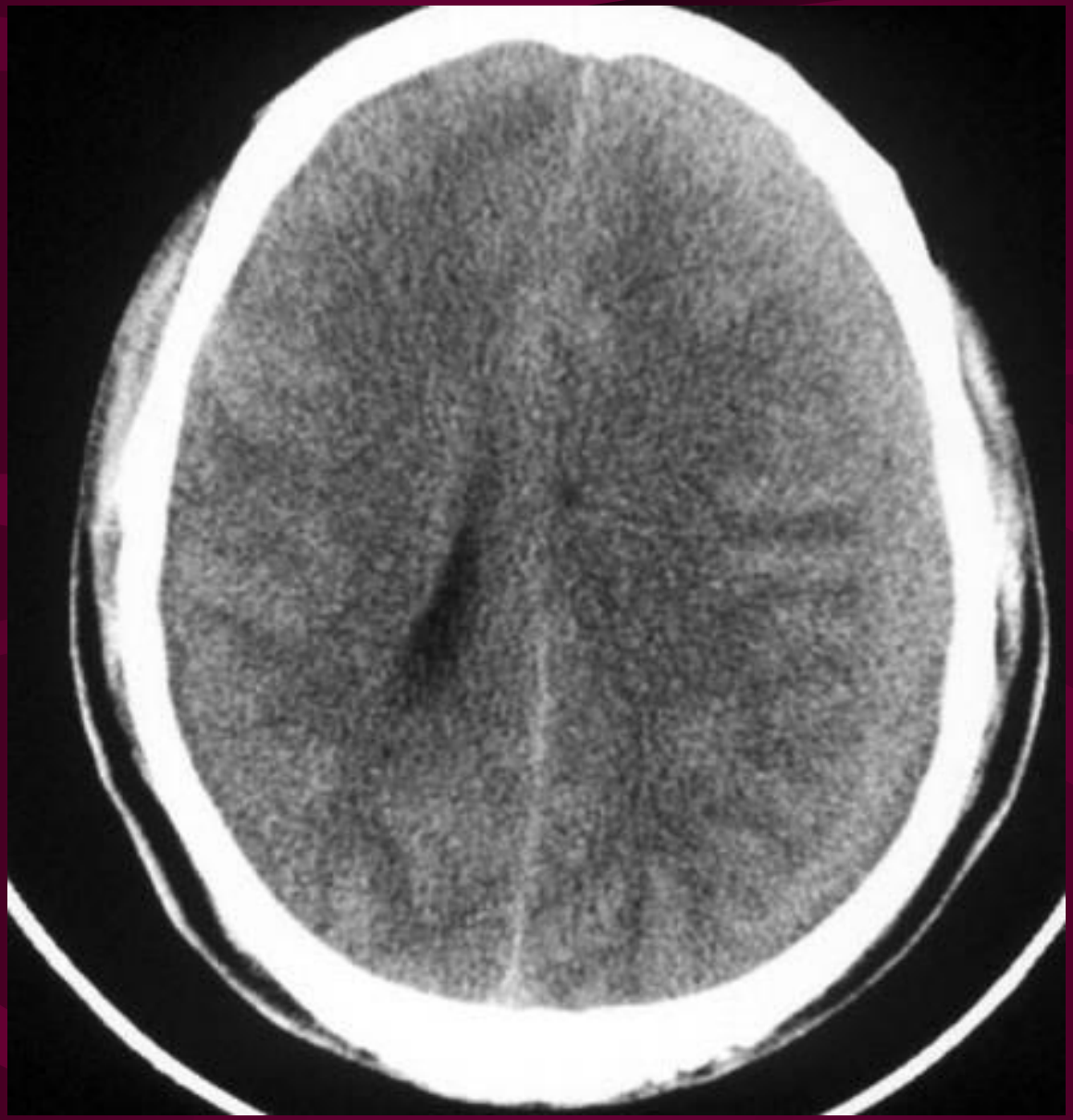


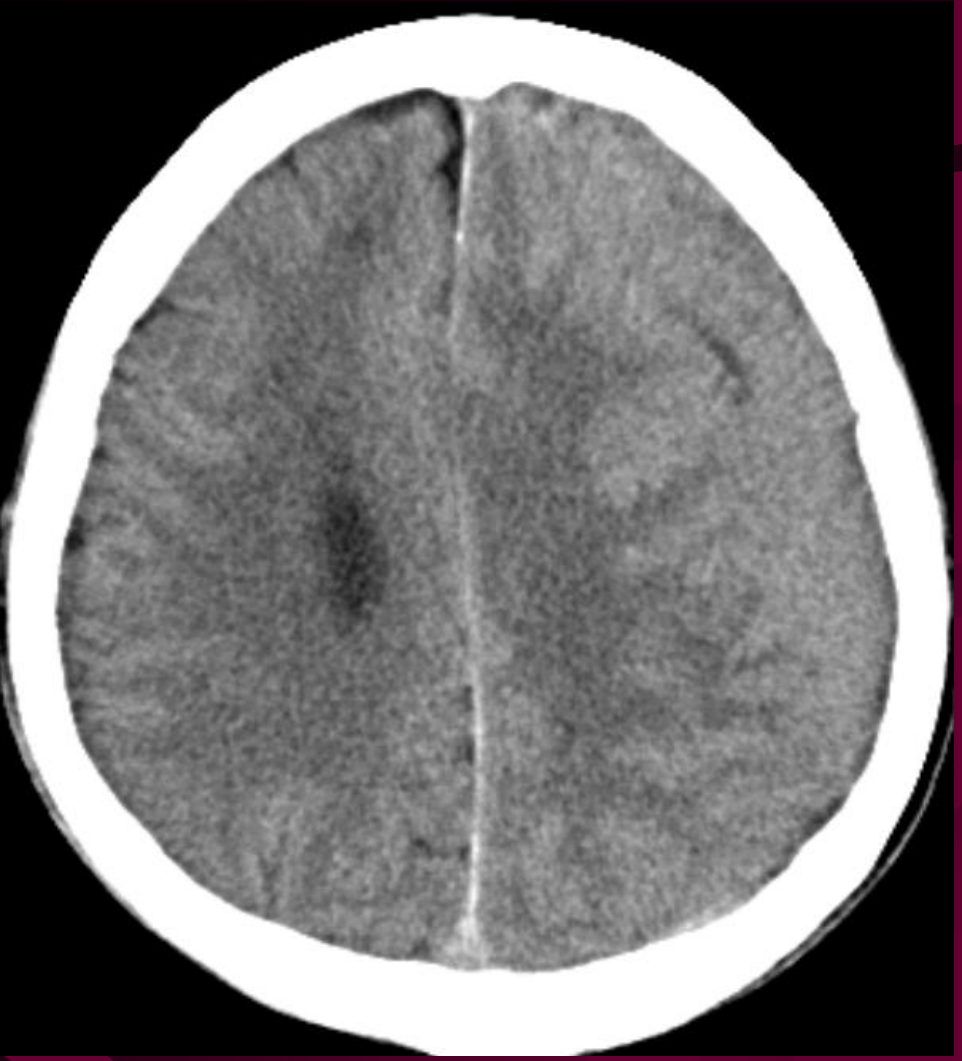


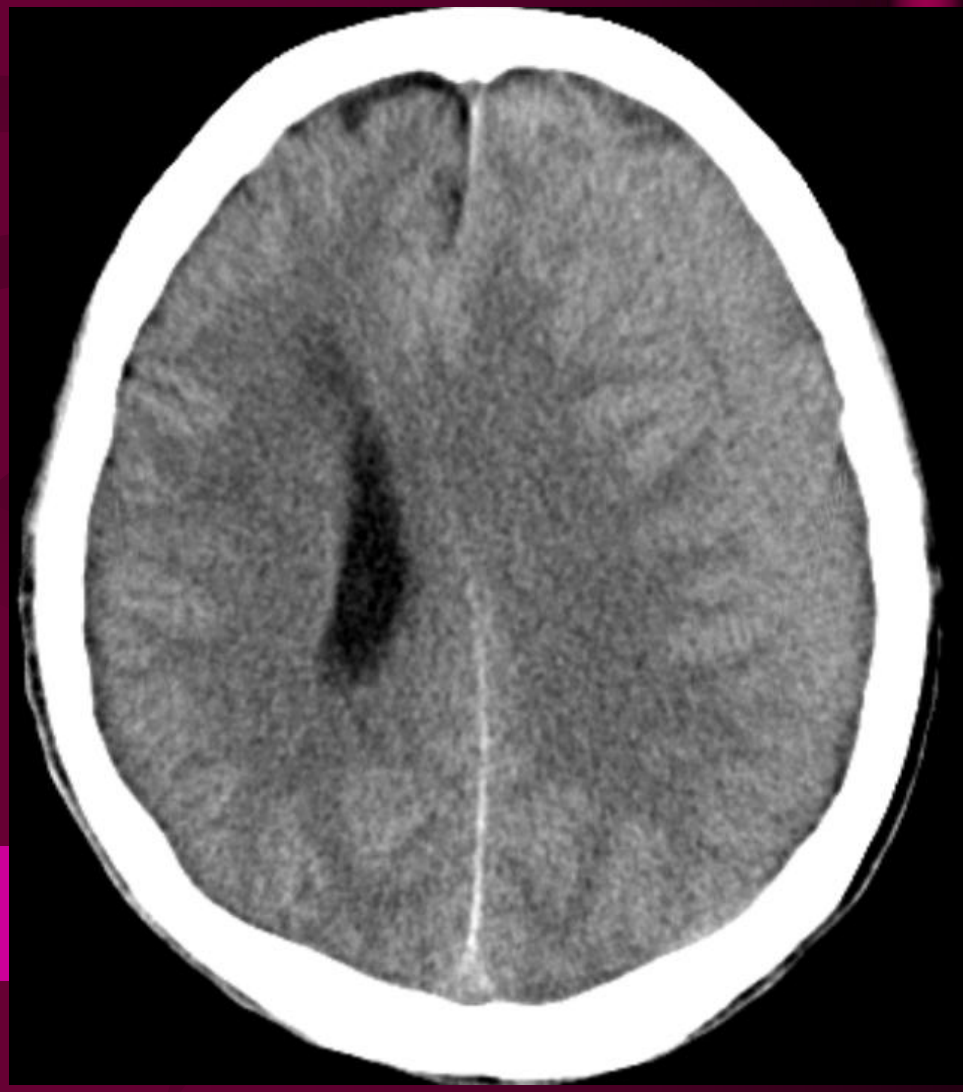
假血肿

CT表现－亚急性硬膜下血肿



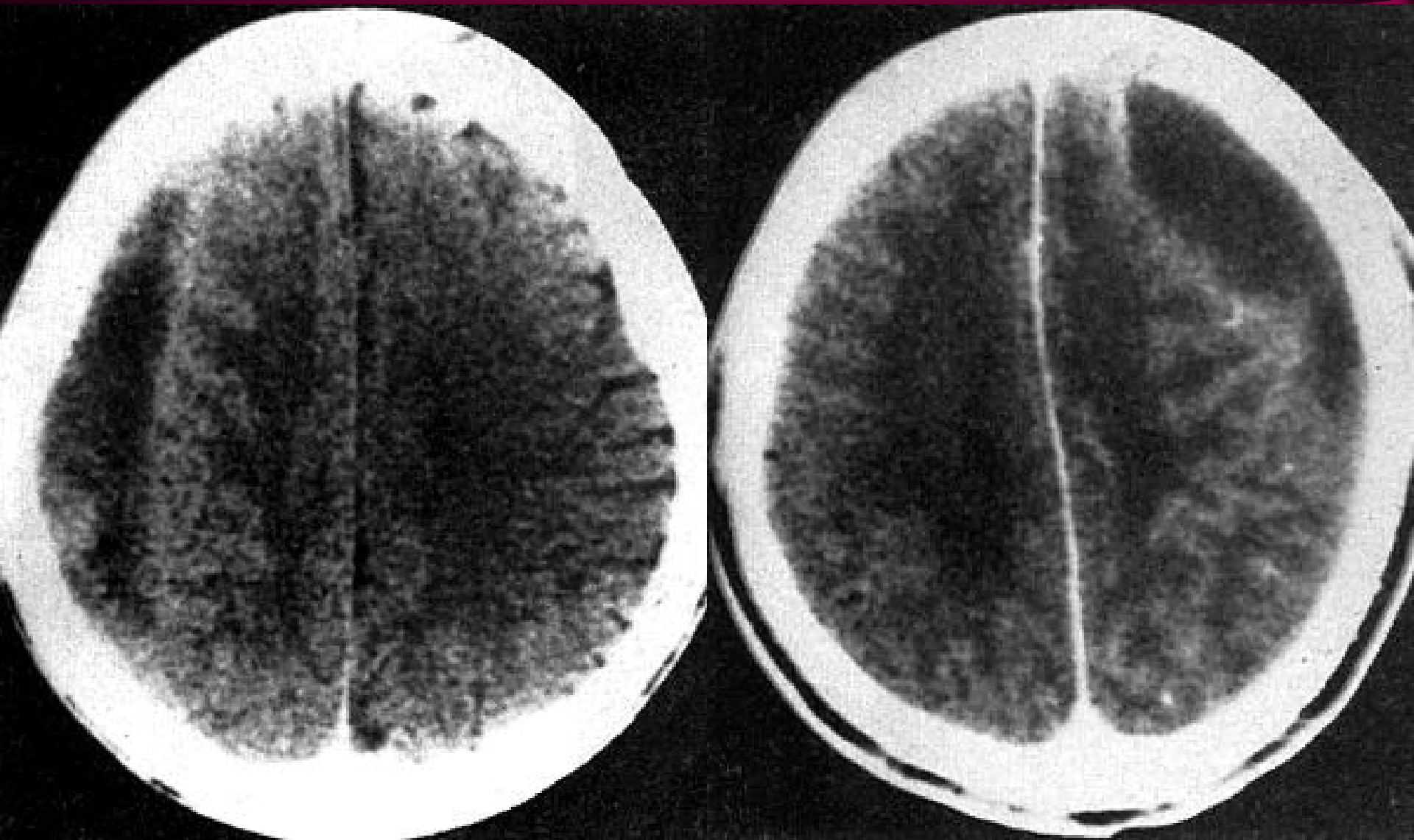


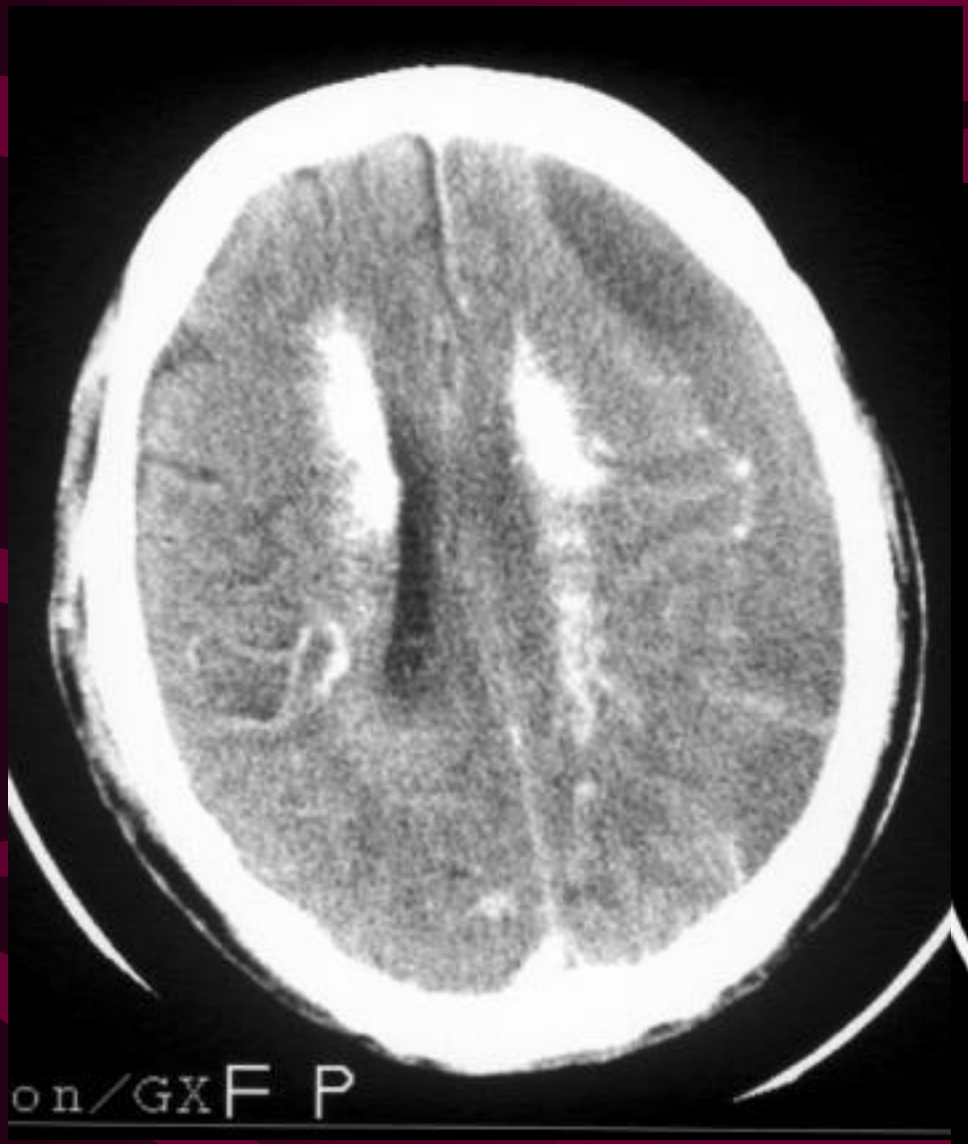


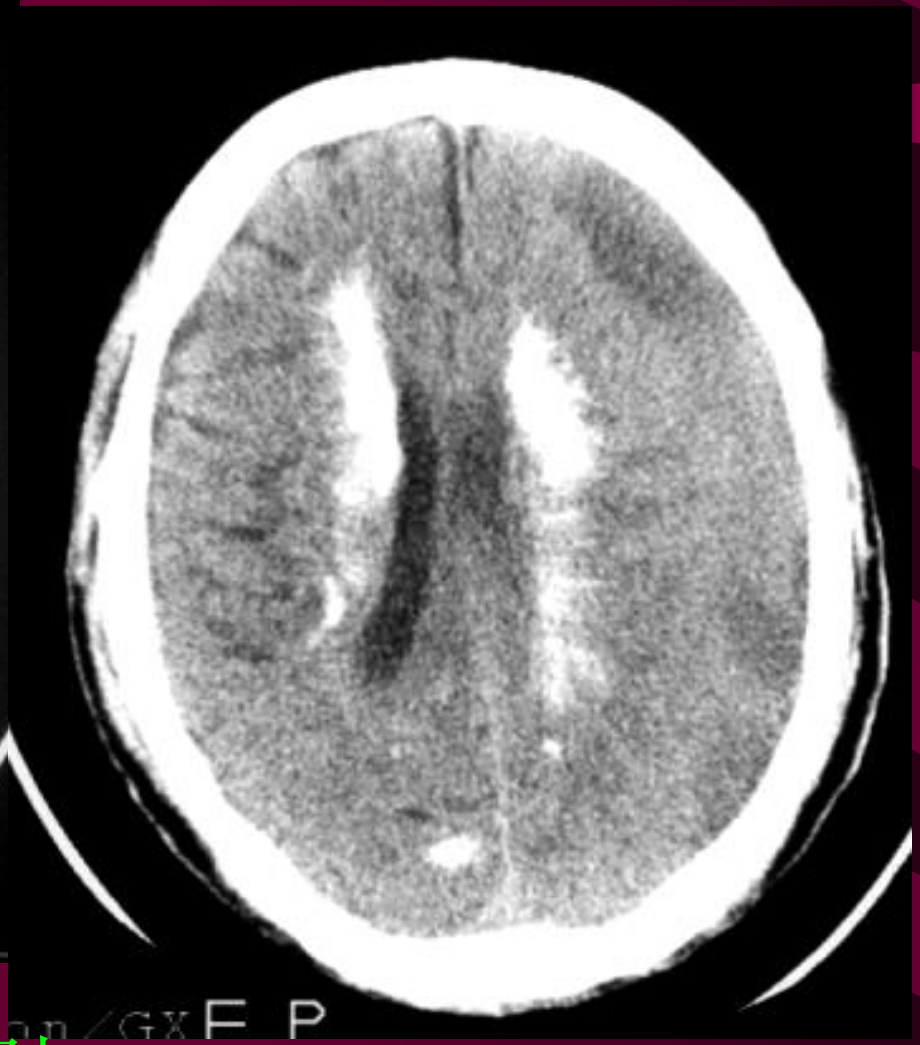


亚急性硬膜下血肿

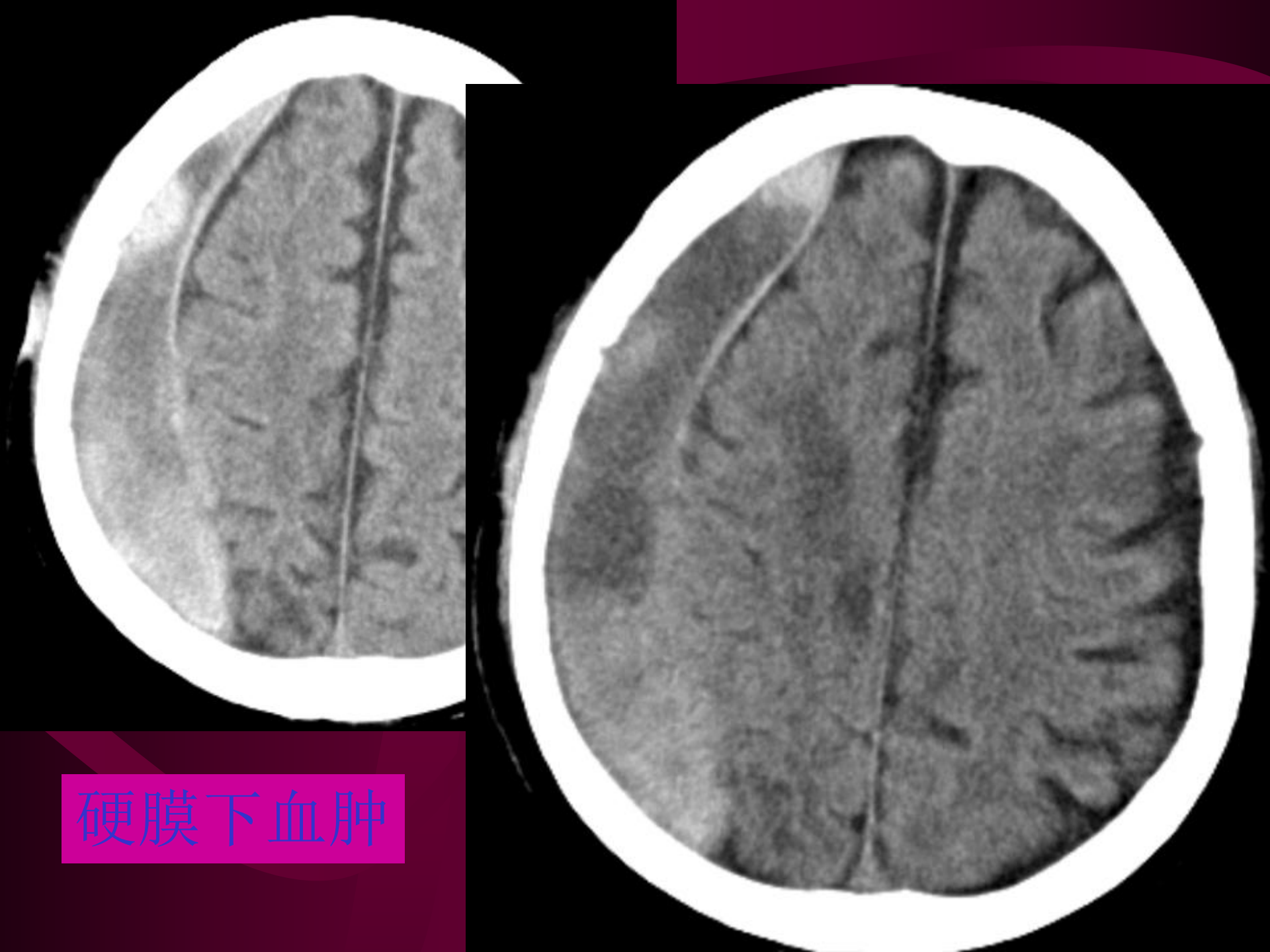
CT表现－慢性硬膜下血肿



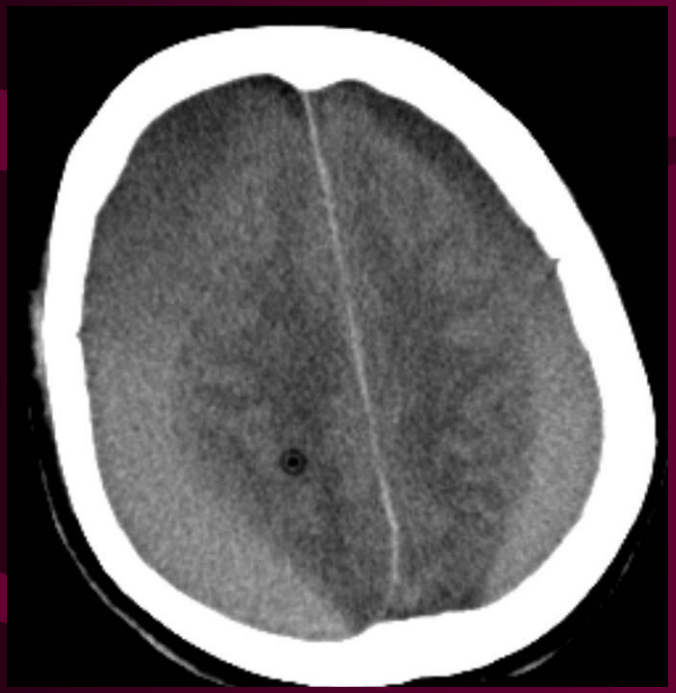


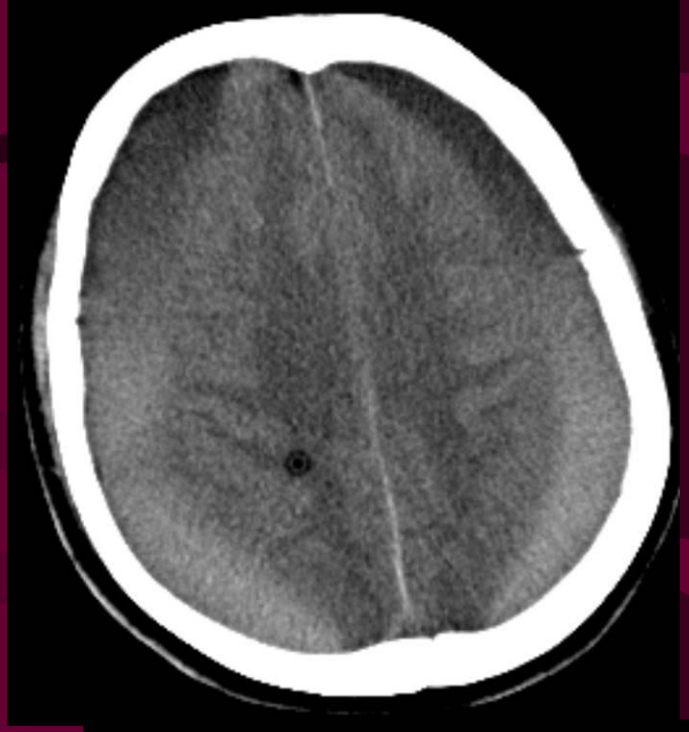


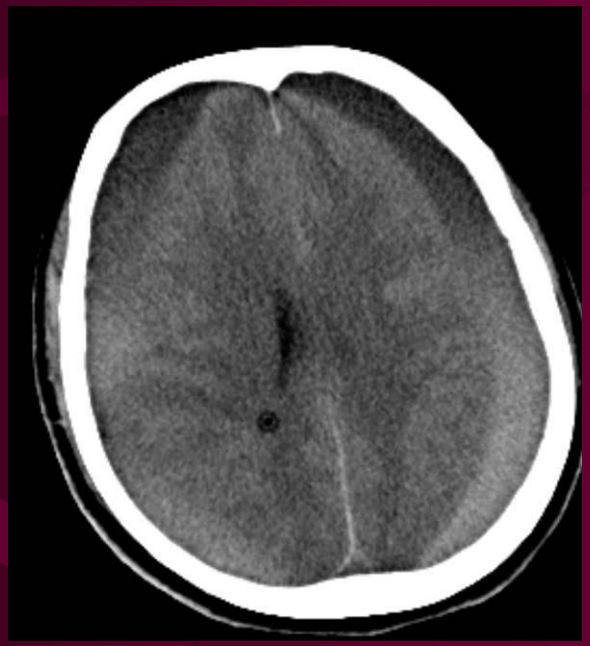
慢性硬膜下血肿

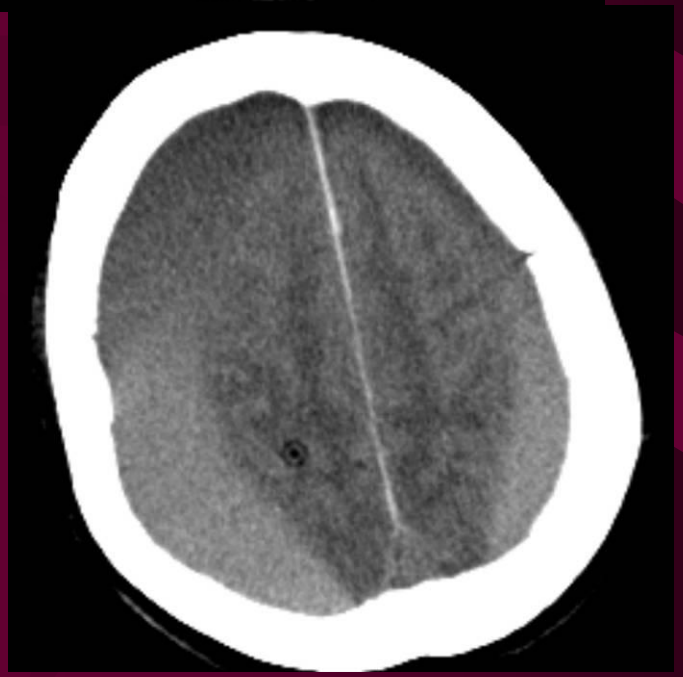


硬膜下血肿









MRI表现－急性硬膜下血肿

去氧血红蛋白使T2缩短

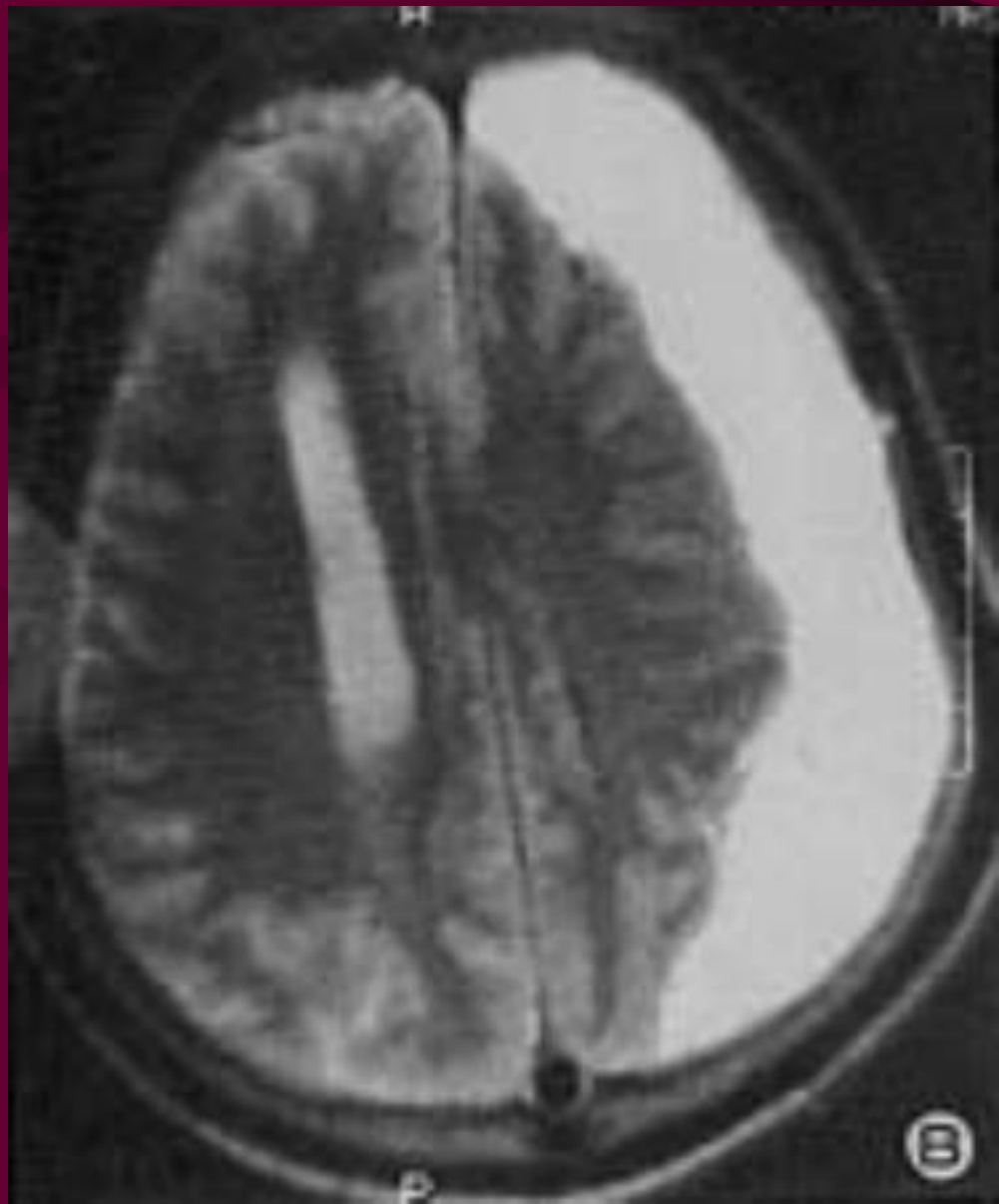
T1W为等信号

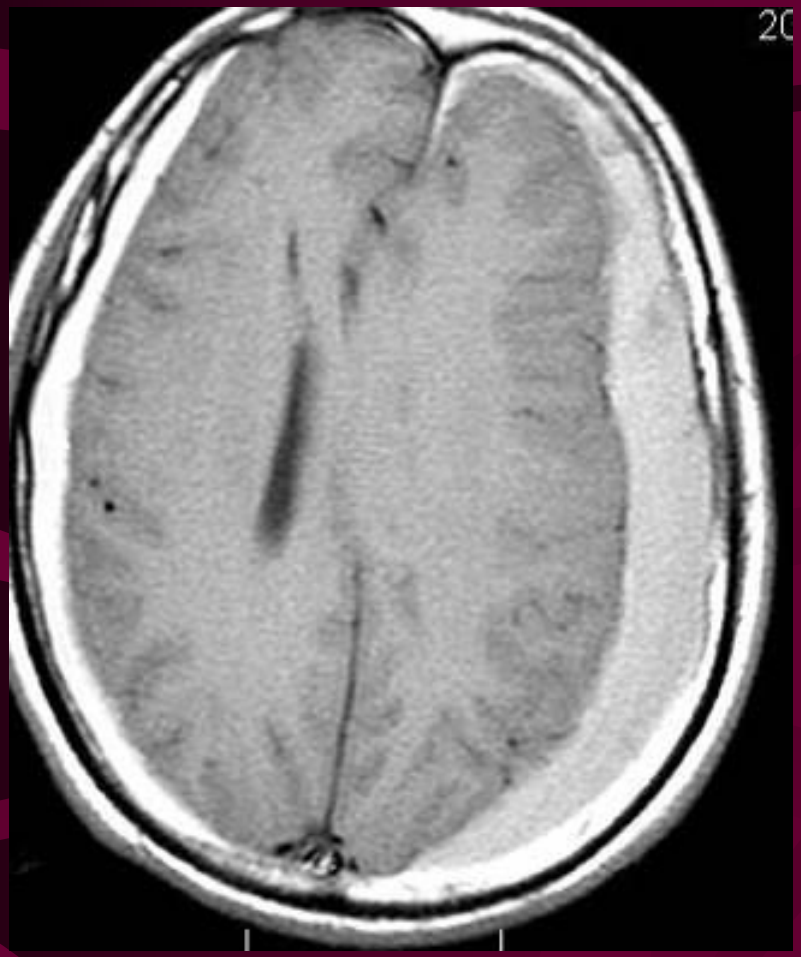
T2W为低信号

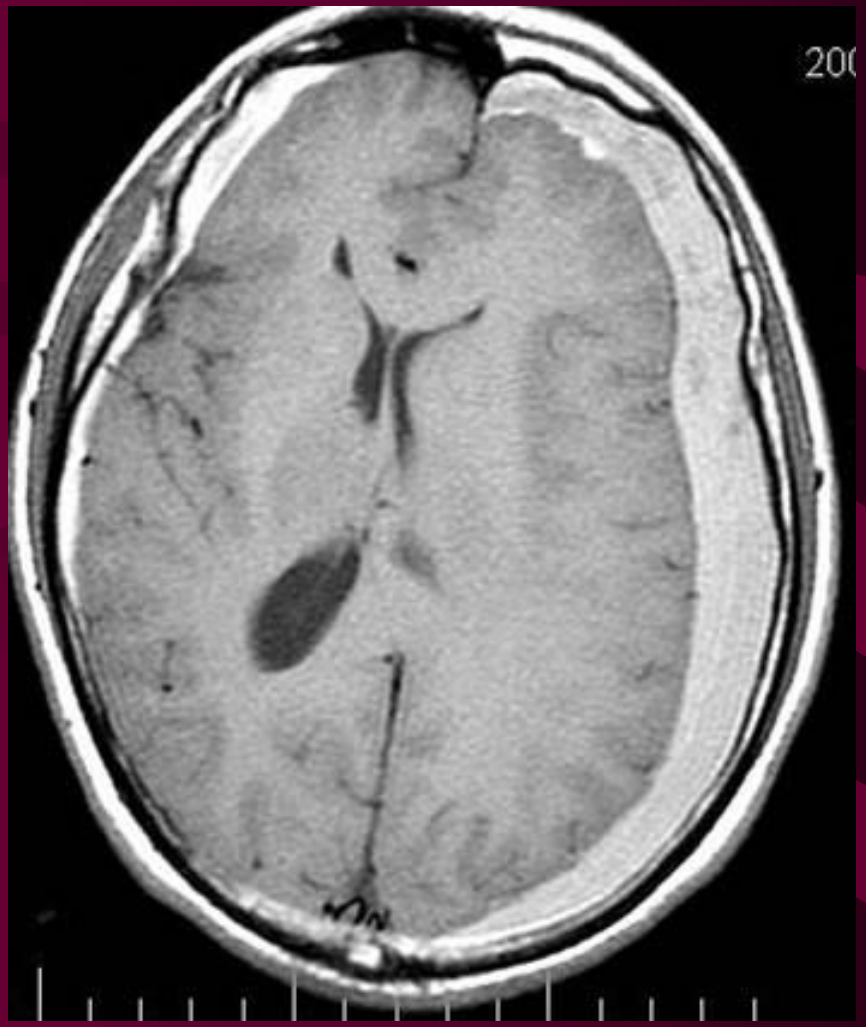
MRI表现－亚急性硬膜下血肿

高铁血红蛋白和溶血使T1缩短，T2延长

T1W和T2W均为高信号





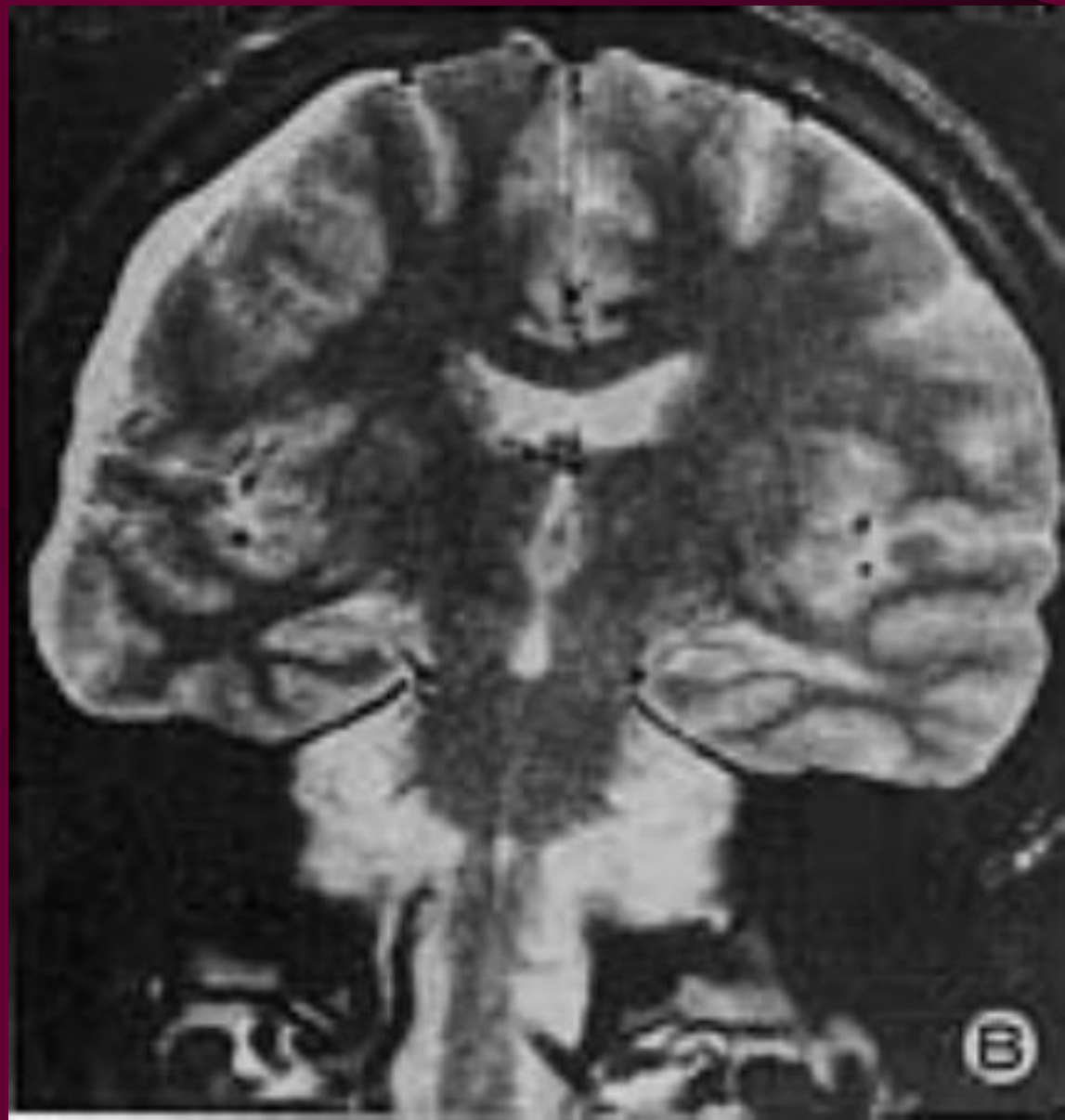


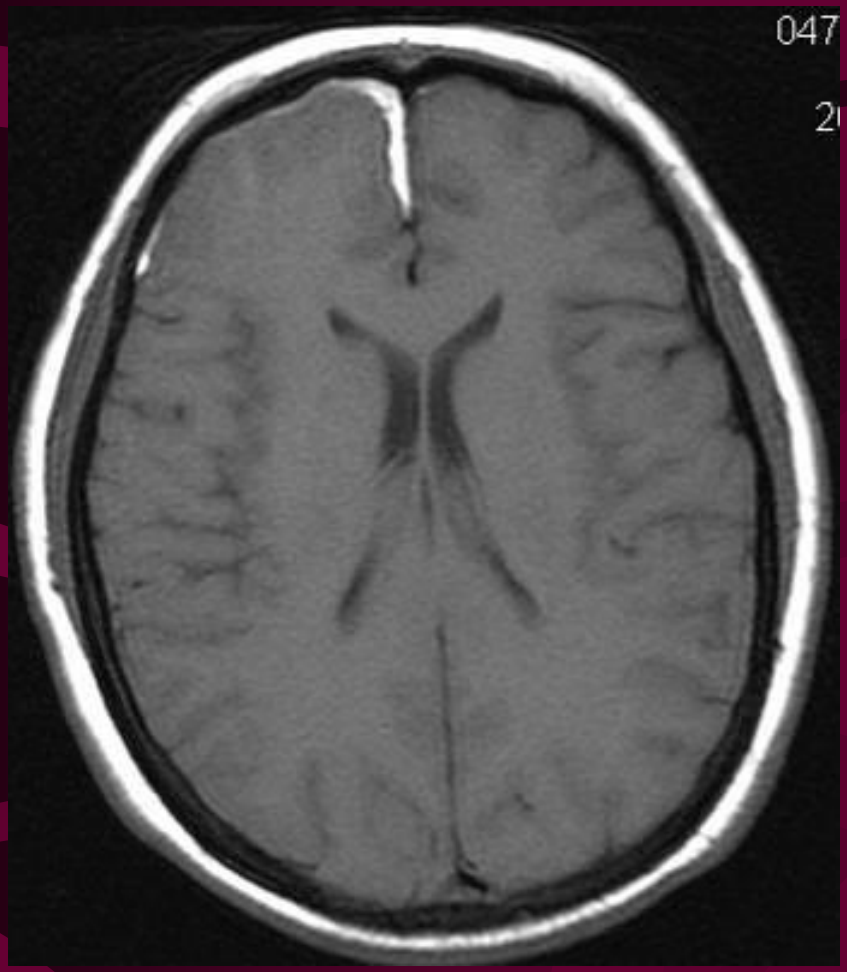
MRI表现—慢性硬膜下血肿

高铁血红蛋白变成血红素。

T1W低信号；

T2W高信号。

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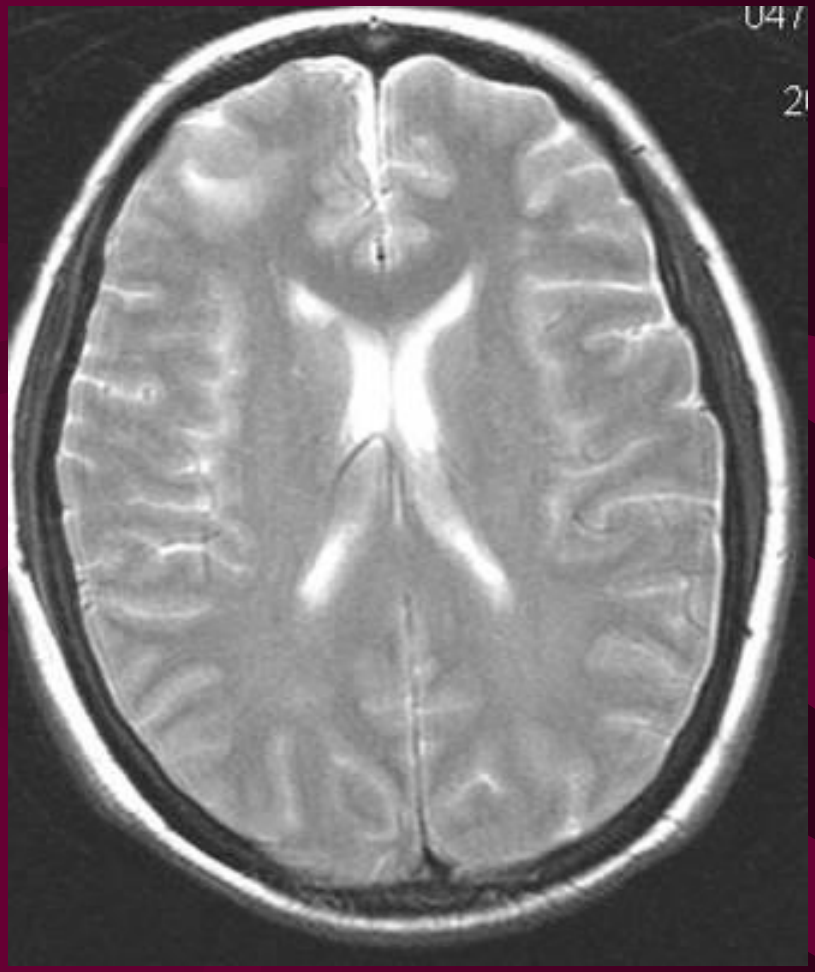
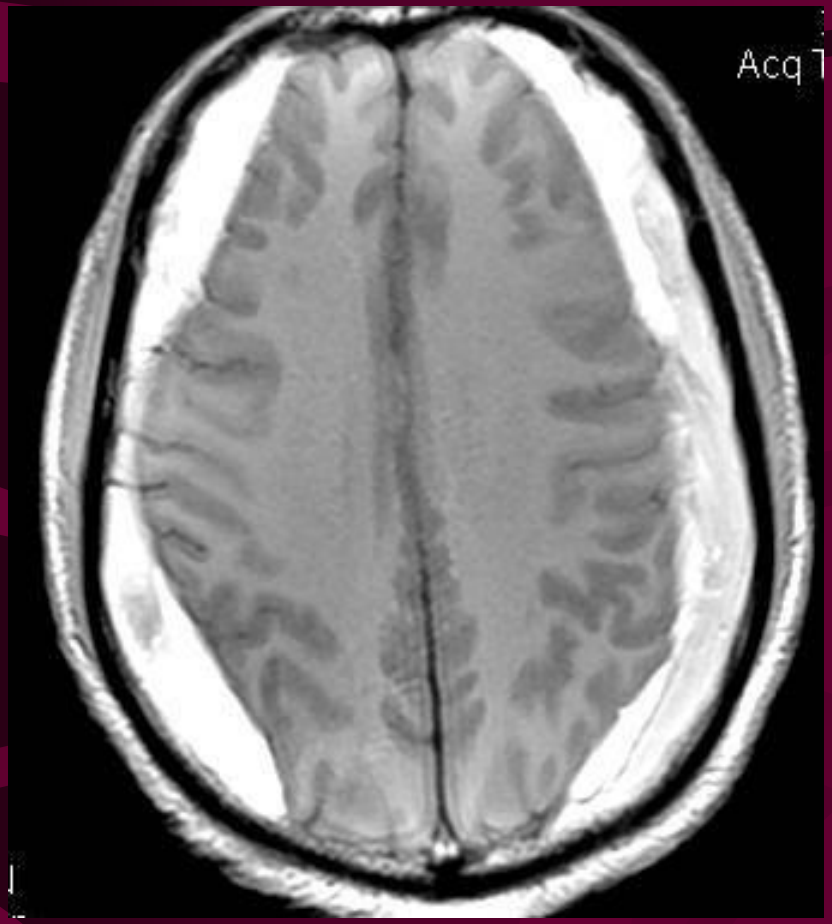
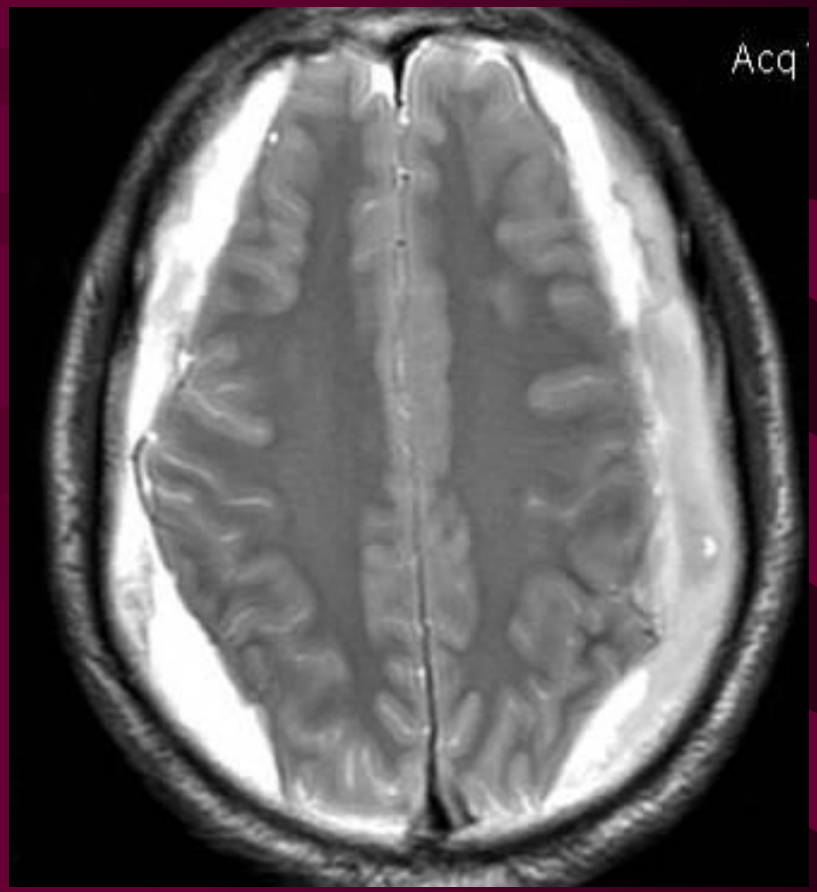
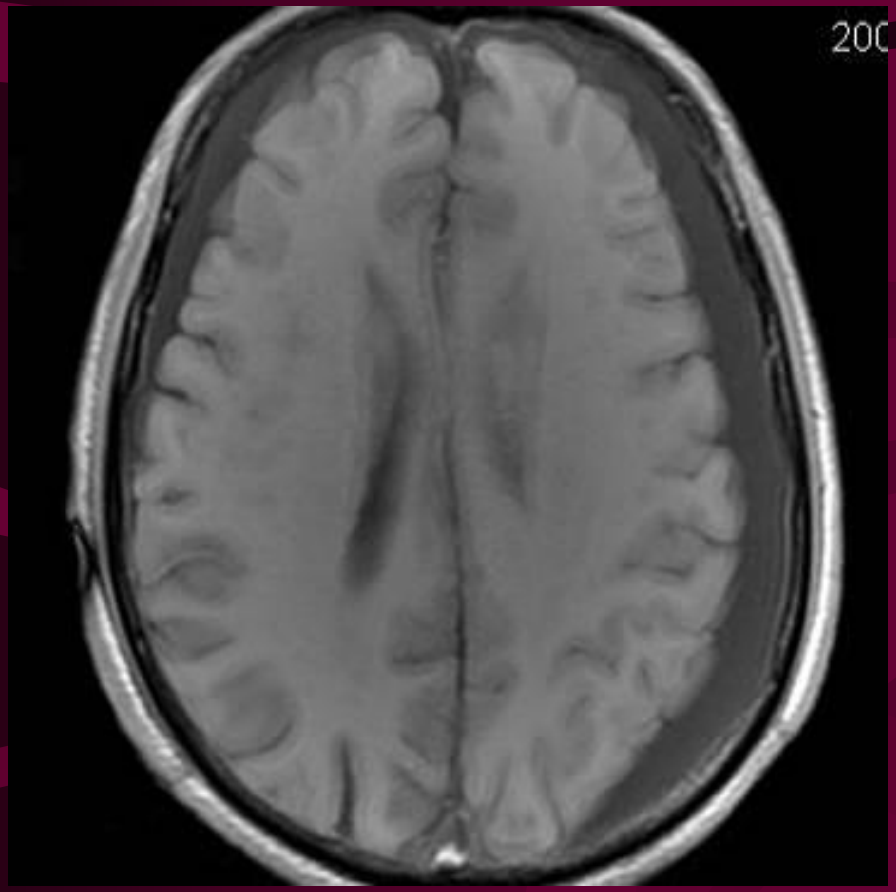
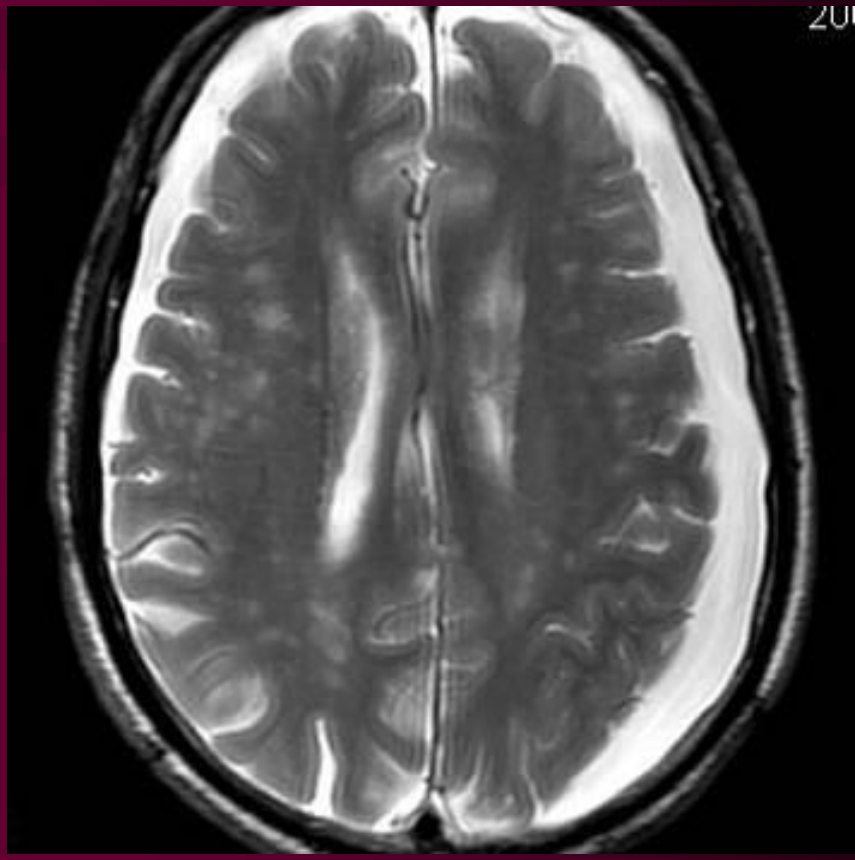






硬膜下血肿





硬膜下血肿吸收


TIANDESK

脑内血肿

脑实质内出血形成血肿
受力或对冲部位均可
常伴发脑挫裂伤
伤后CT即可显示
9%表现晚

平片和血管造影表现

1、脑内血肿60％伴颅骨骨折

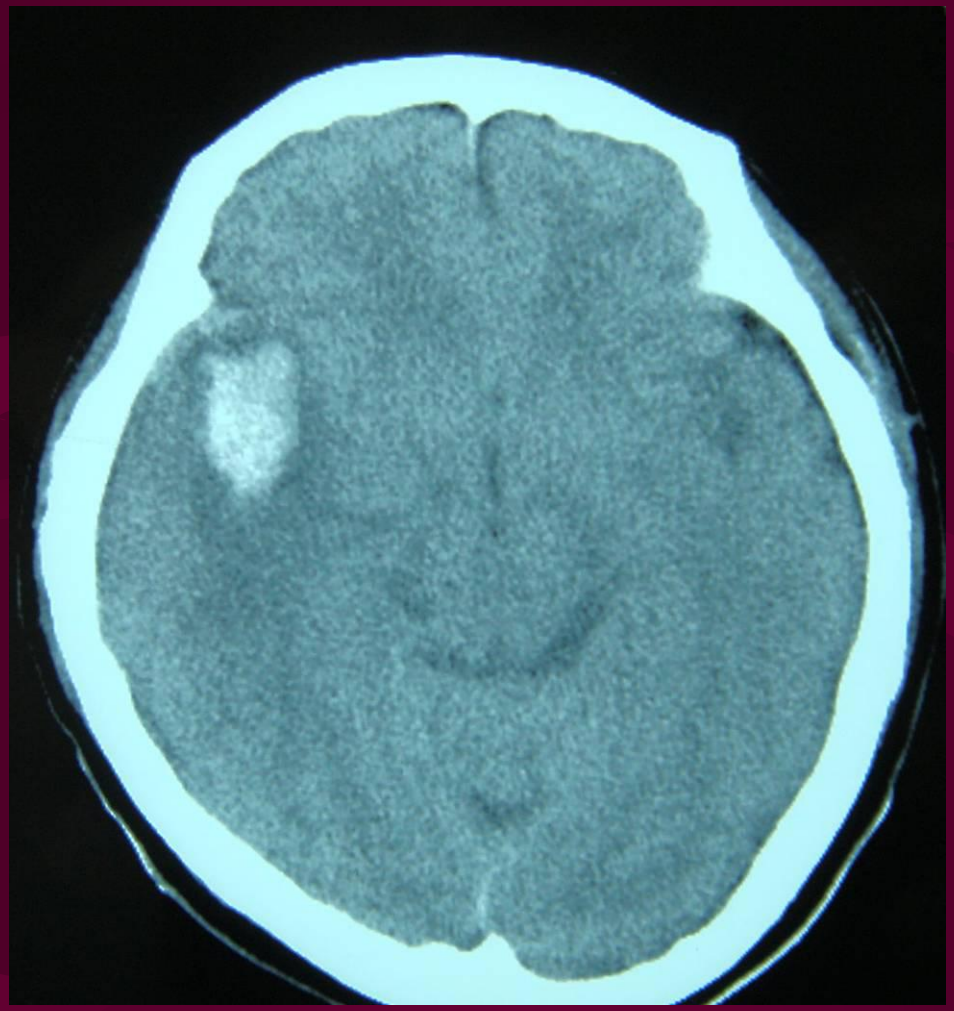
颅内压增高，松果体钙斑移位

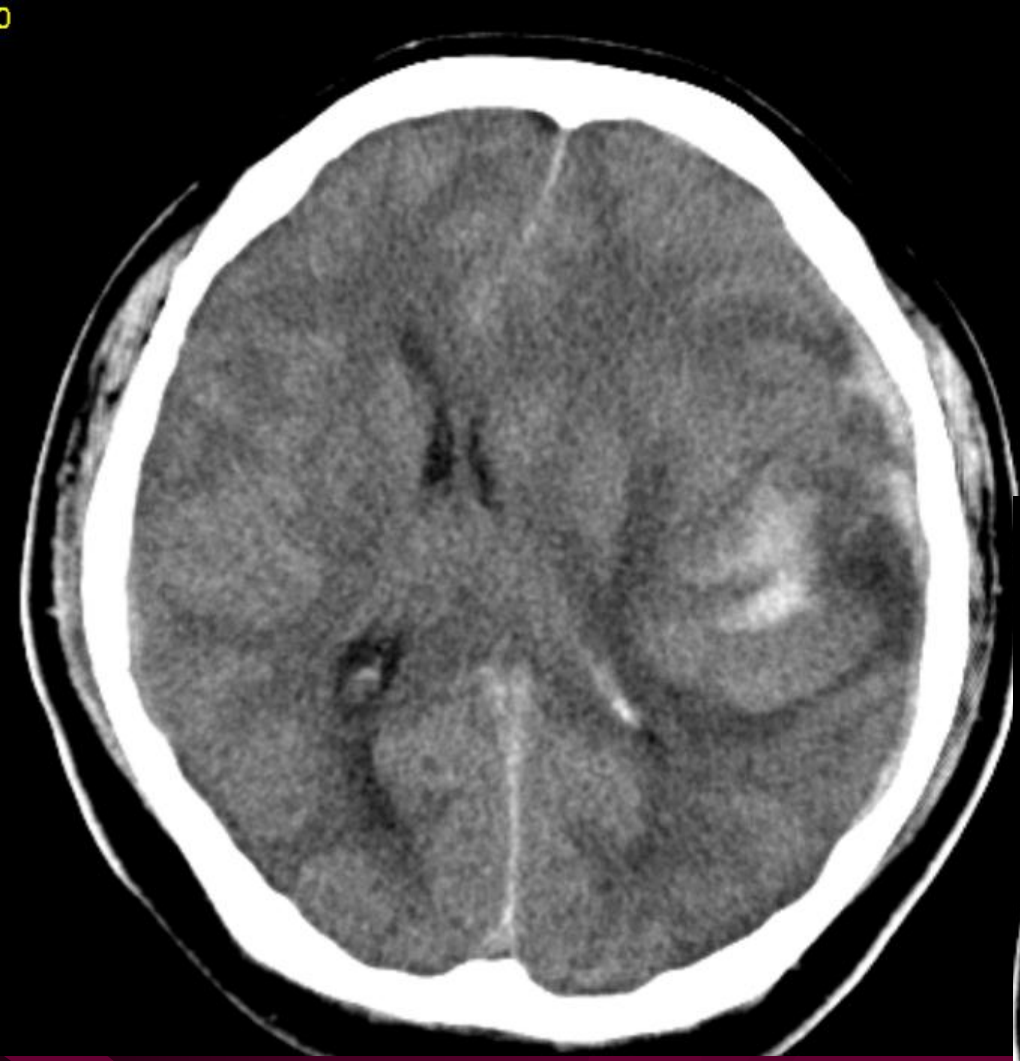
2、脑血管造影：占位表现

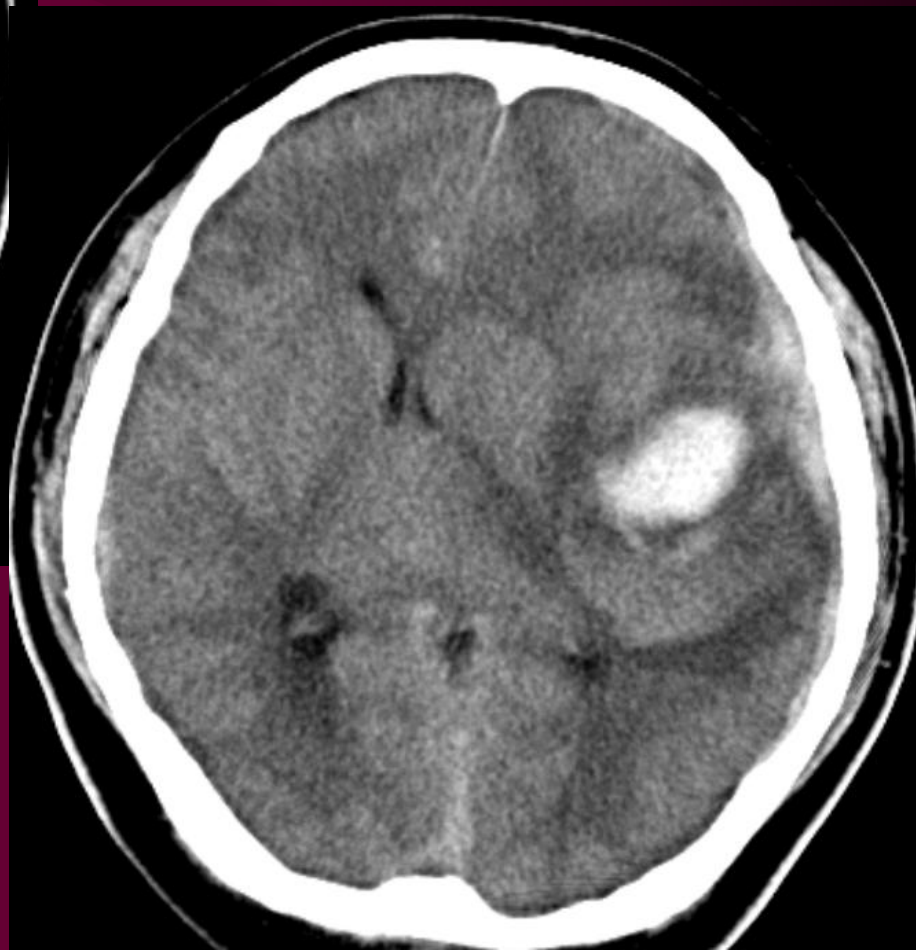
血肿区血管痉挛

脑内血肿－CT表现

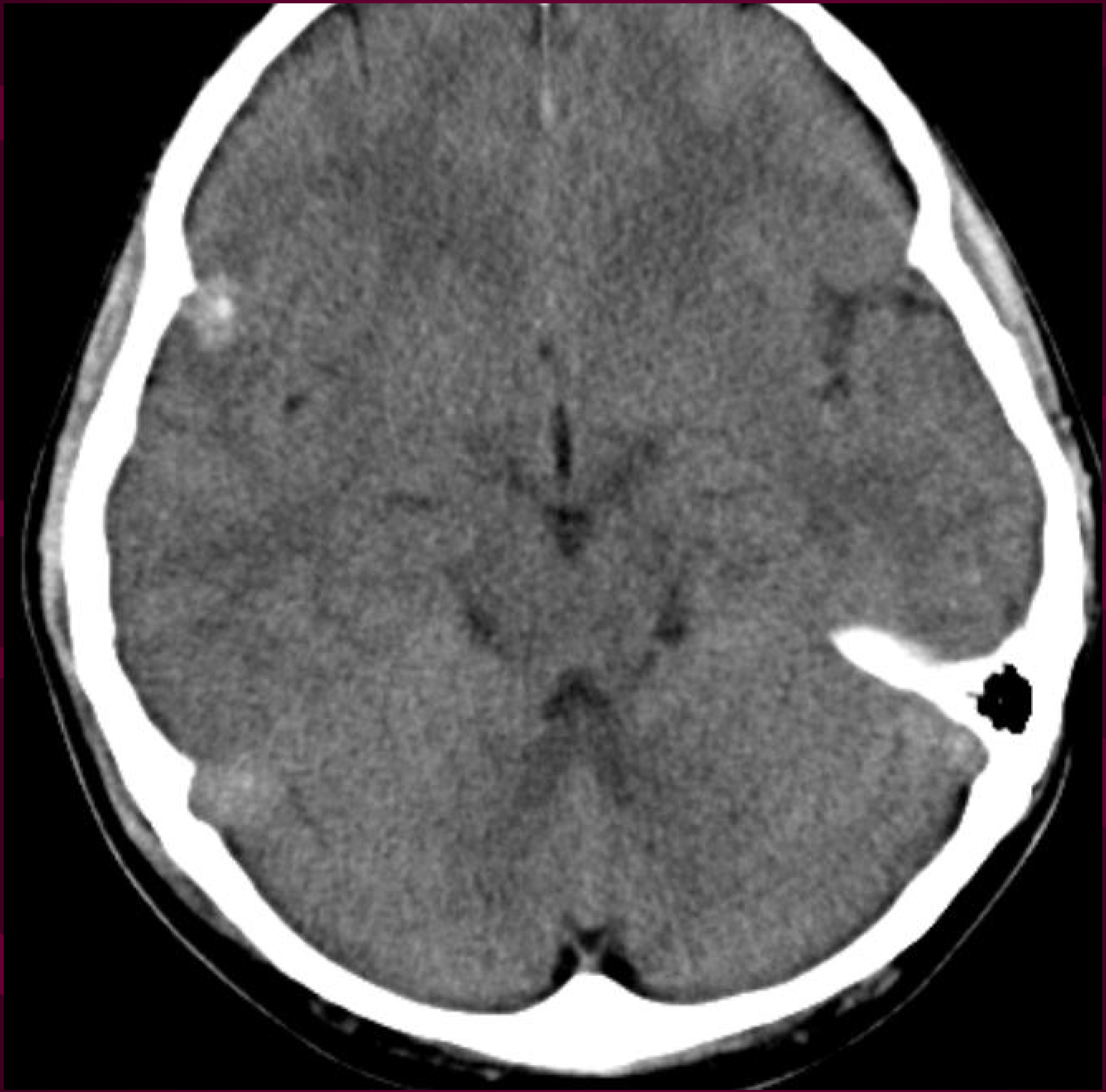
高密度，CT值50～90HU







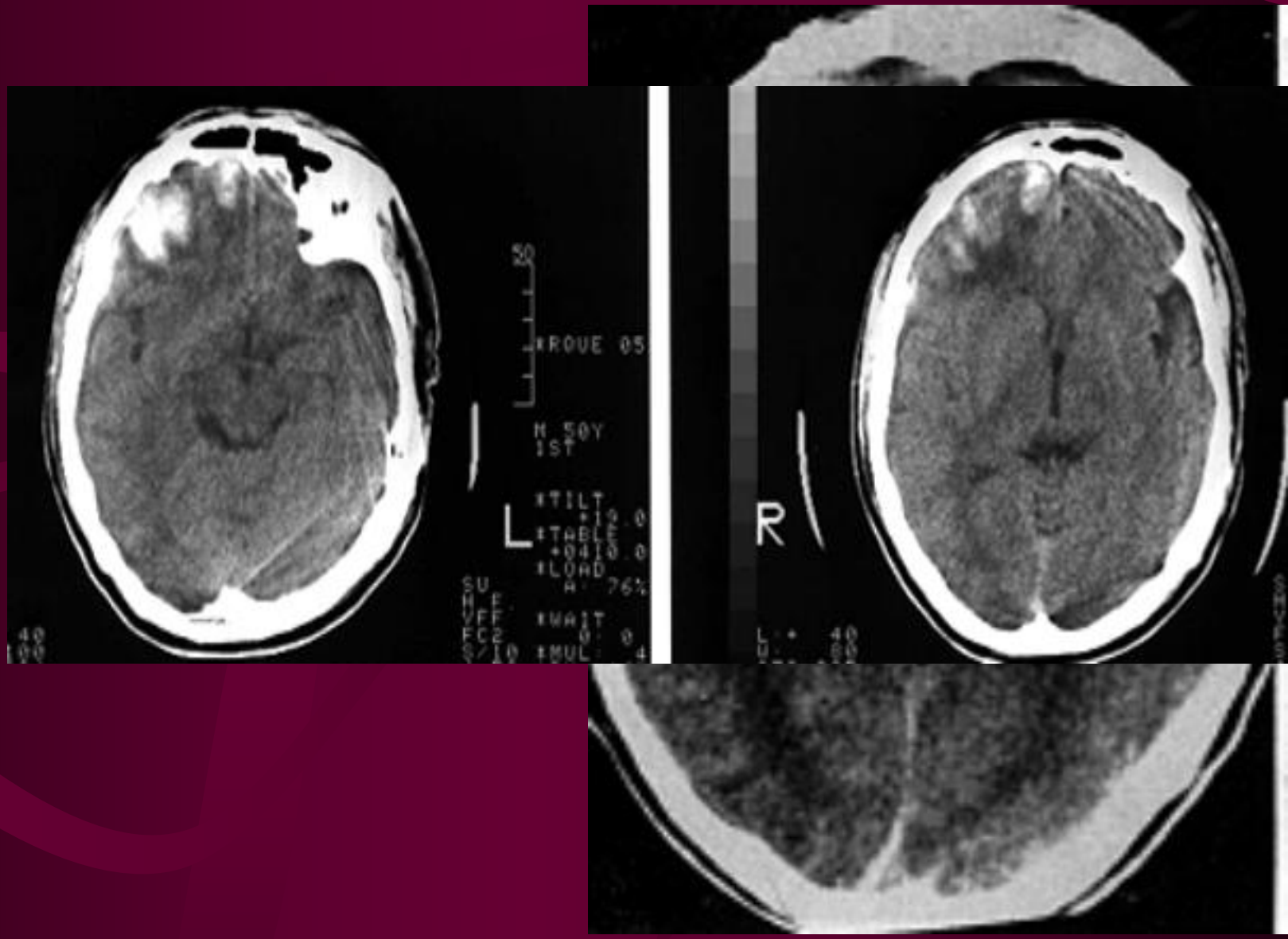
外伤

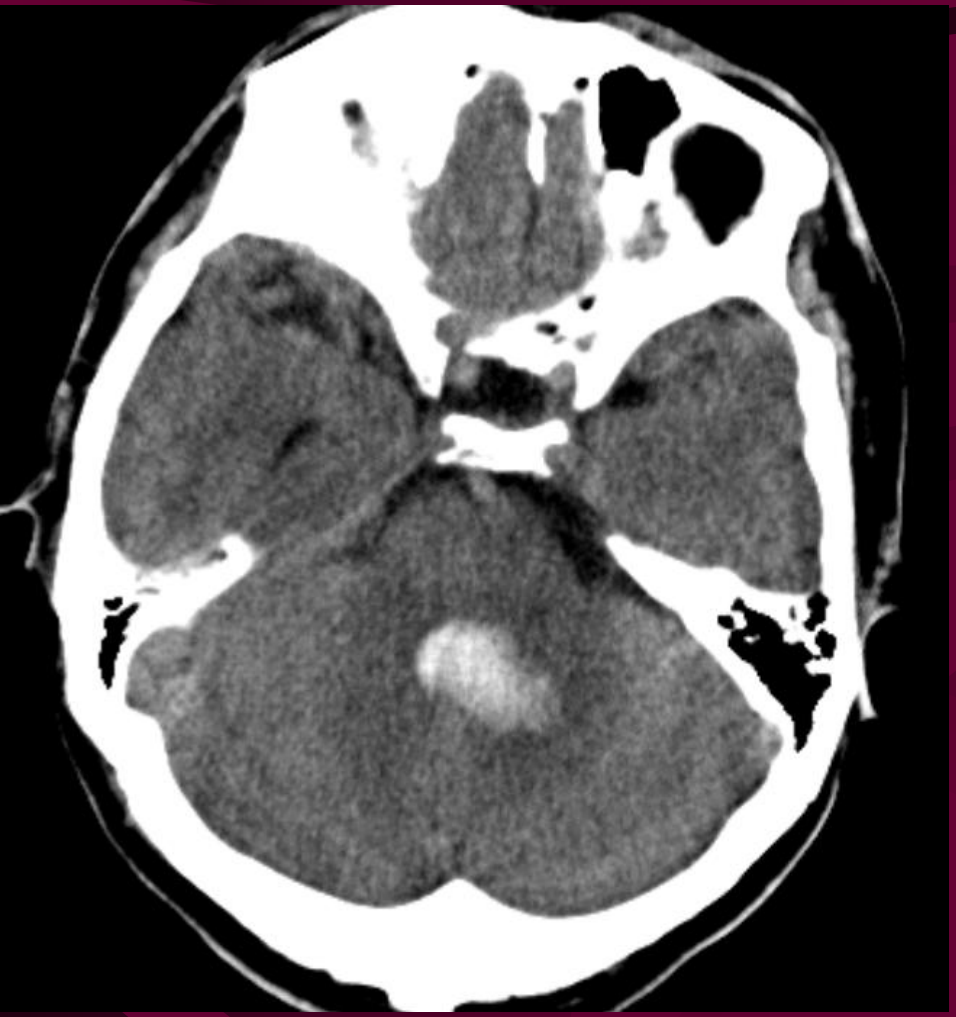


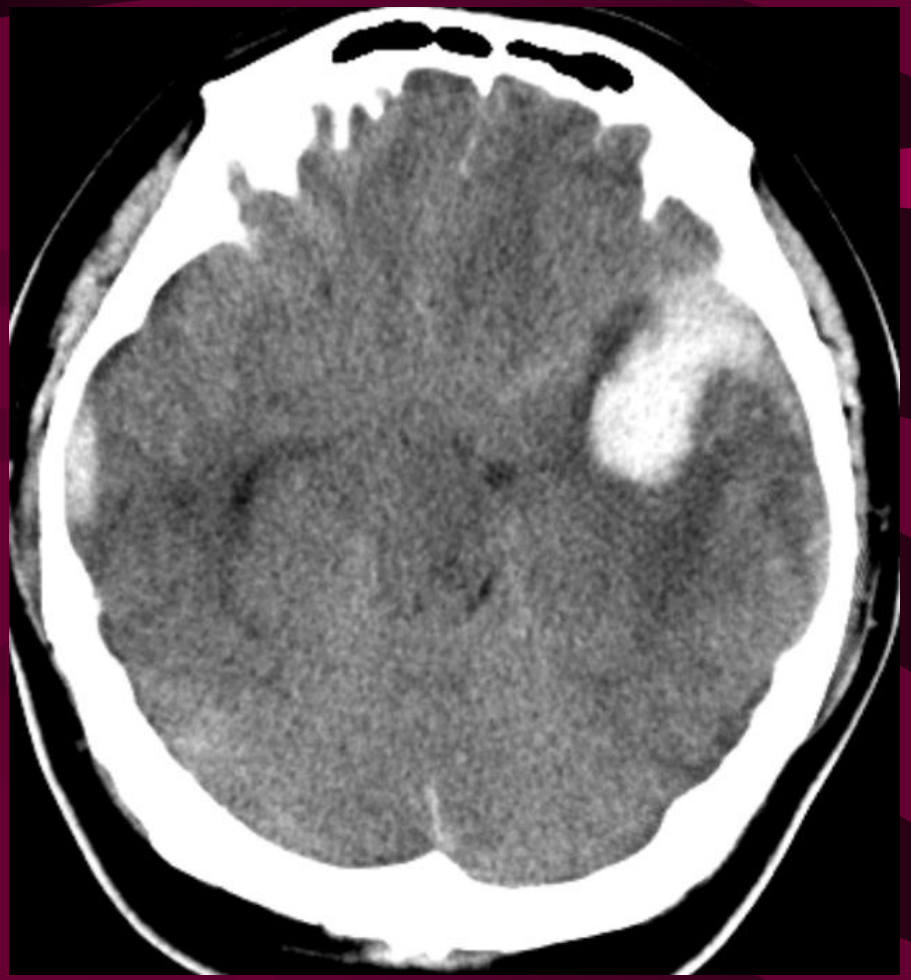
脑内小血肿

脑内血肿—CT表现

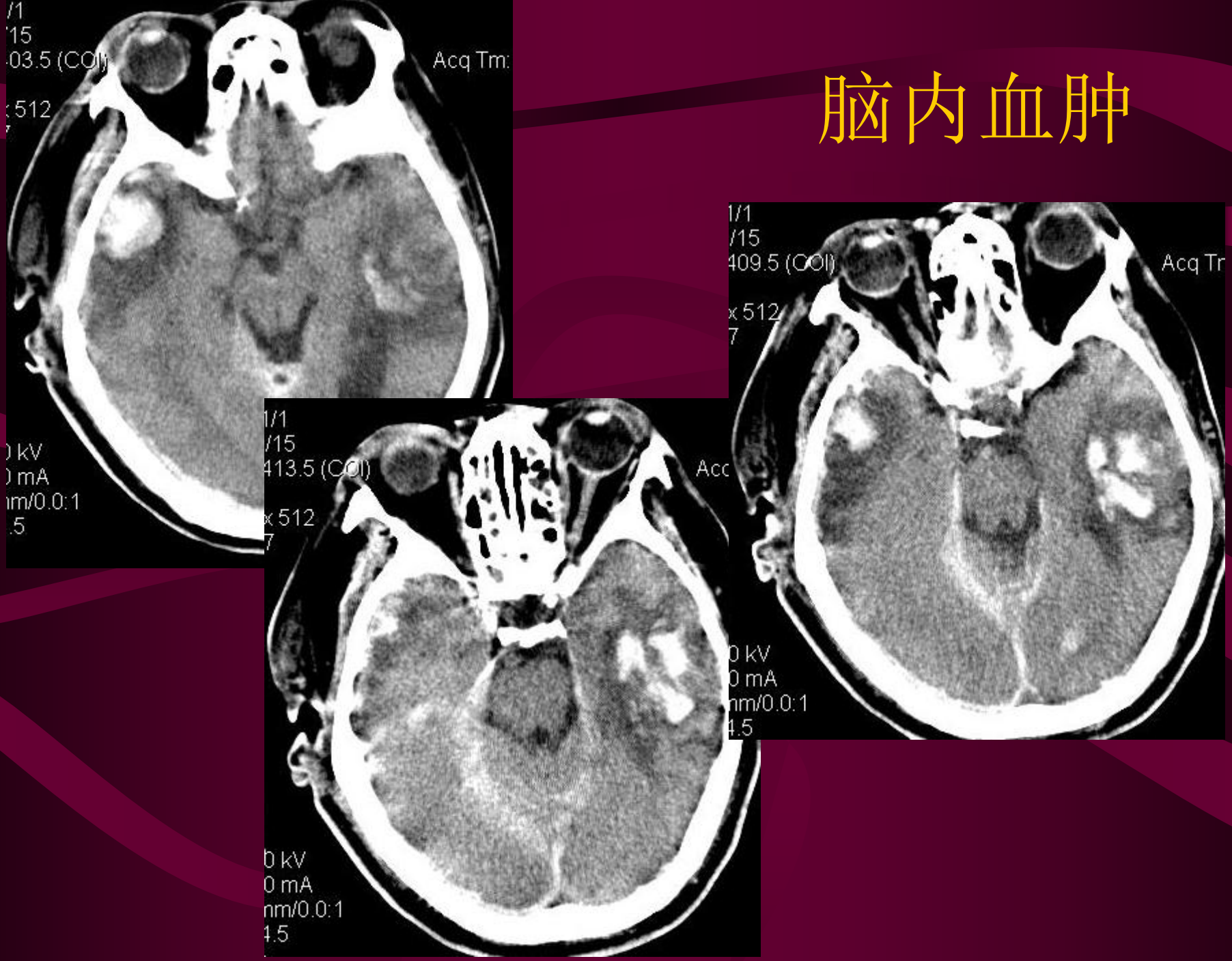
周围有水肿、占位效应



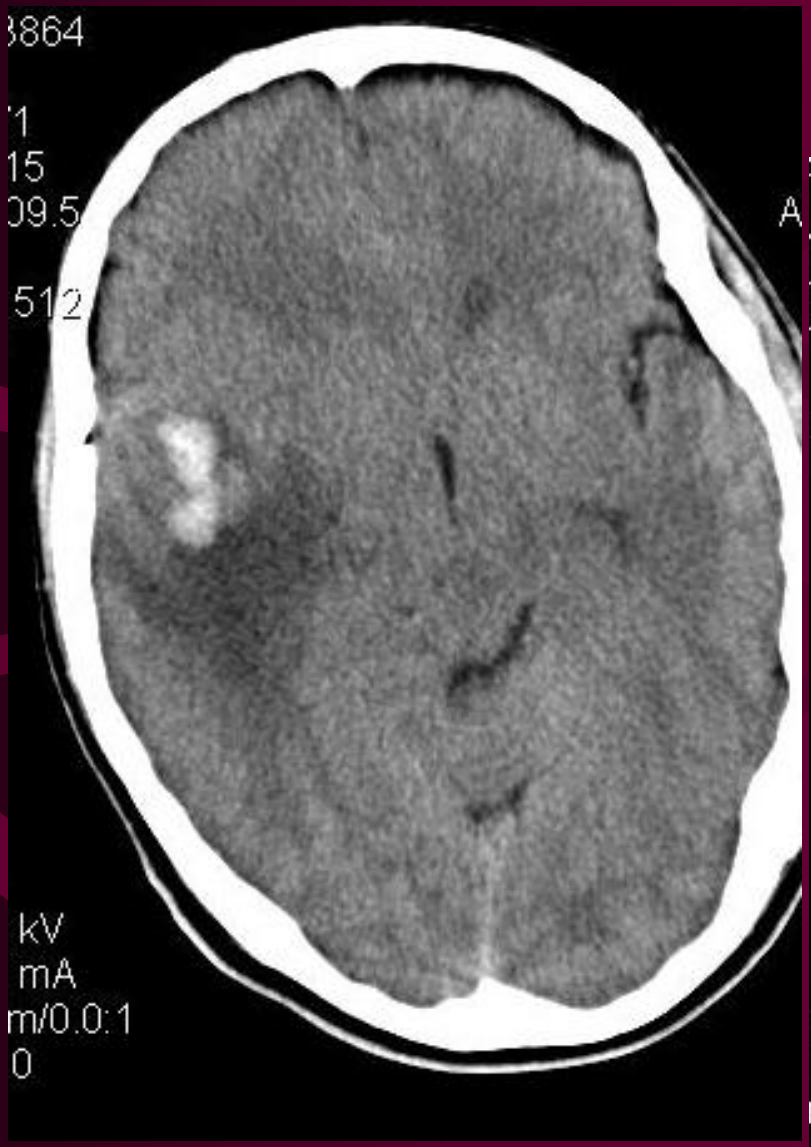


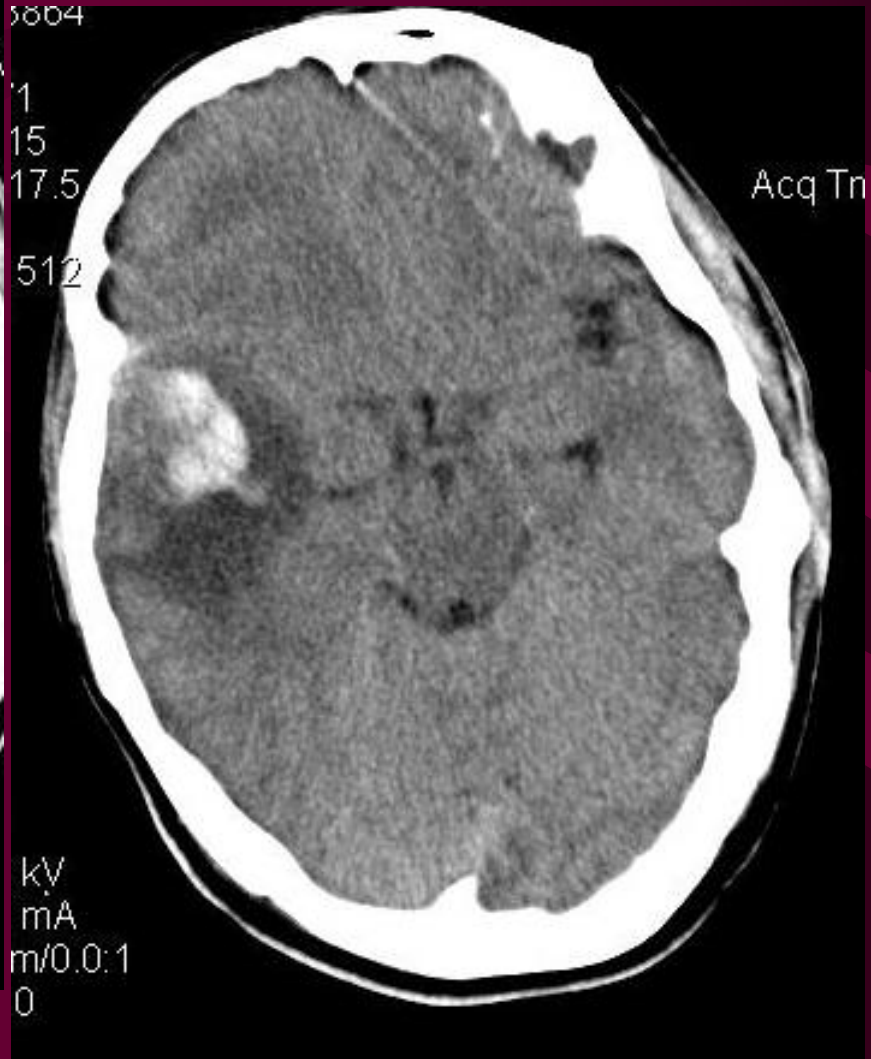


脑内血肿

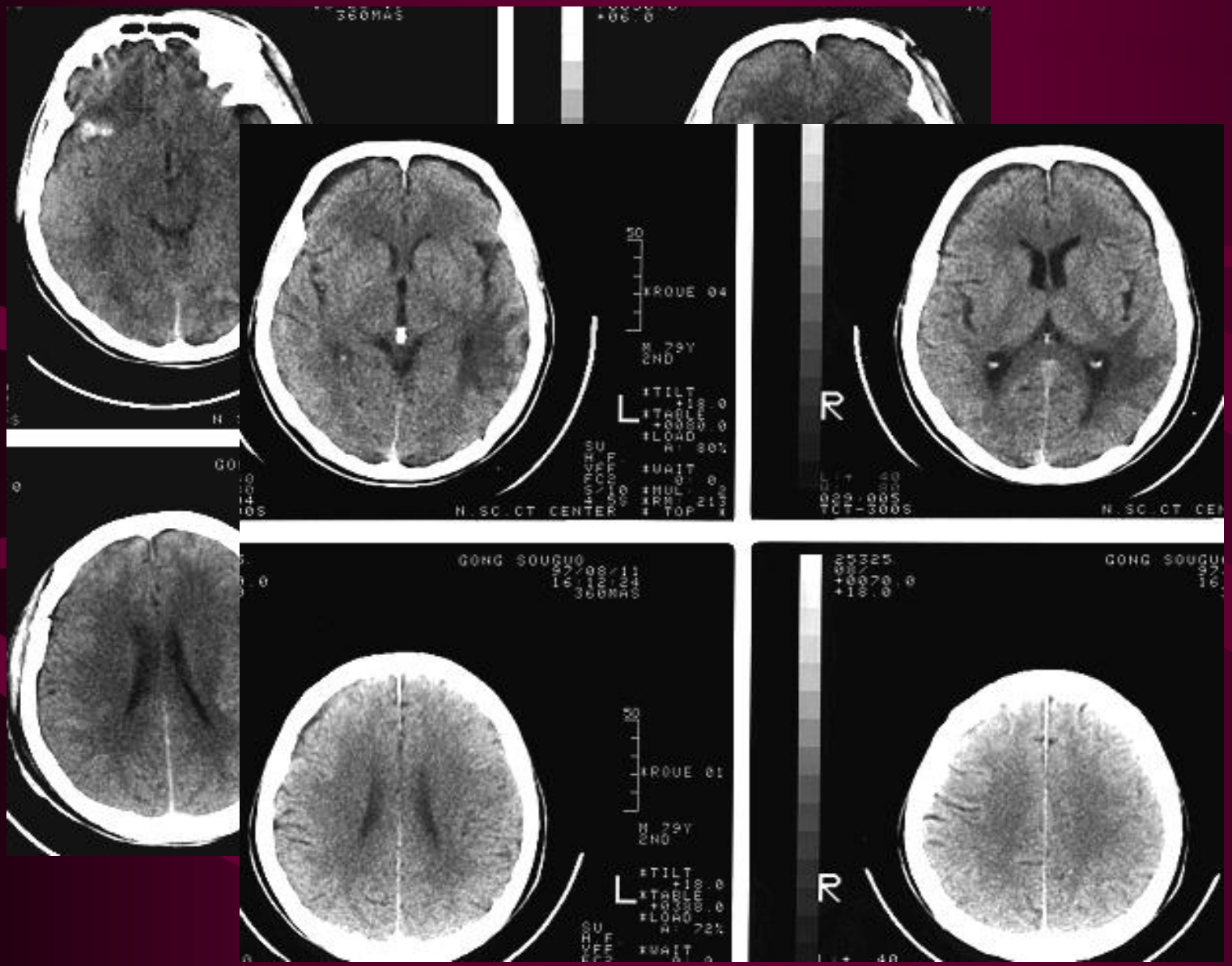


脑内血肿





脑内血肿－CT表现



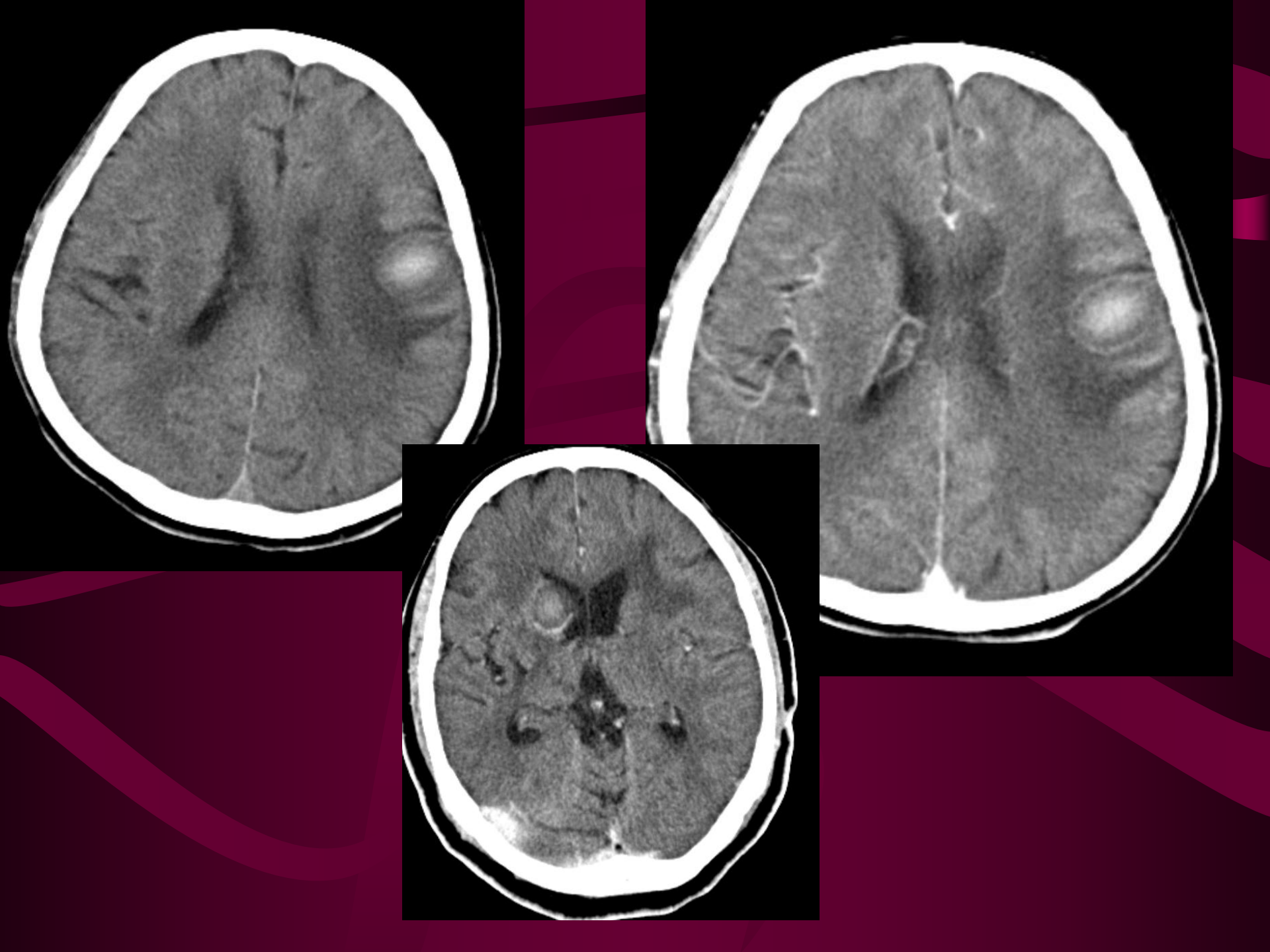
血肿自周边吸收，2～4周为等密度，4周后为低密度

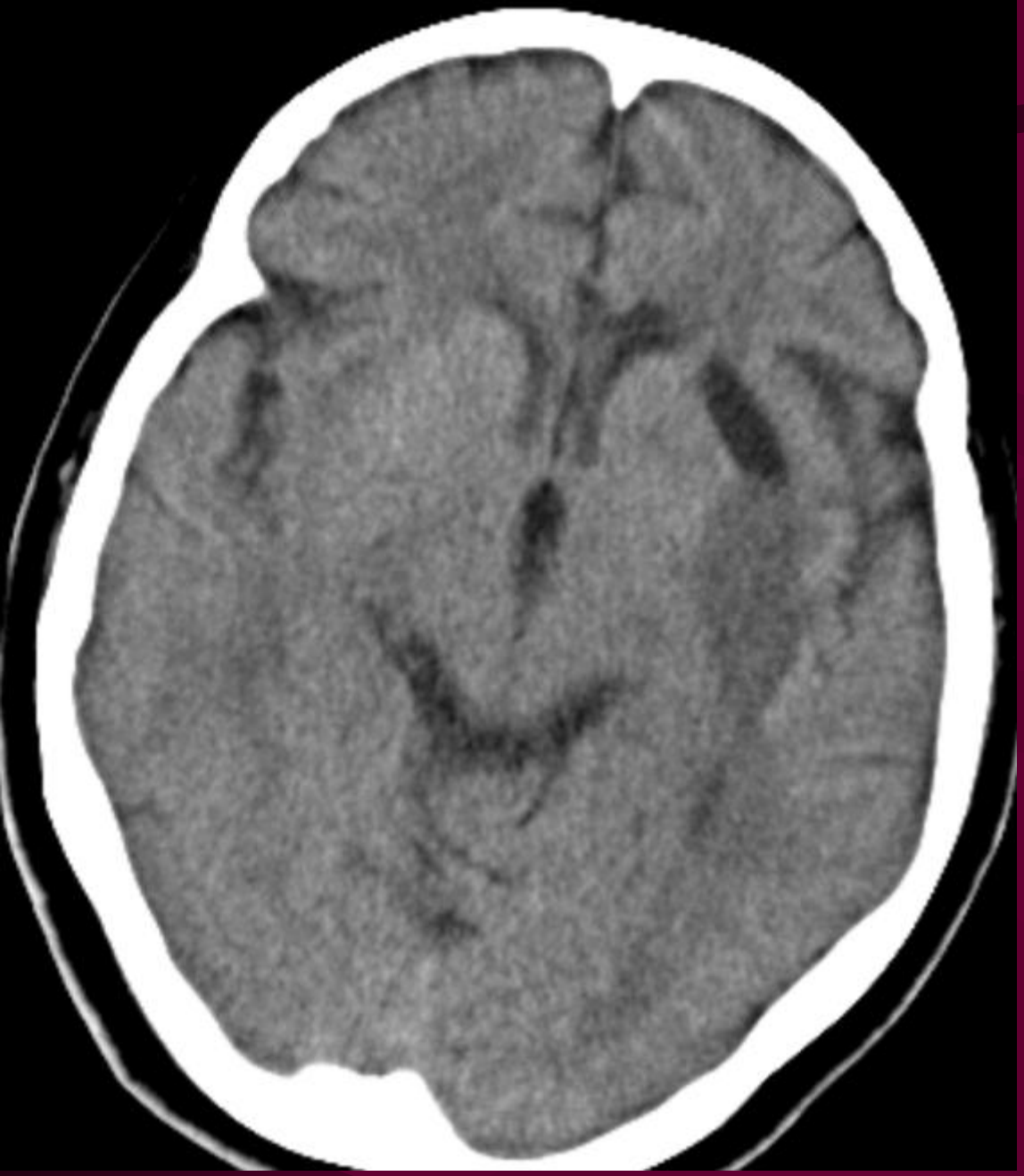
脑内血肿－CT表现

血肿进入慢性期，血肿周围有包膜形成，增强扫描可见强化。

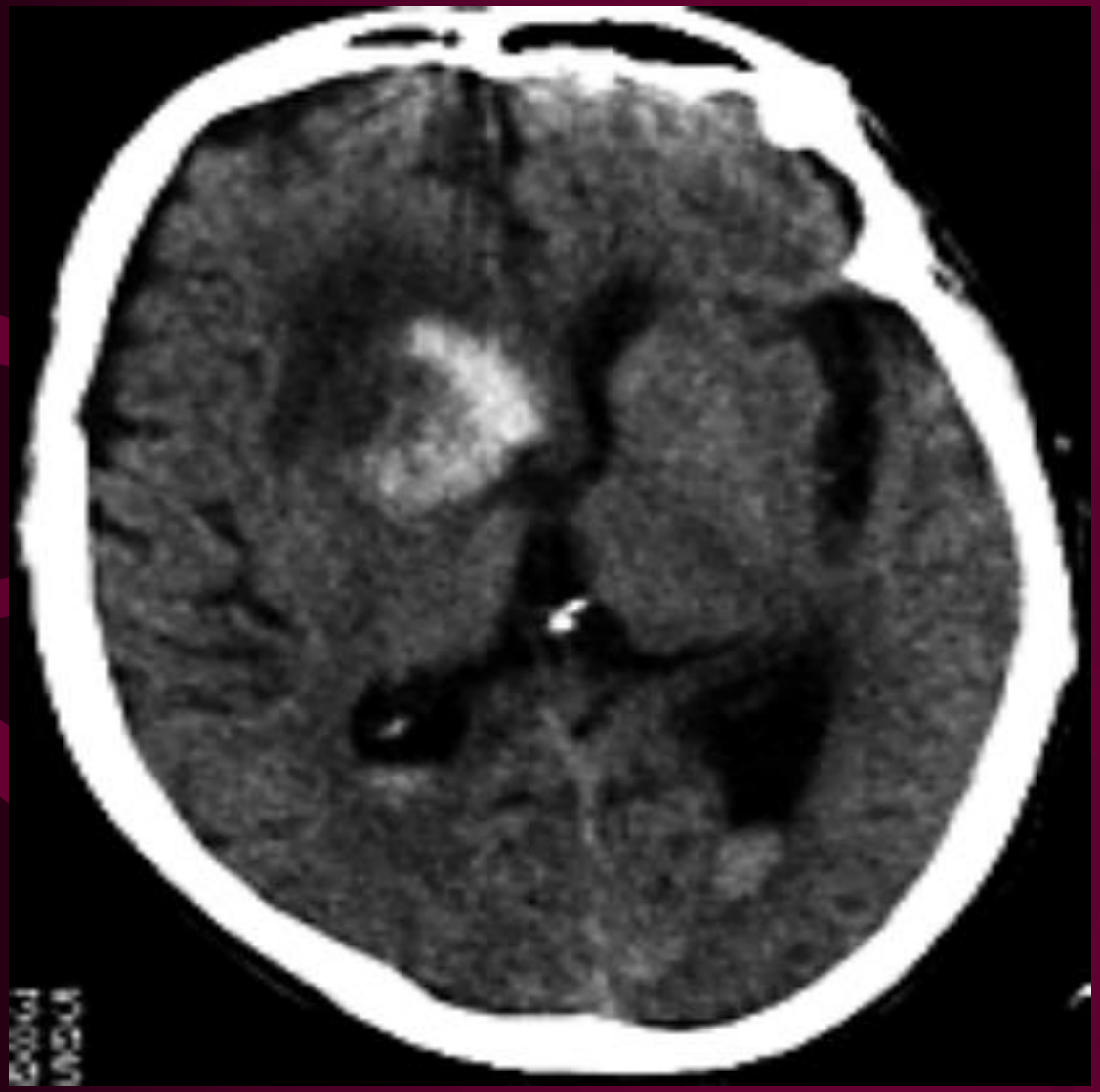
3～5周出现率高。

胶质增生所致。



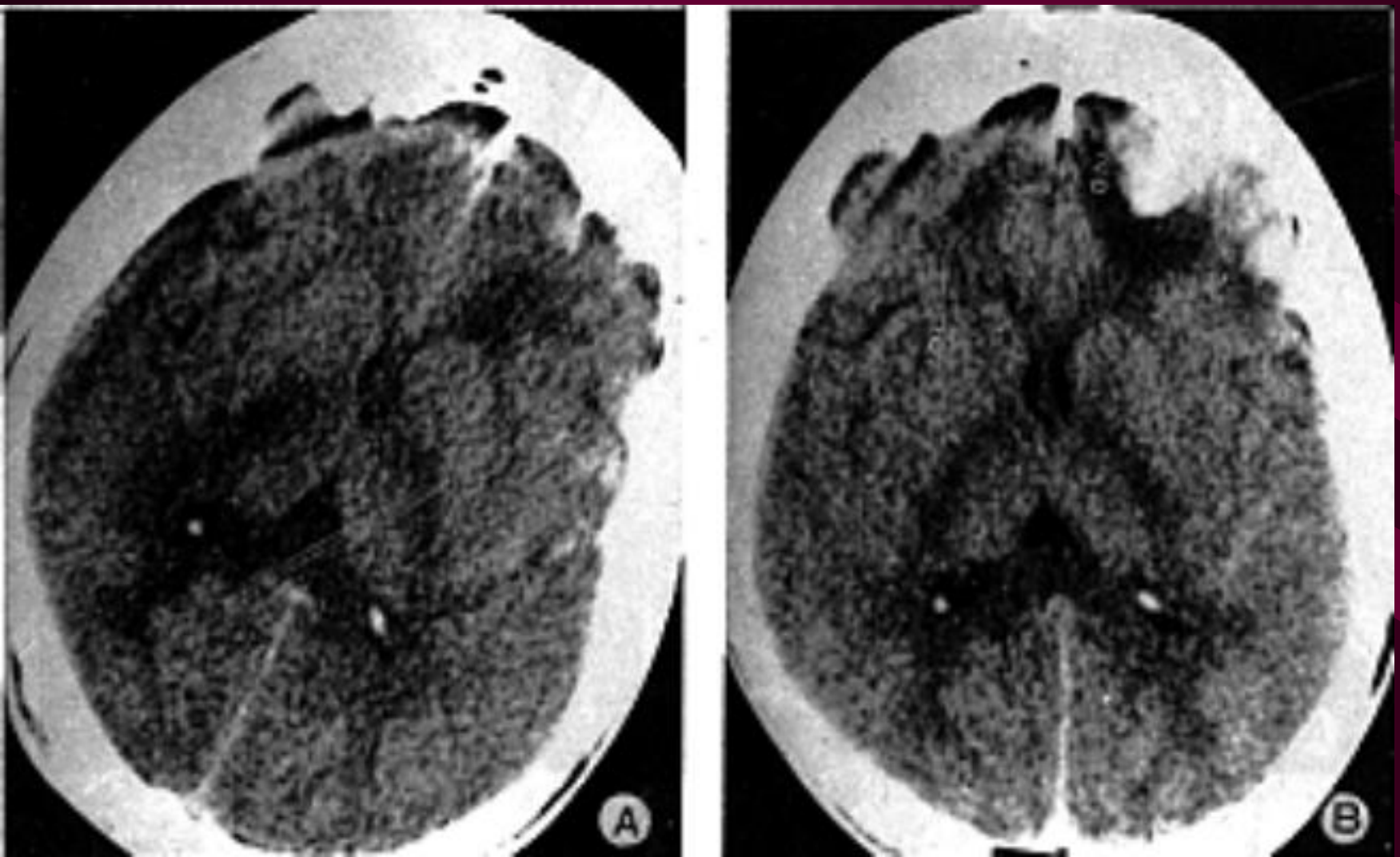


脑内血肿—CT表现

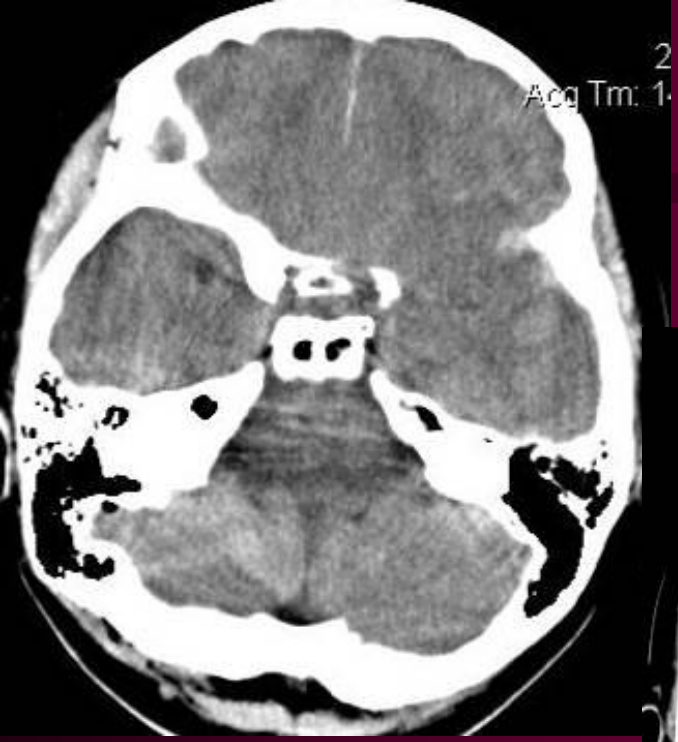


血肿可破入脑室

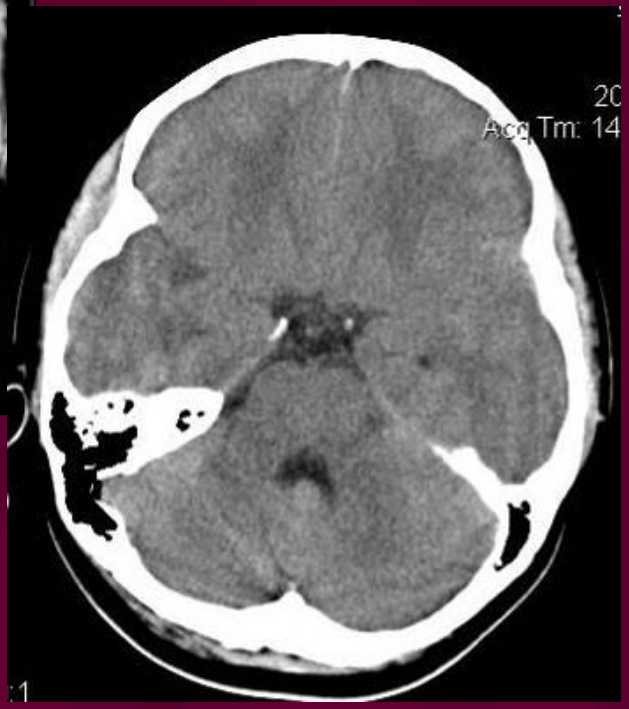
脑内血肿－CT表现

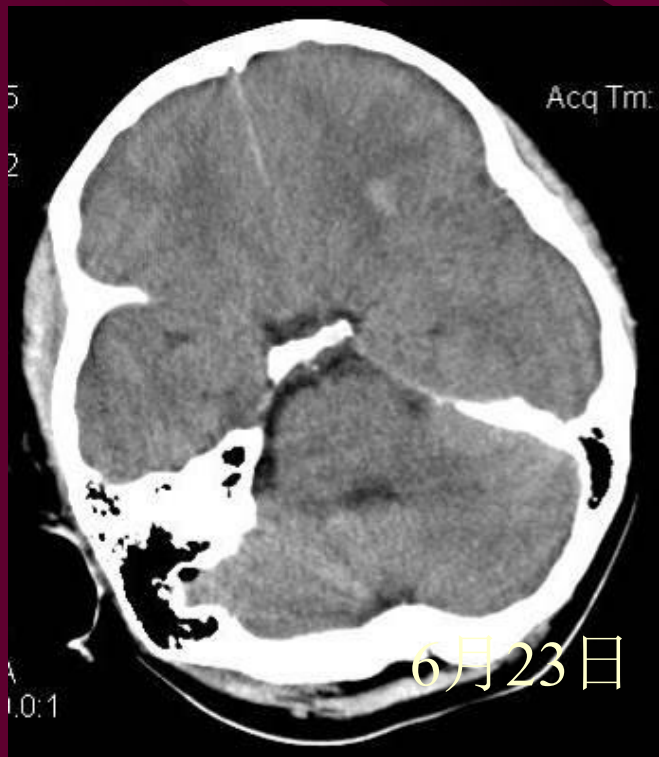


迟发血肿，预后差



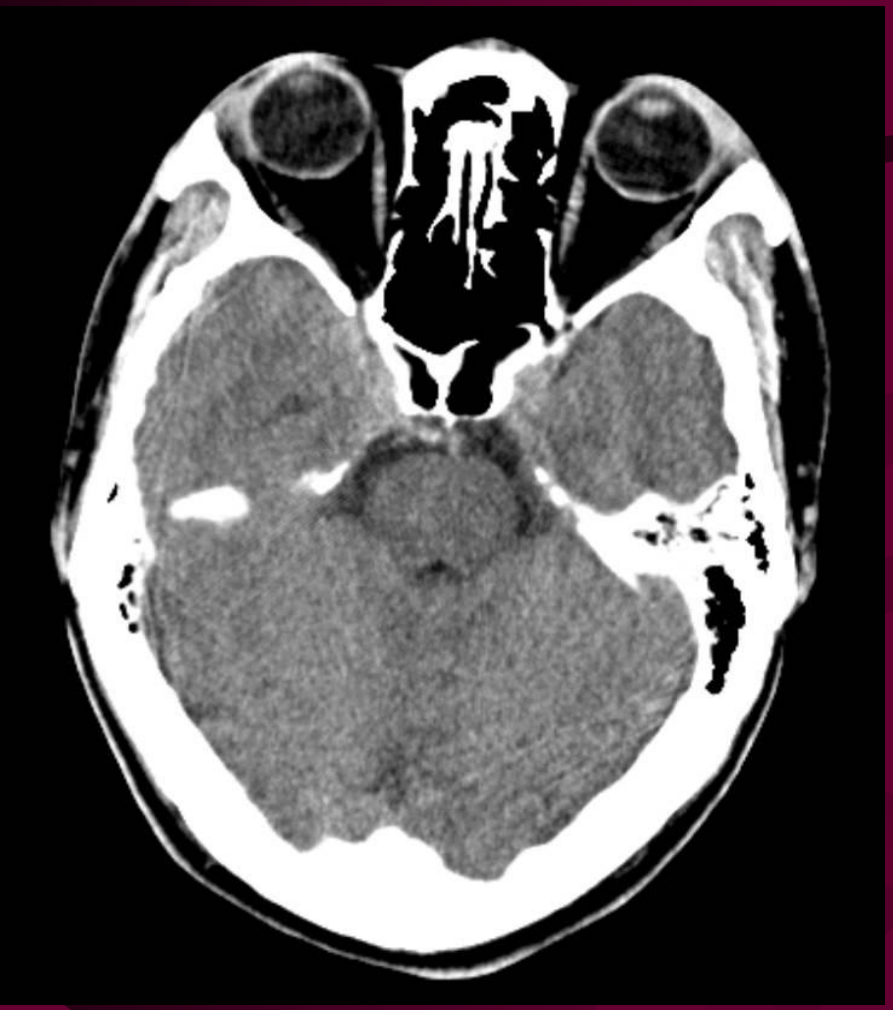
6月22日



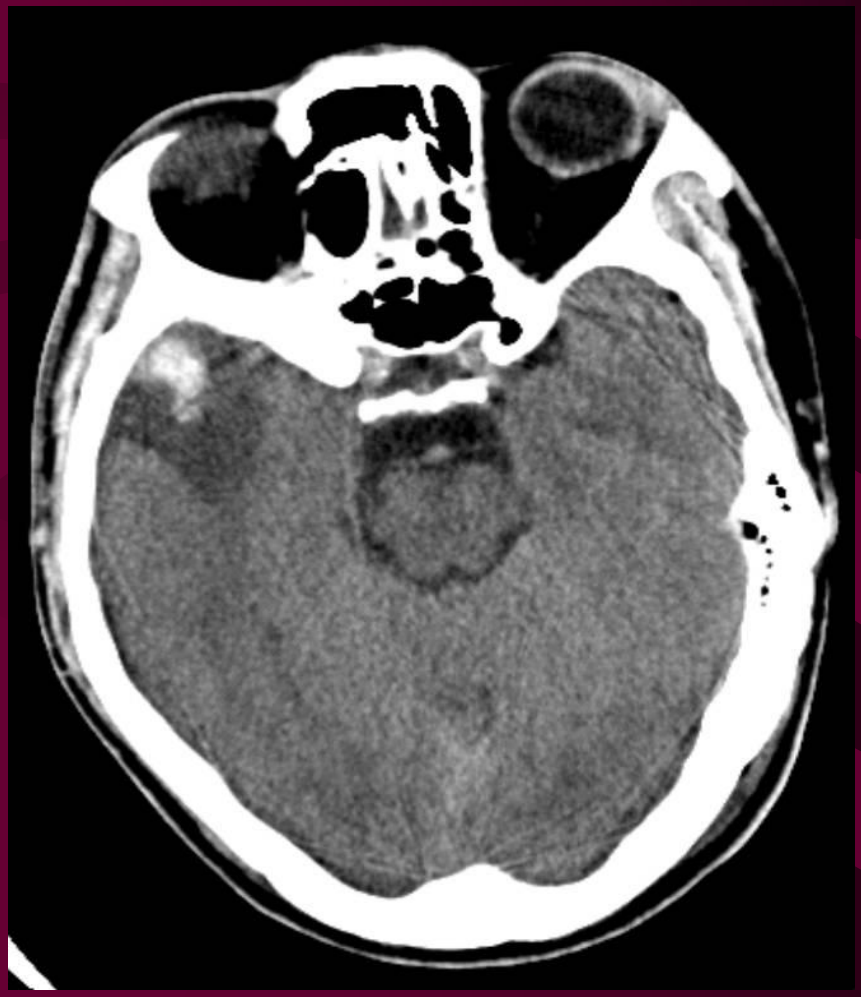


6月23日

迟发血肿

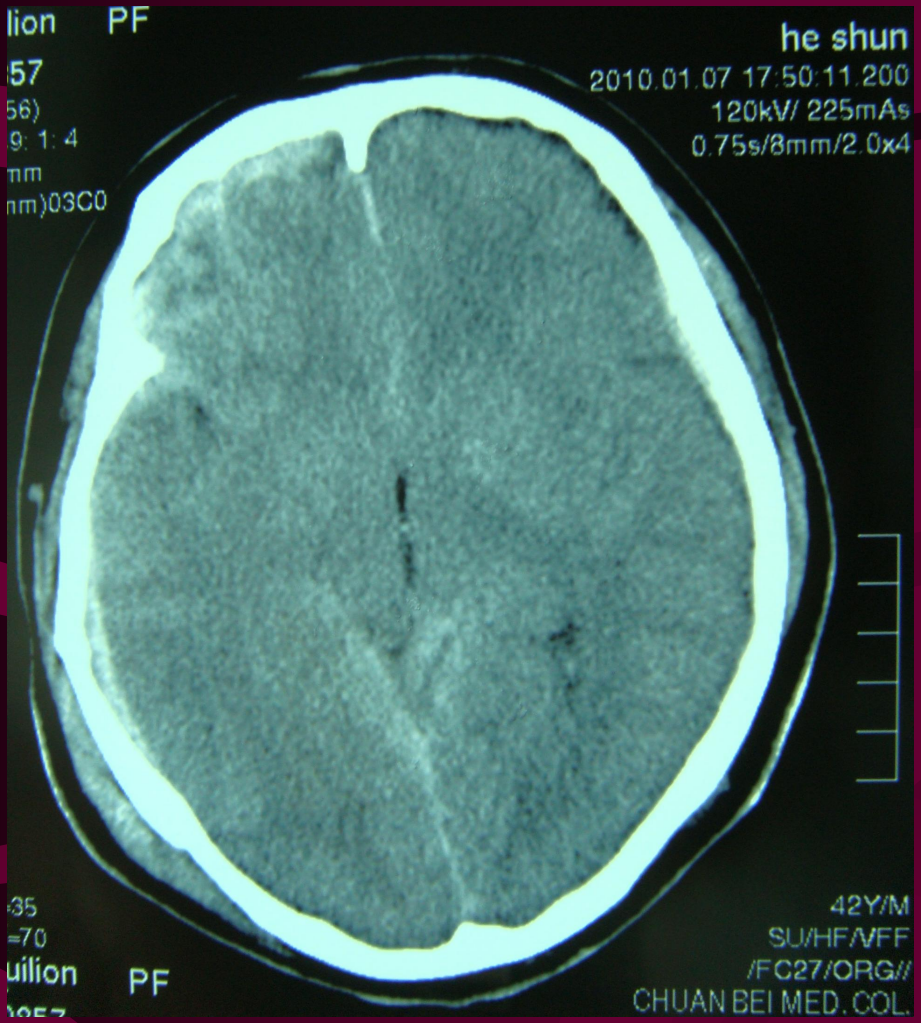


9月28日



9月29日

迟发血肿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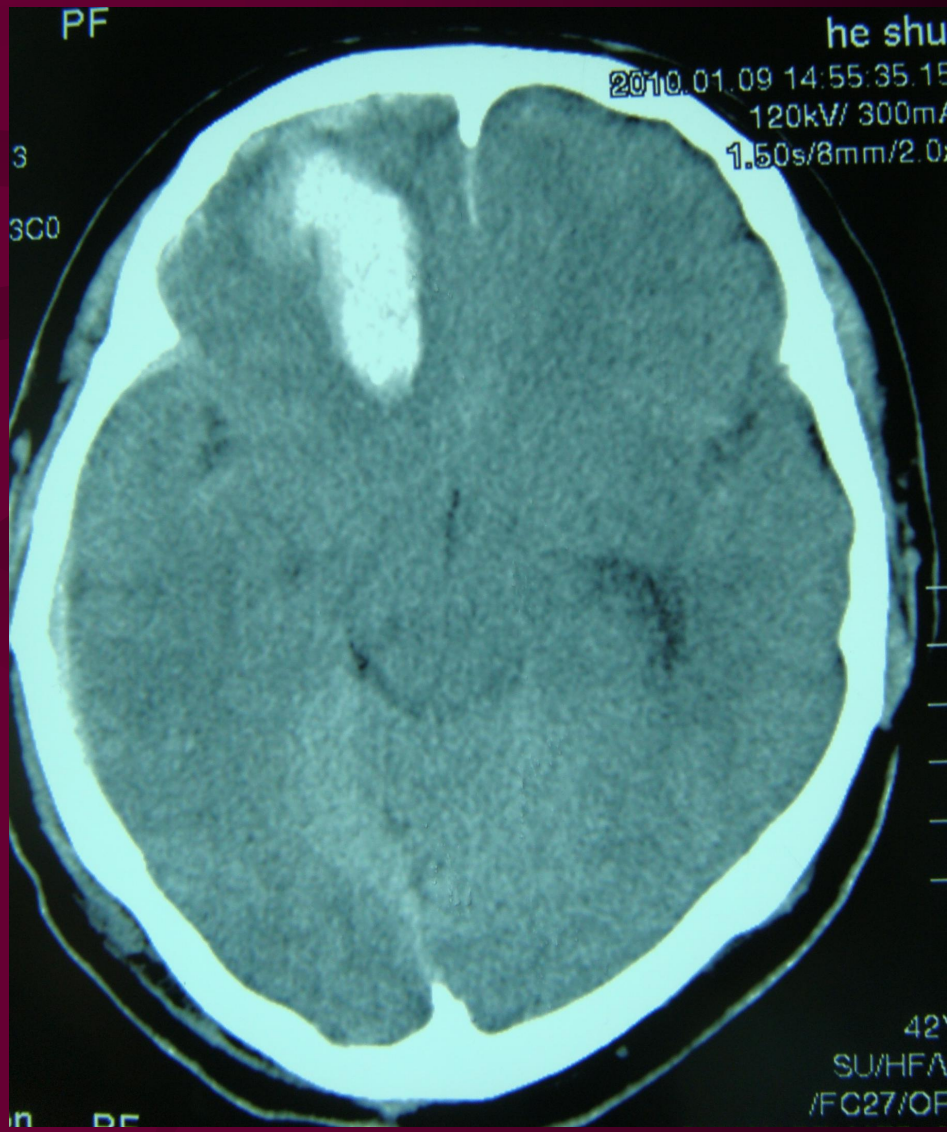
PF


PF
he shu
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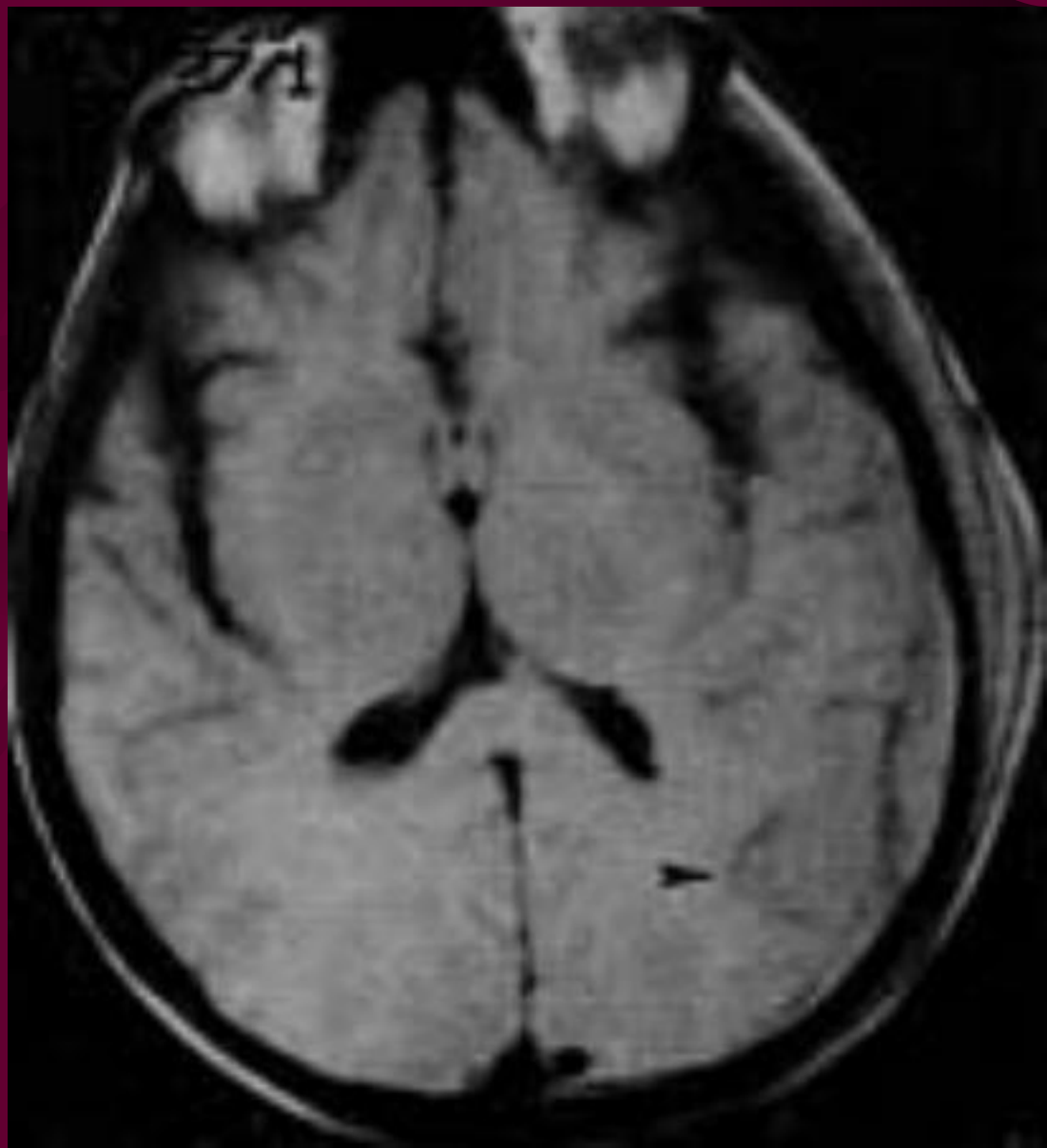
120kV/ 300mA
1.50s/8mm/2.0

迟发血肿

脑内血肿—MRI表现

急性早期：
T1W等信号
T2W等信号
急性期：
T2W低信号
周围水肿
T1W低信号
T2W高信号



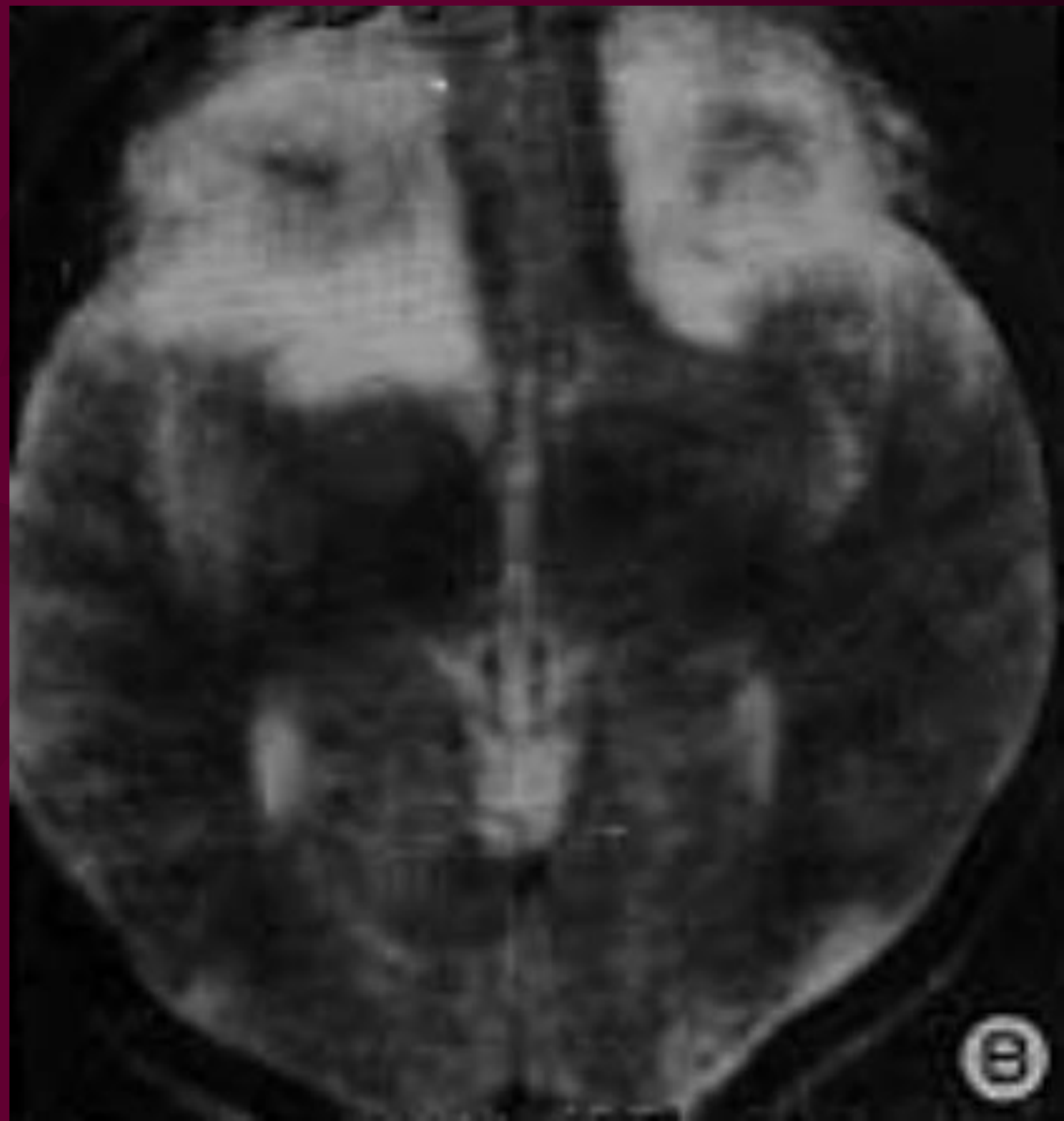
脑内血肿—MRI表现

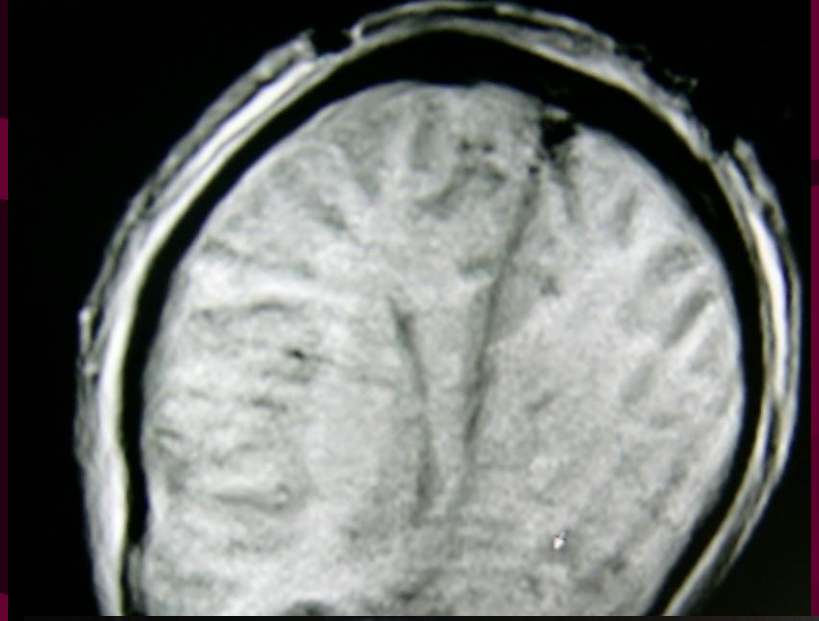
亚急性和慢性

T1W高信号，

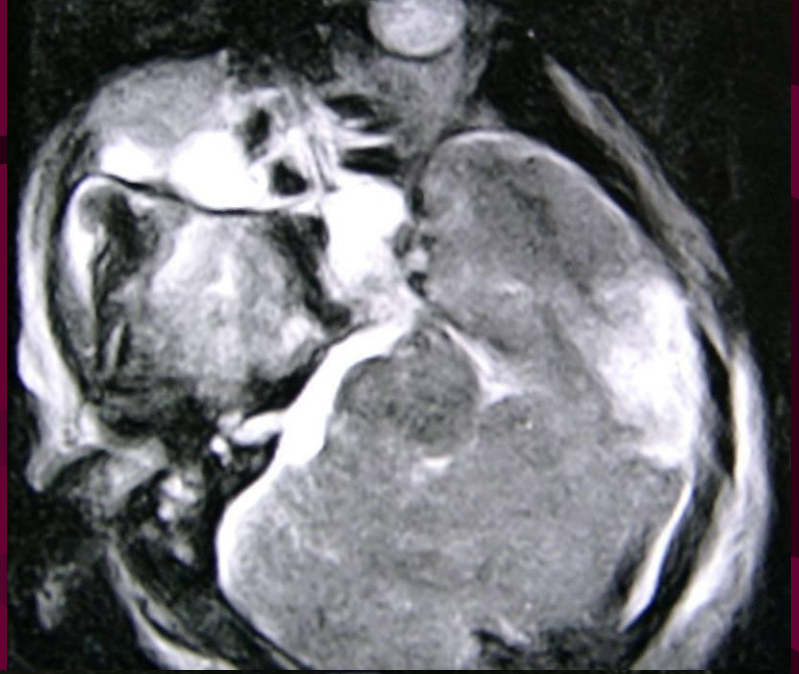
中央等信号；

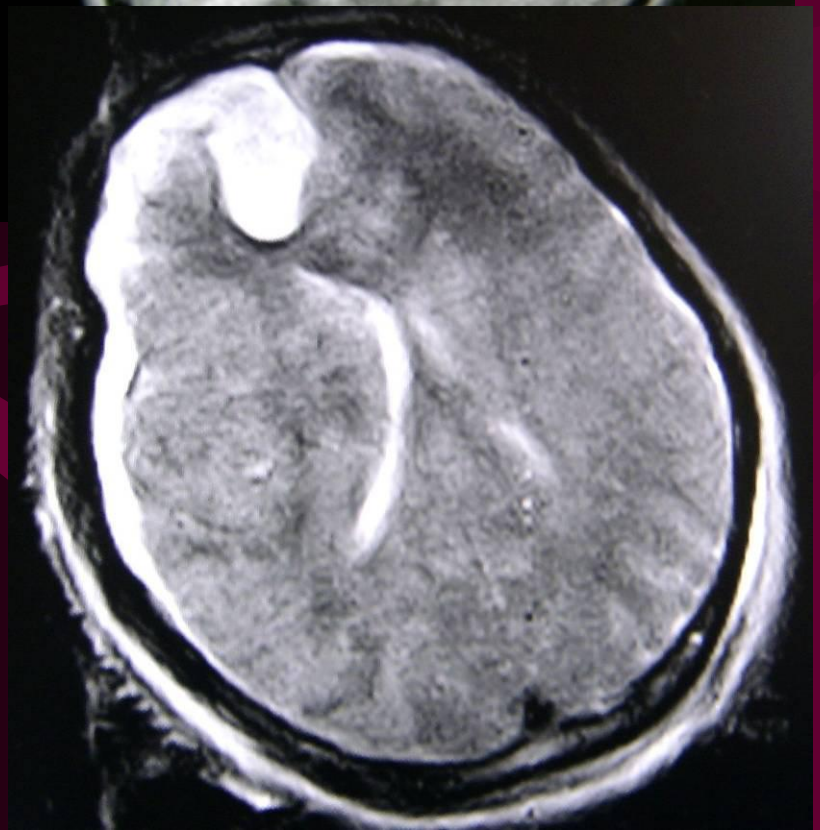
T2W高信号。

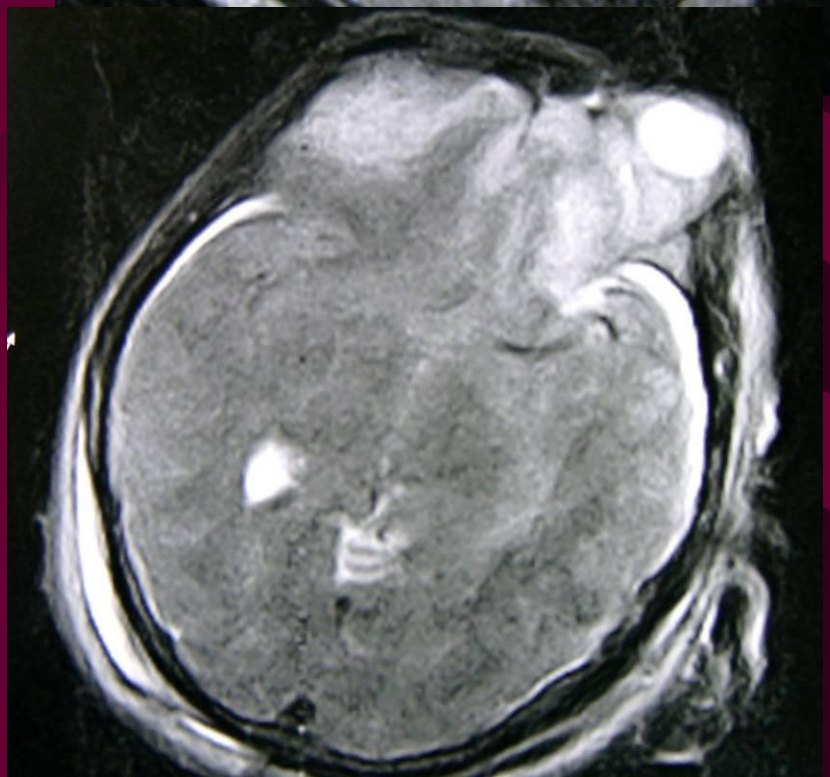


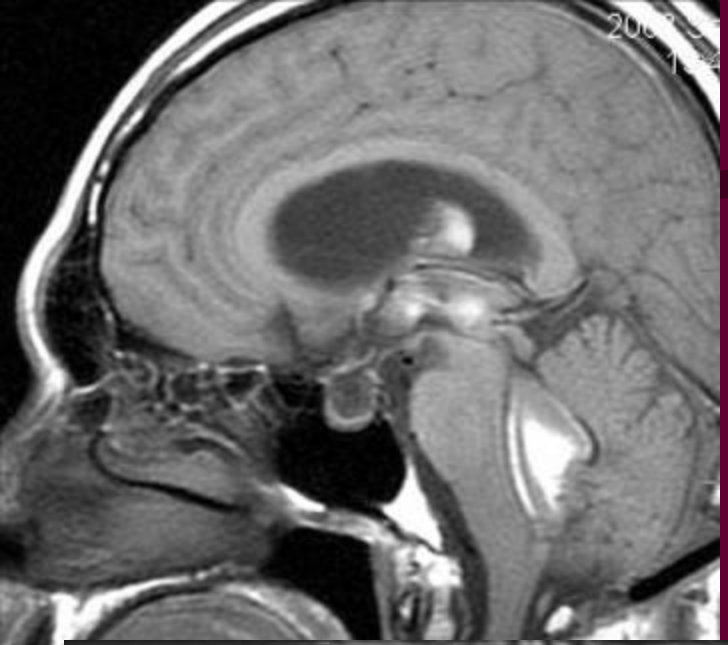


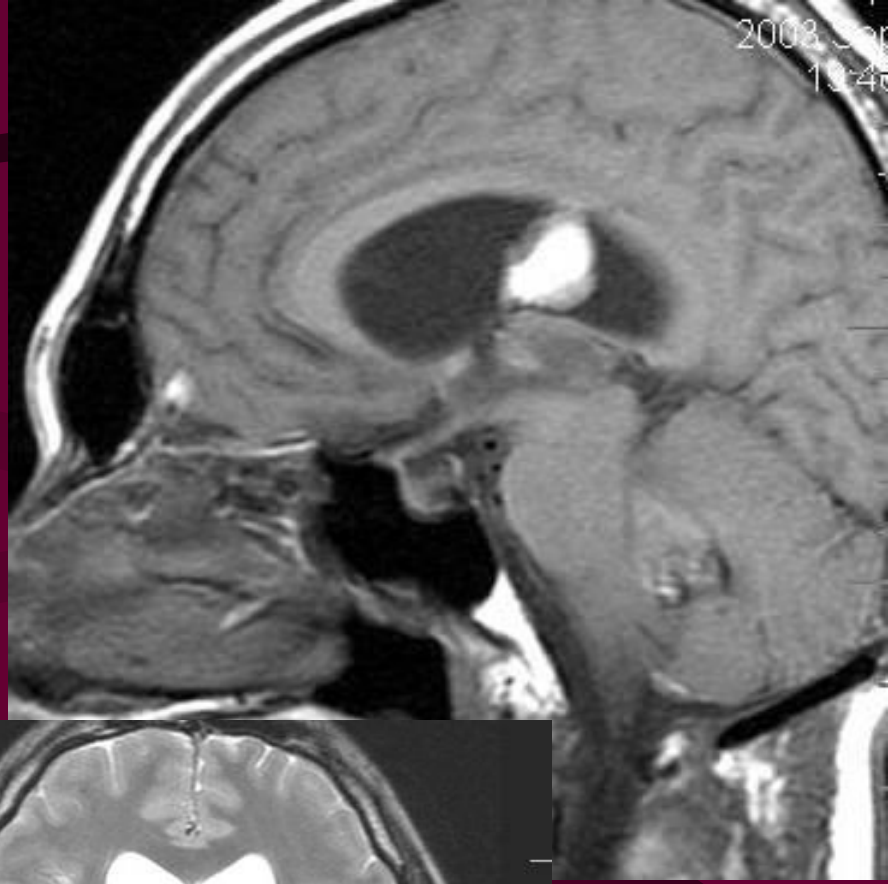
脑挫伤伴血肿

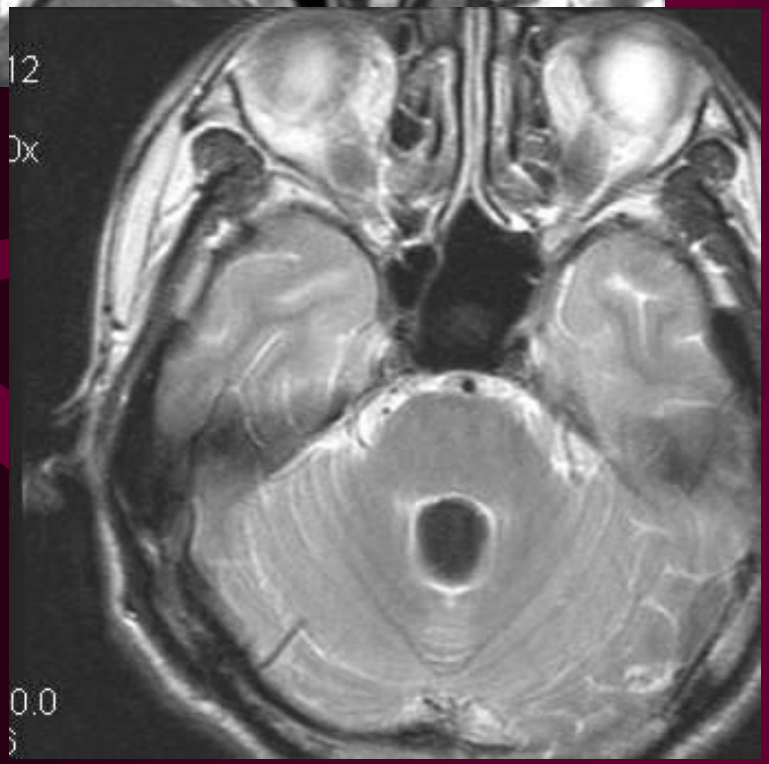








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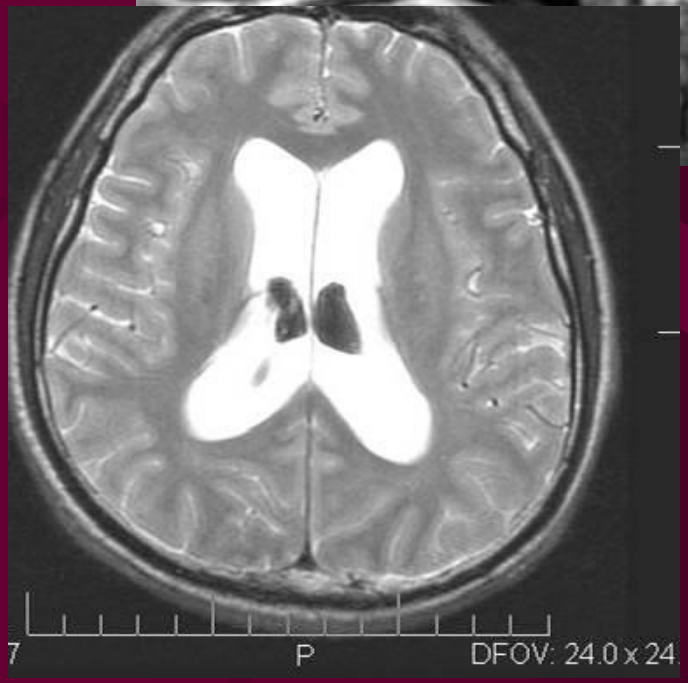
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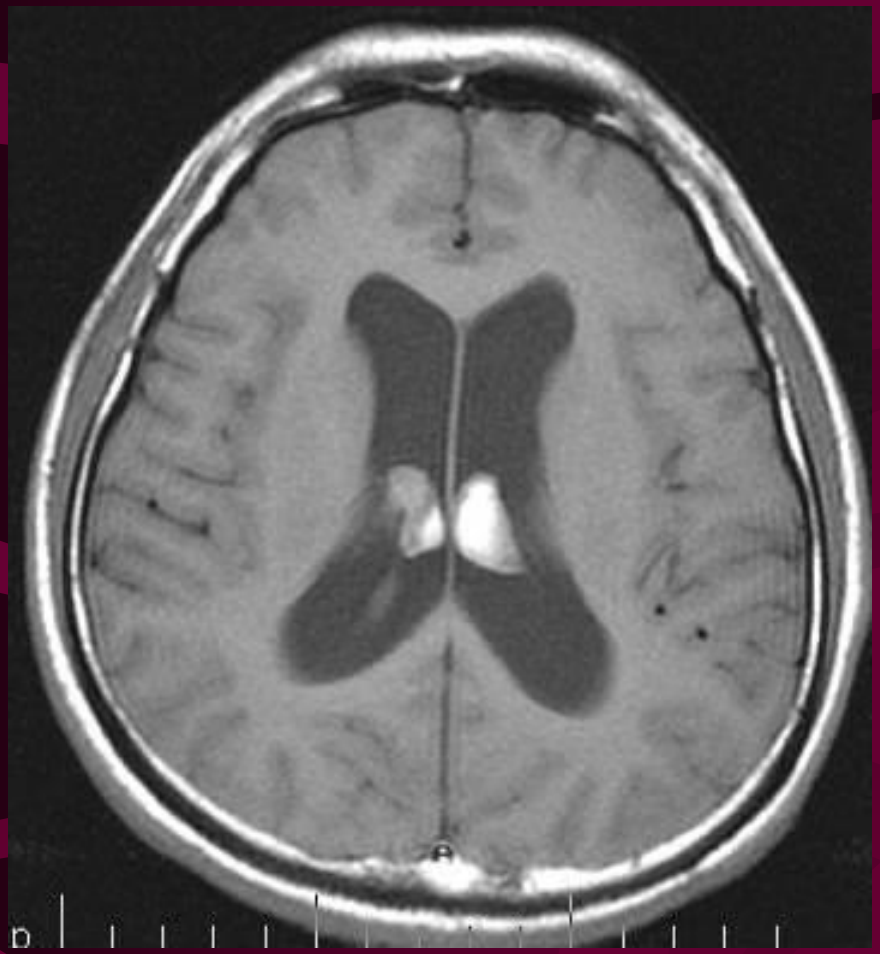
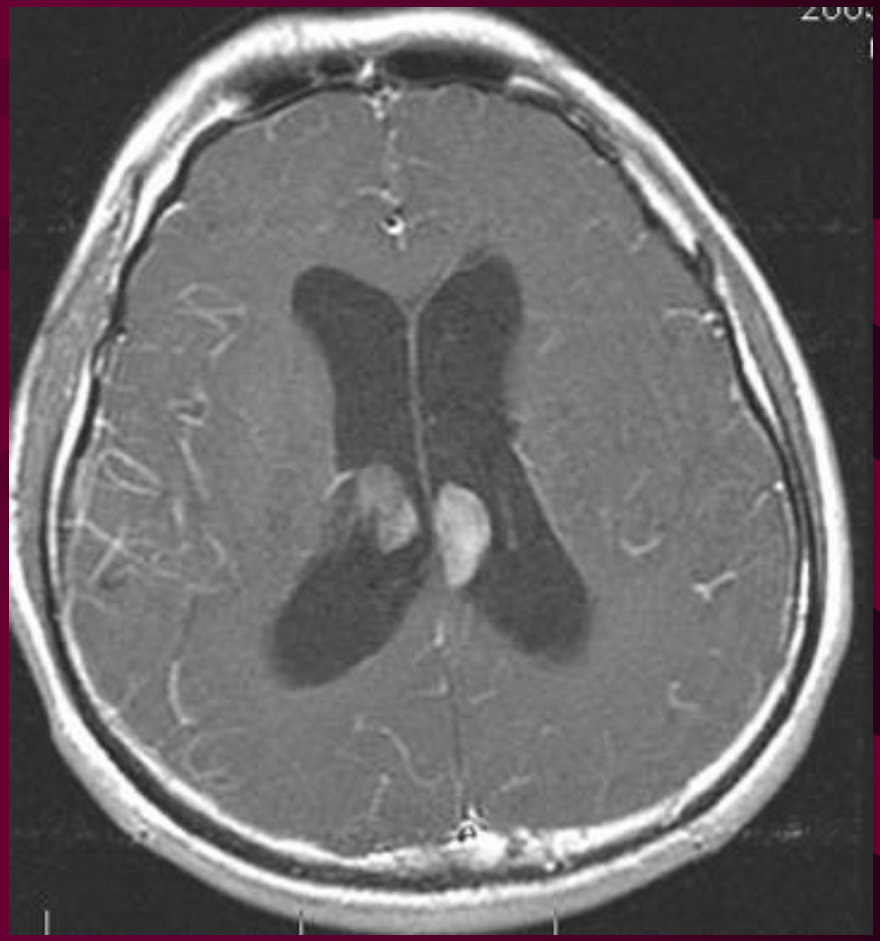
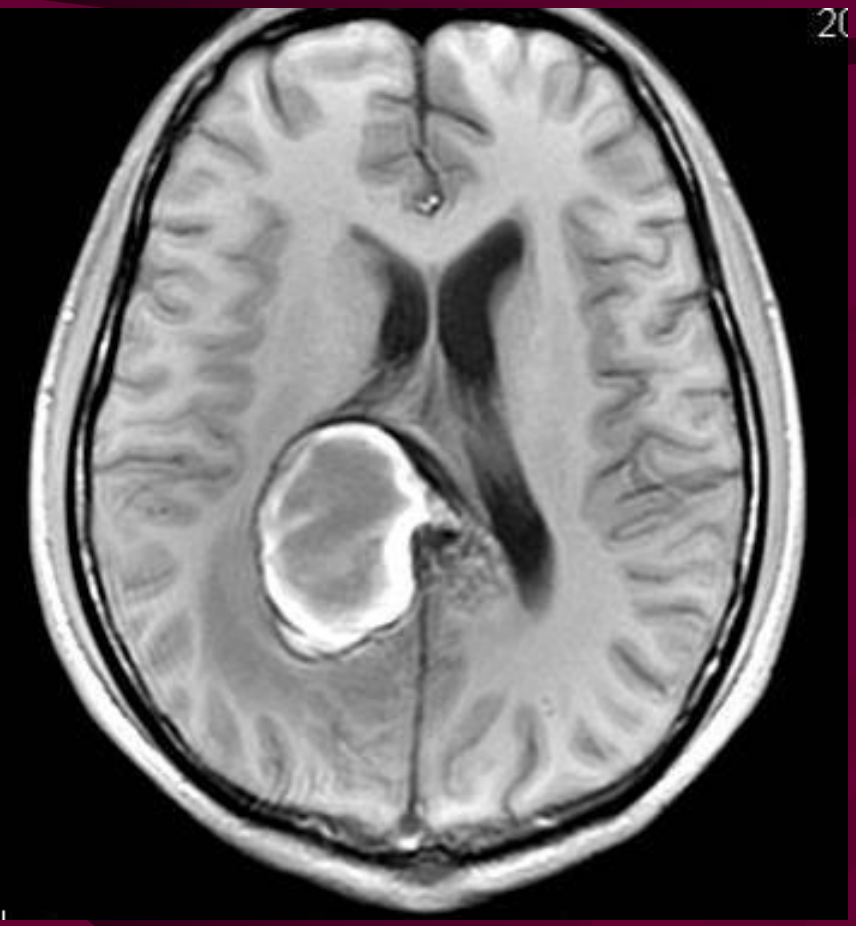
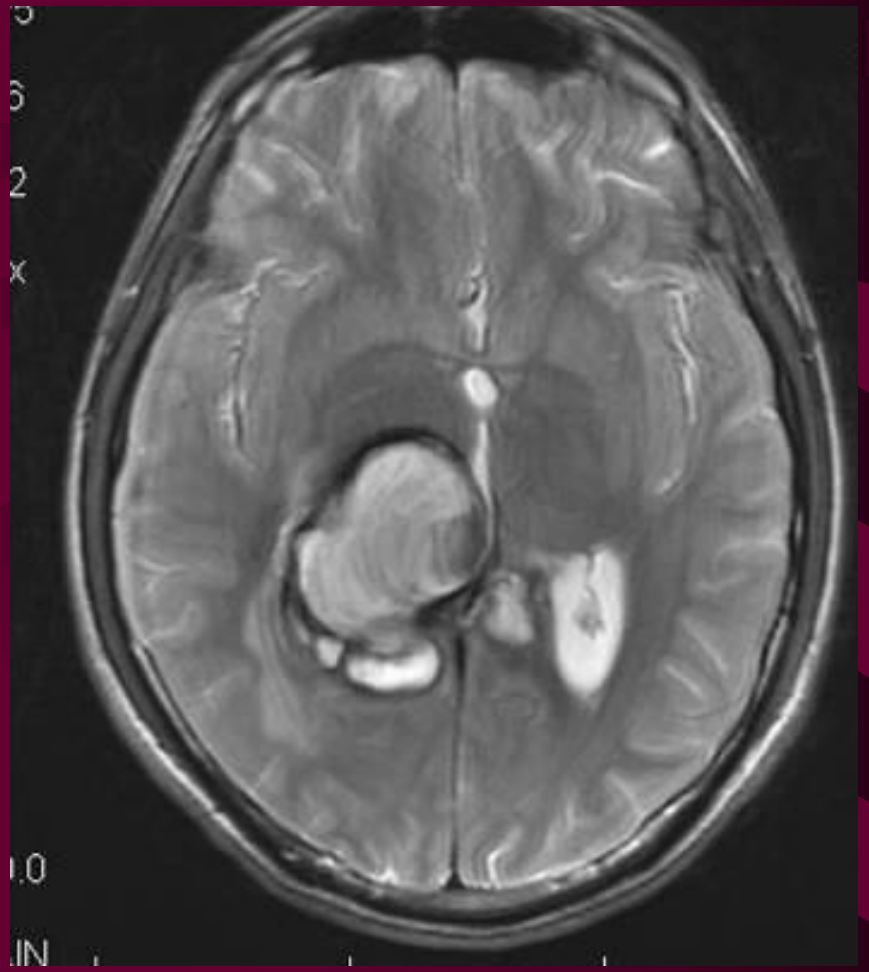
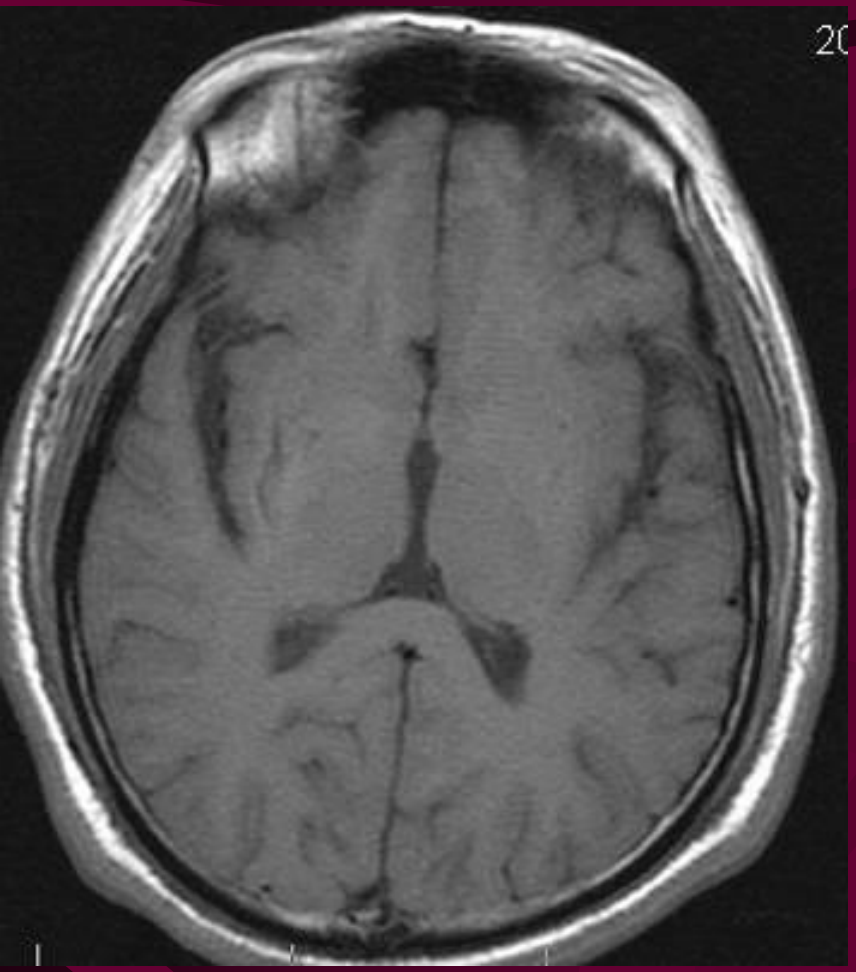
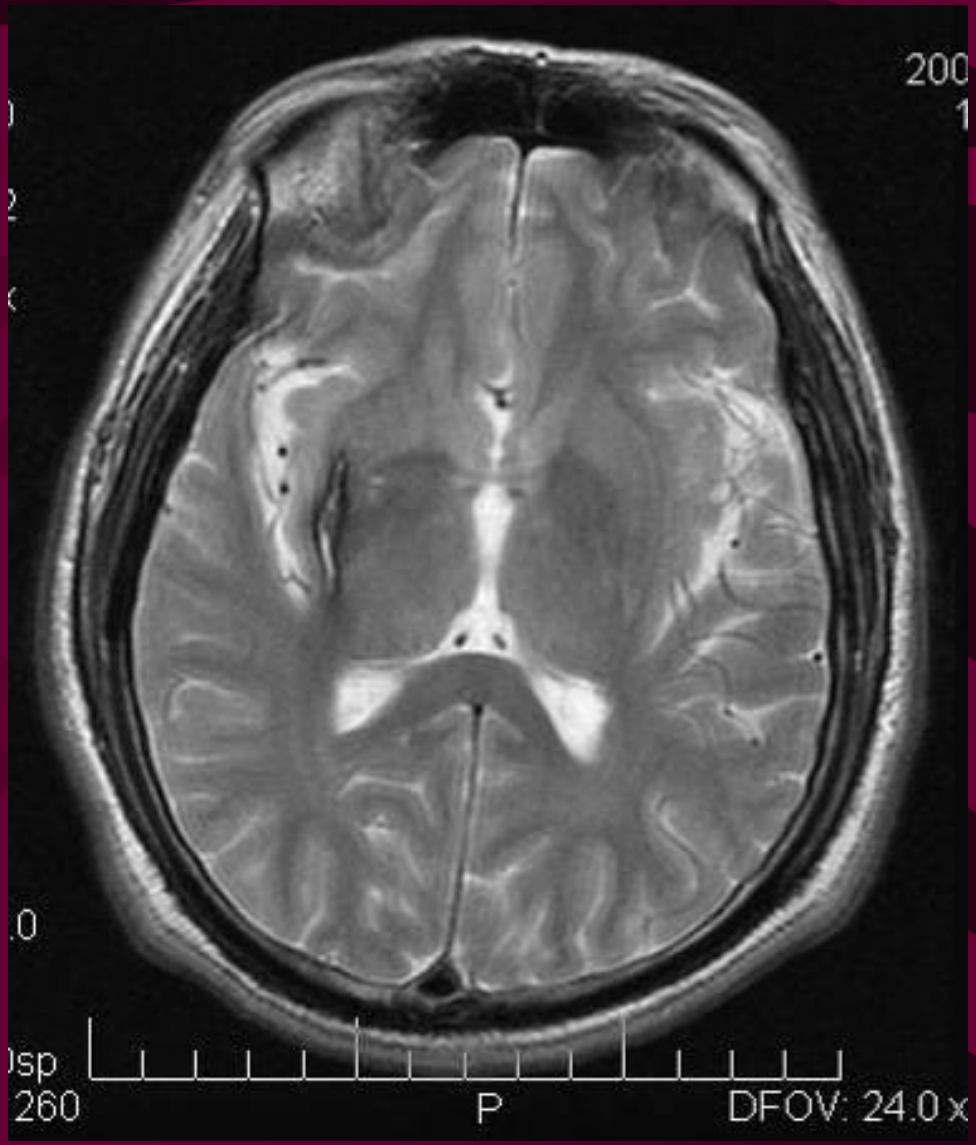




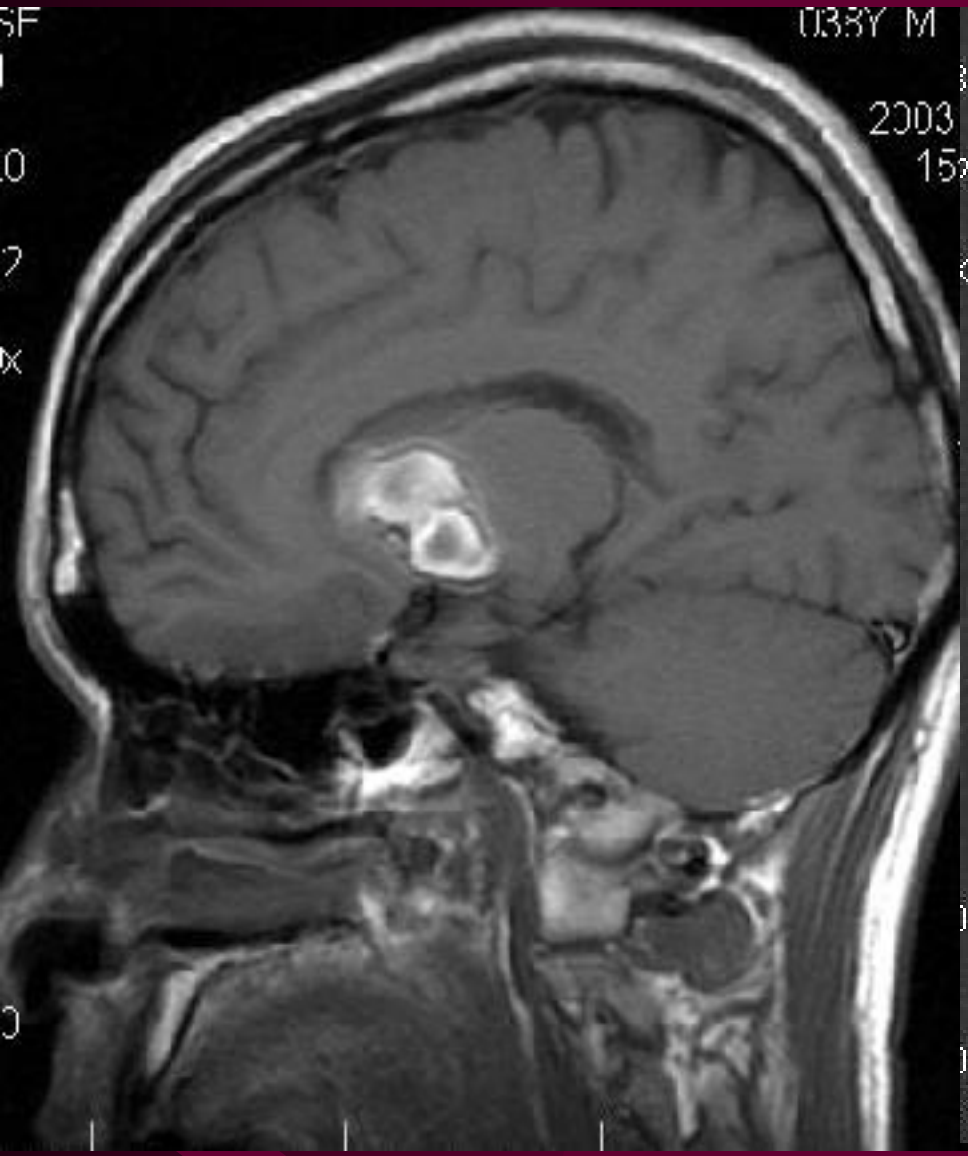


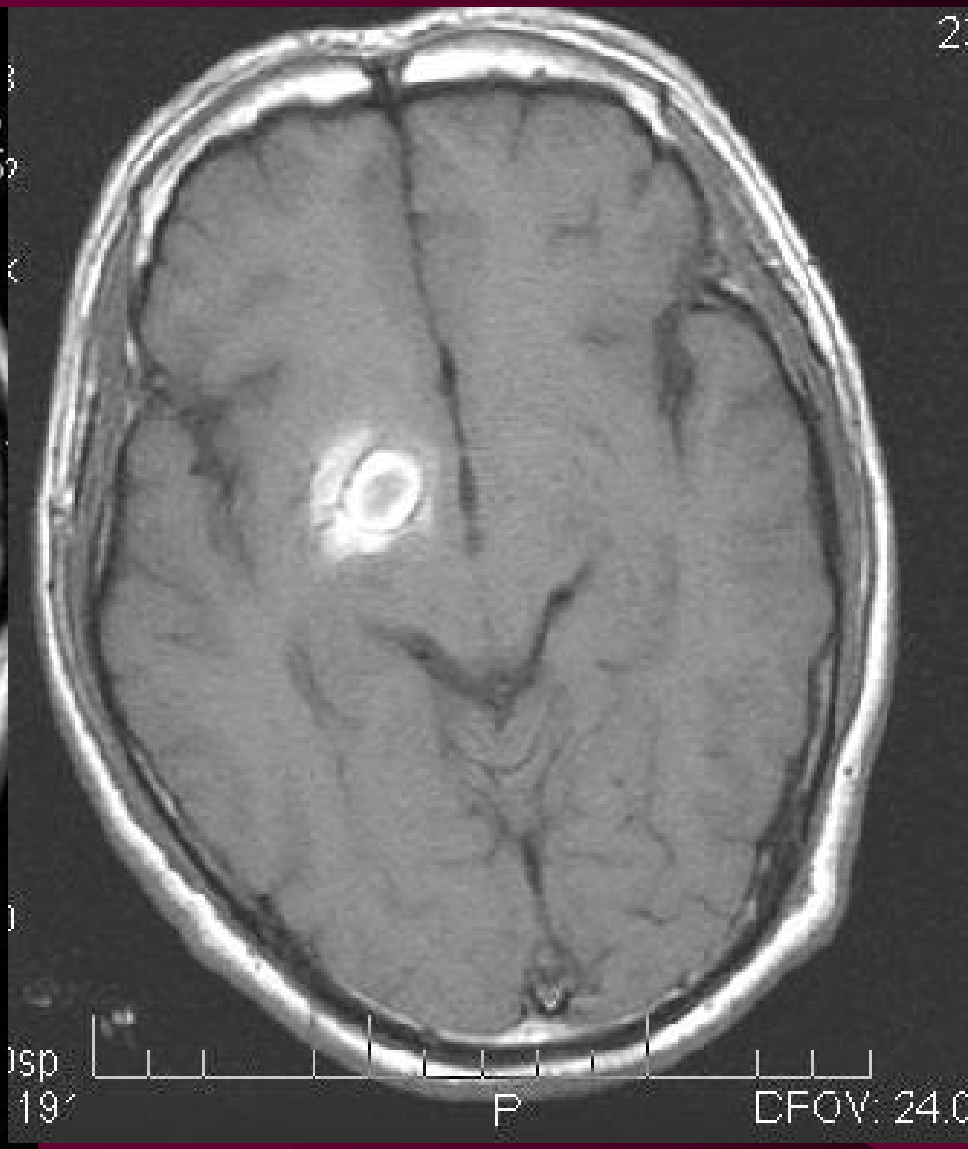




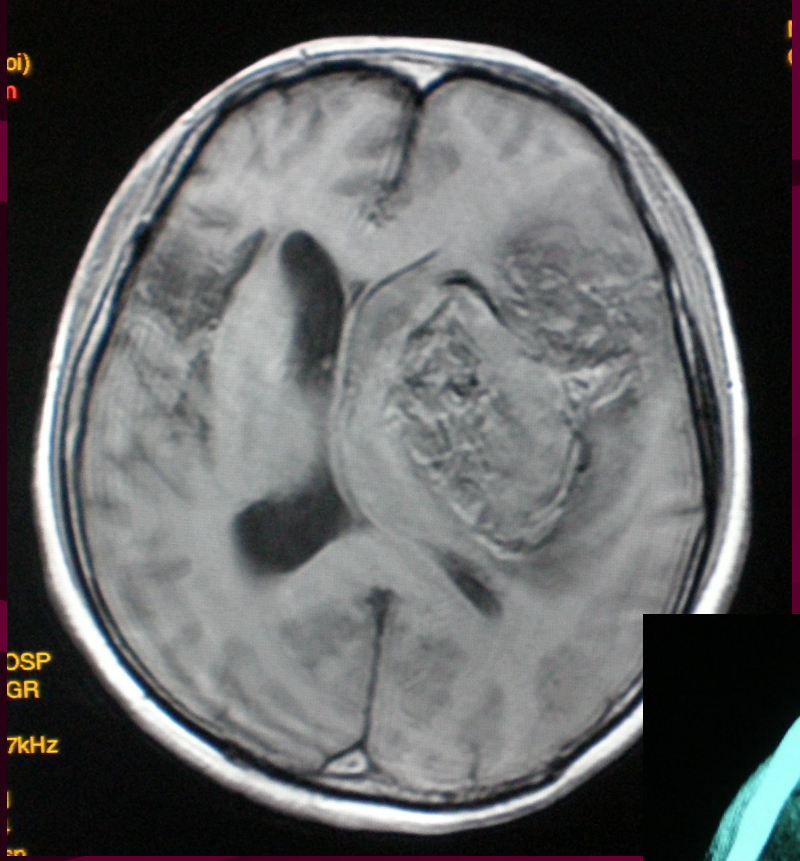


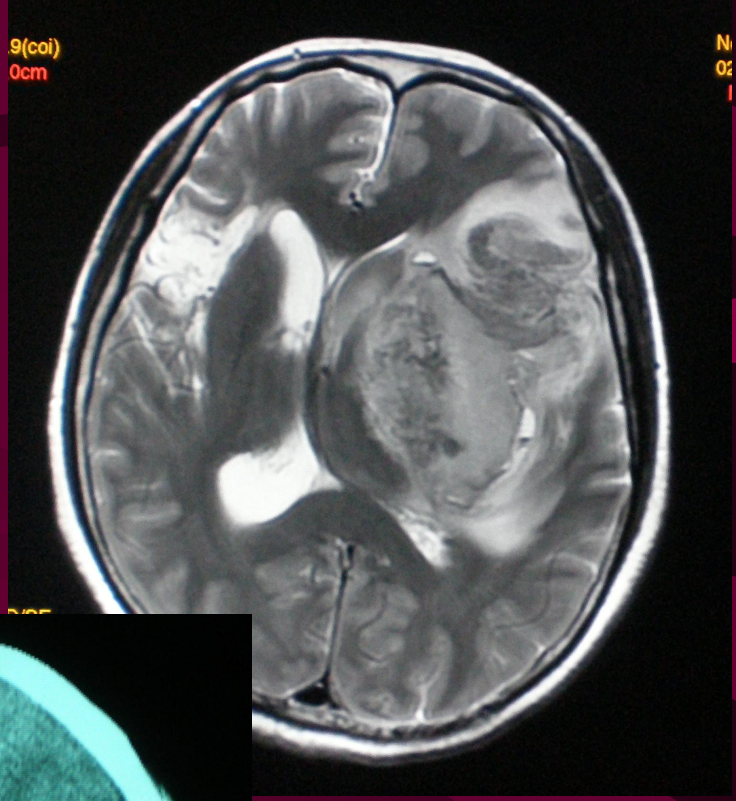
血肿吸收期

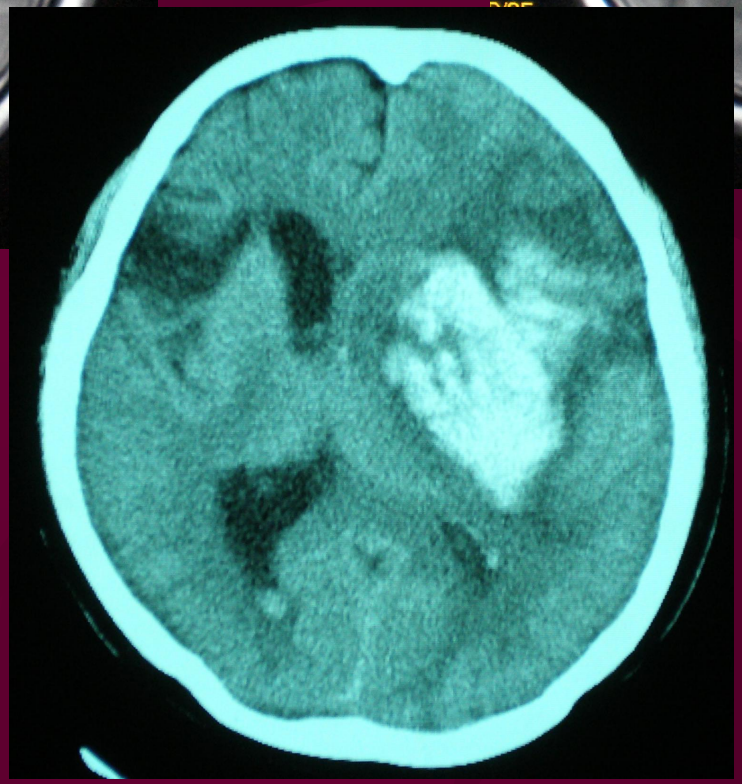




3、显示血肿:不如CT敏感


oi)
n
OSP
GR
7kHz


9(coi)
0cm



石象湖郁金香

脑挫裂伤

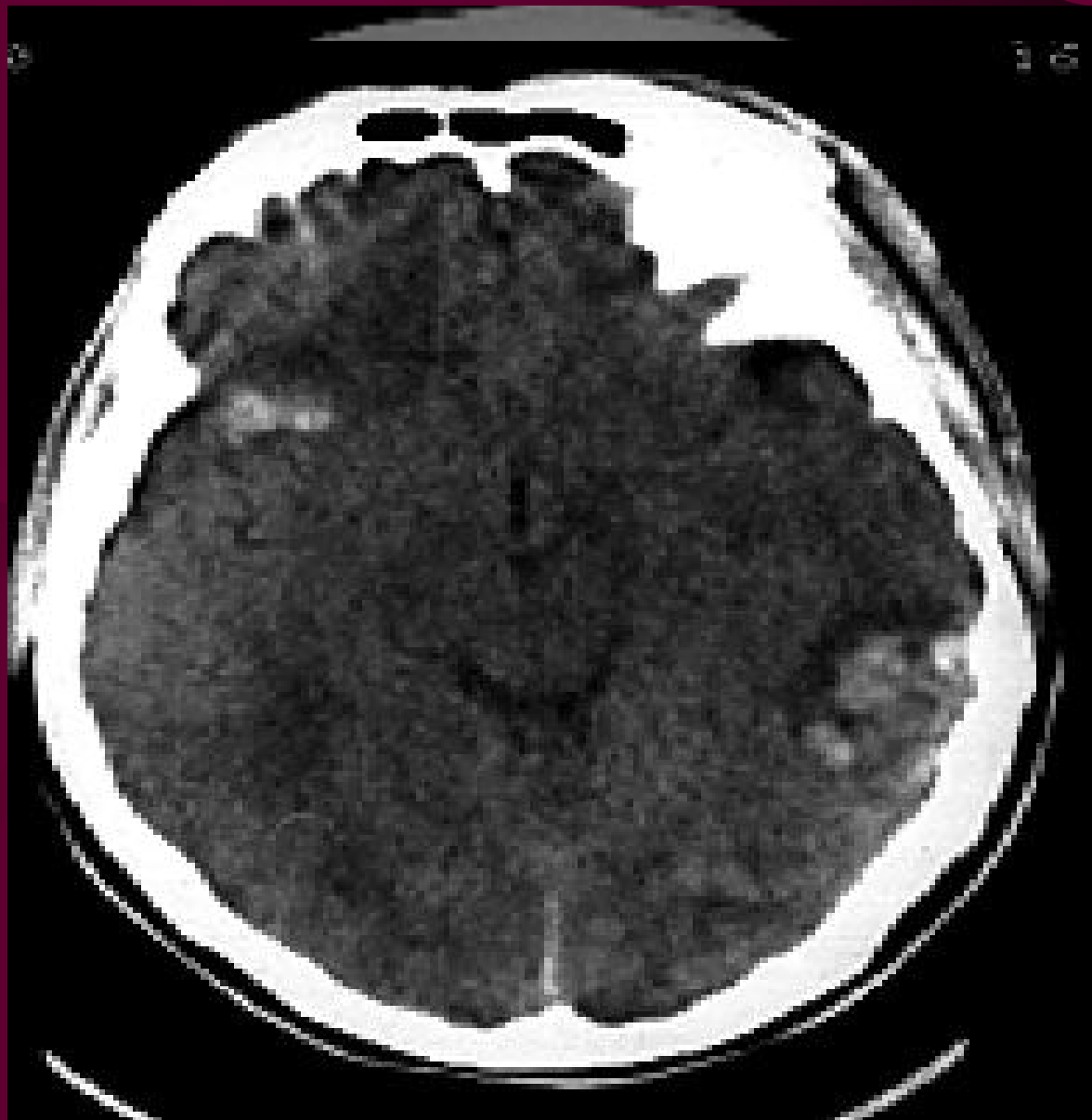
外伤引起的局部脑水肿、坏死、液化和多发散在小出血

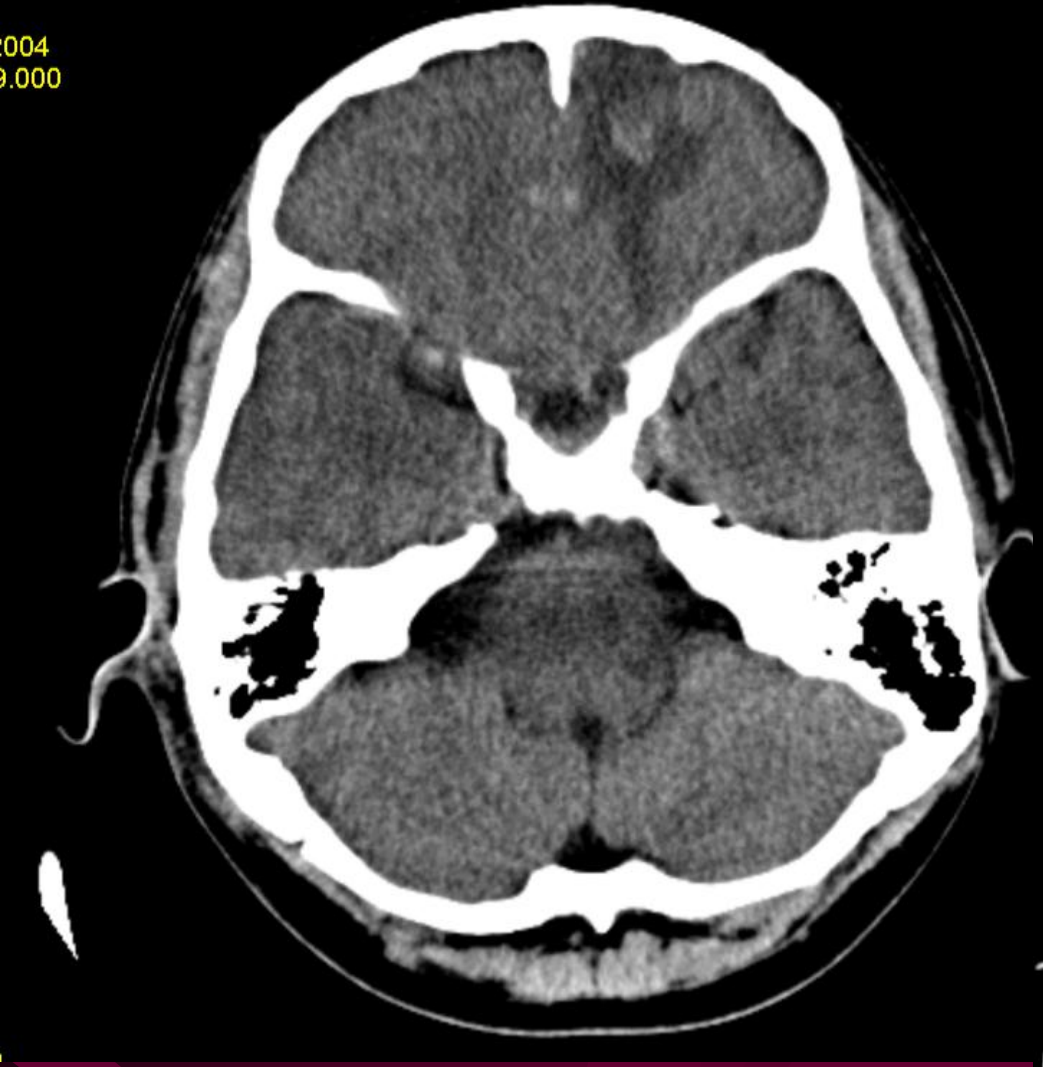
脑挫裂伤－CT表现

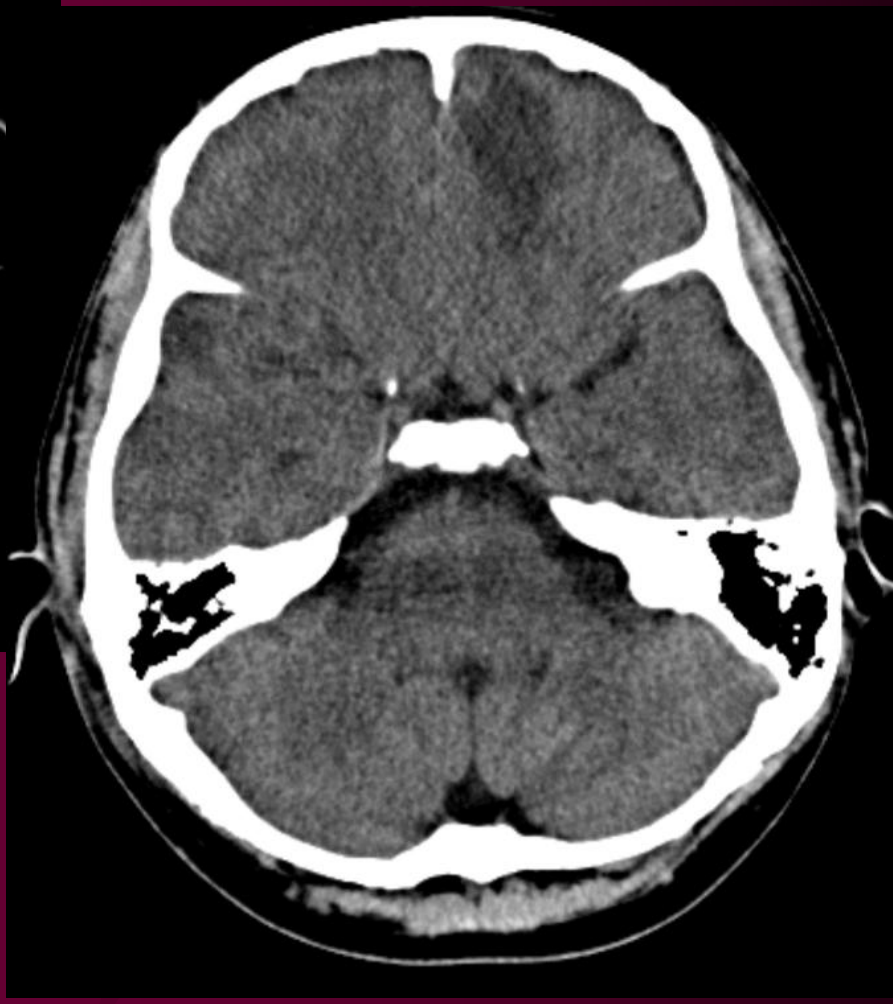
低密度

斑点状

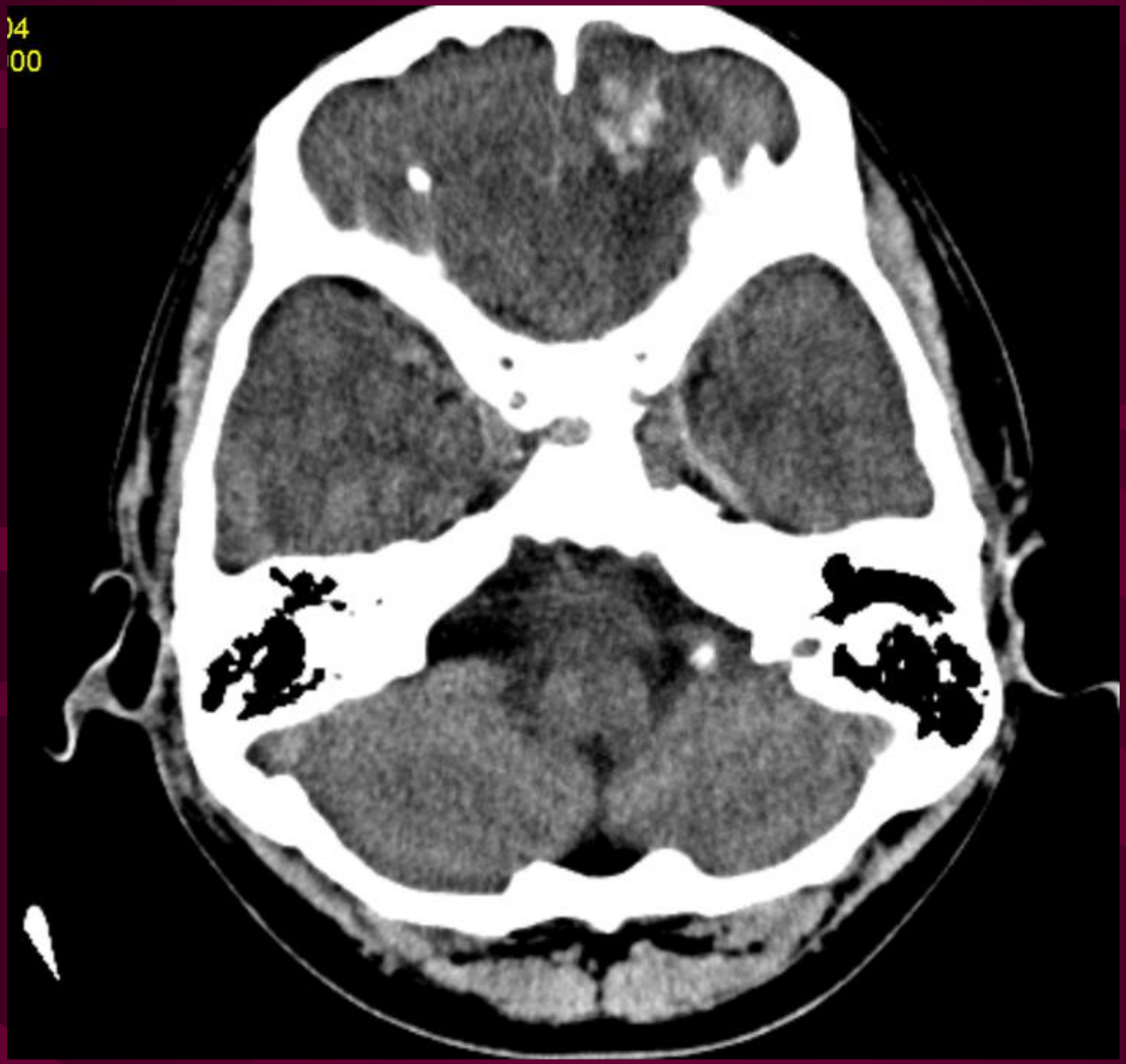
高密度





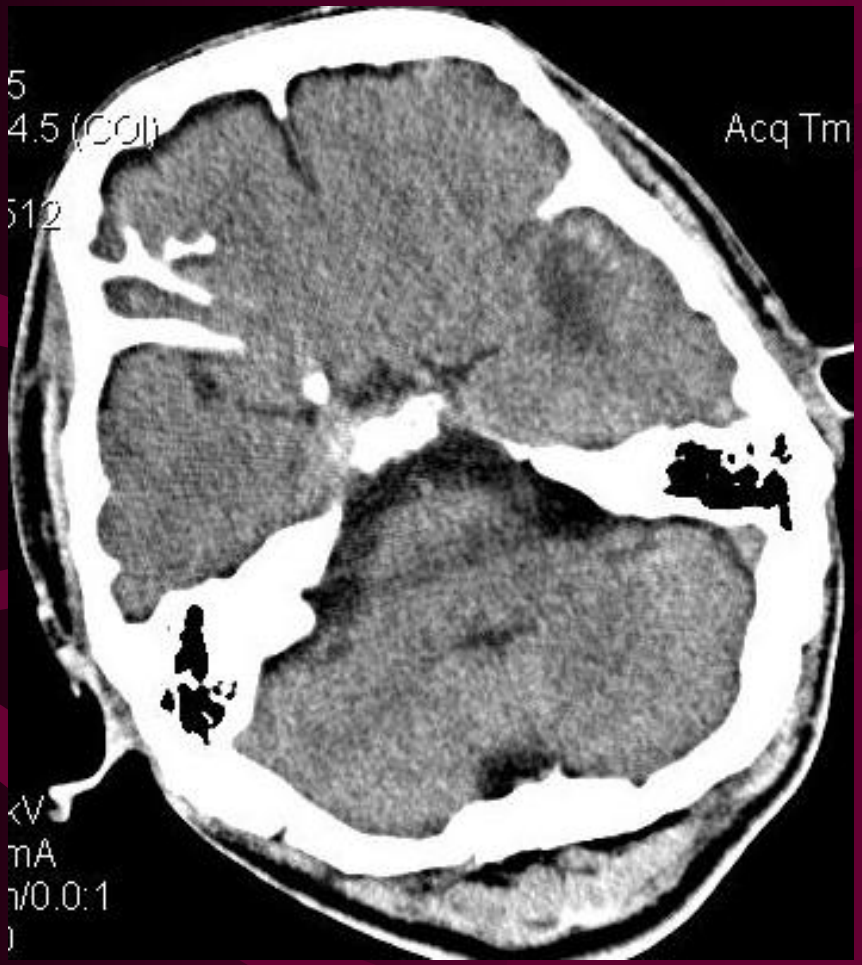


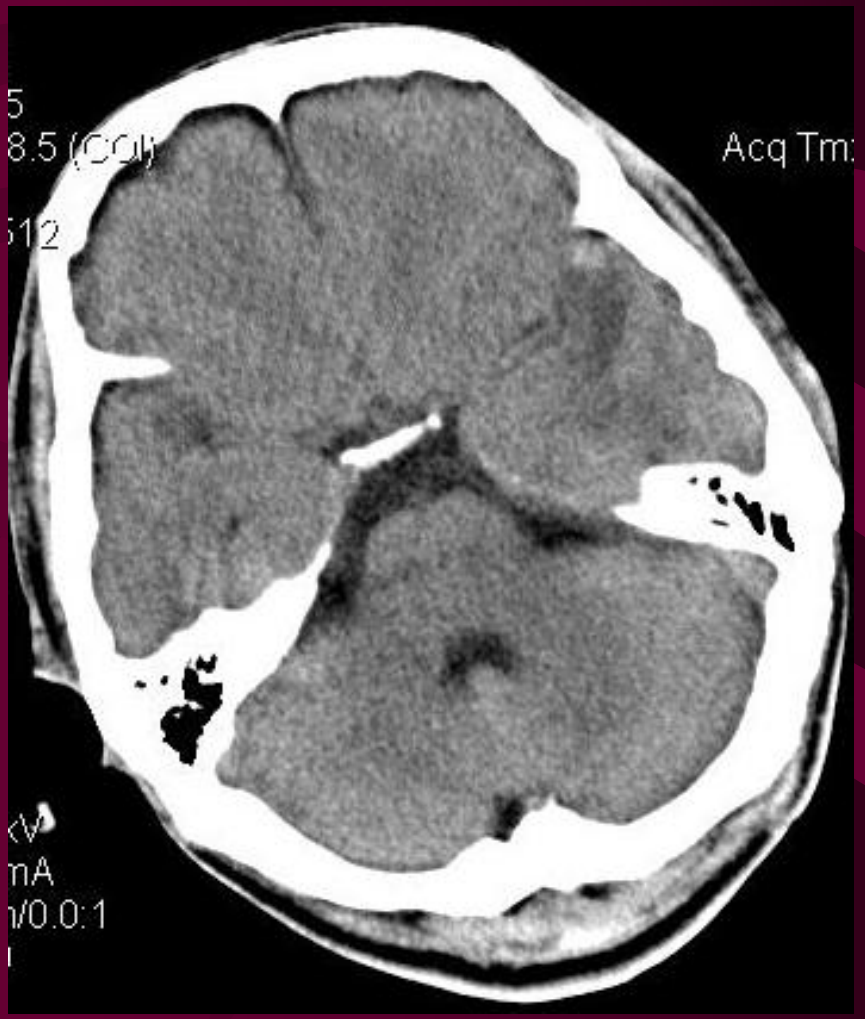
脑挫伤



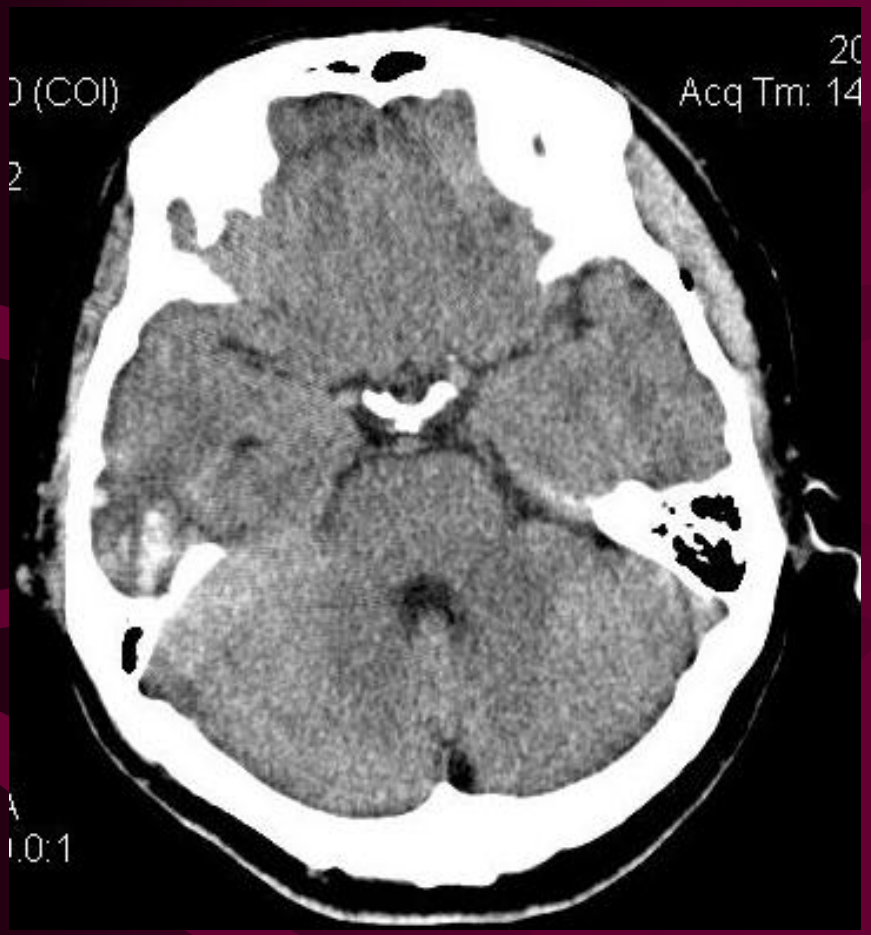
脑挫裂伤

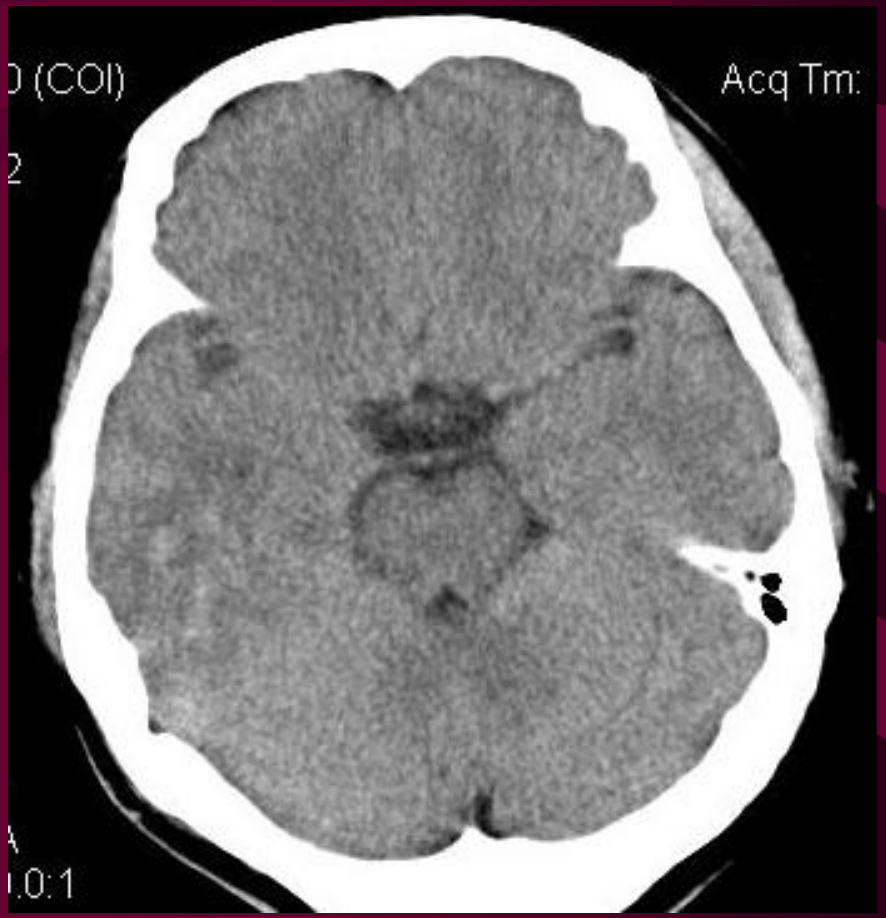
脑挫裂伤



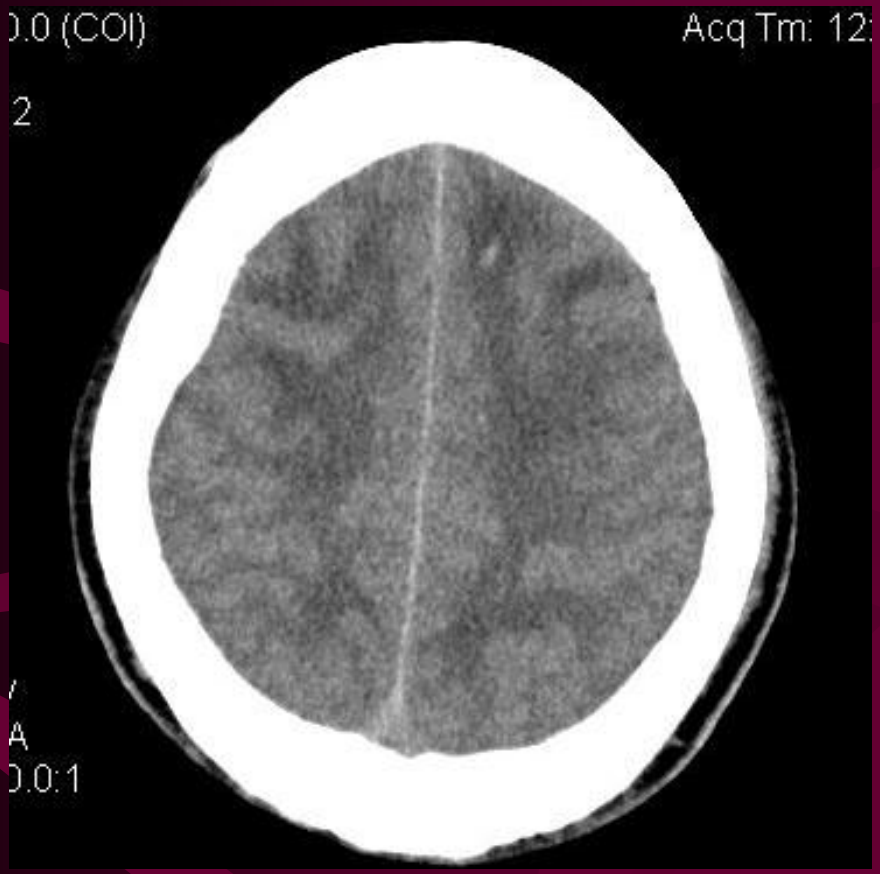


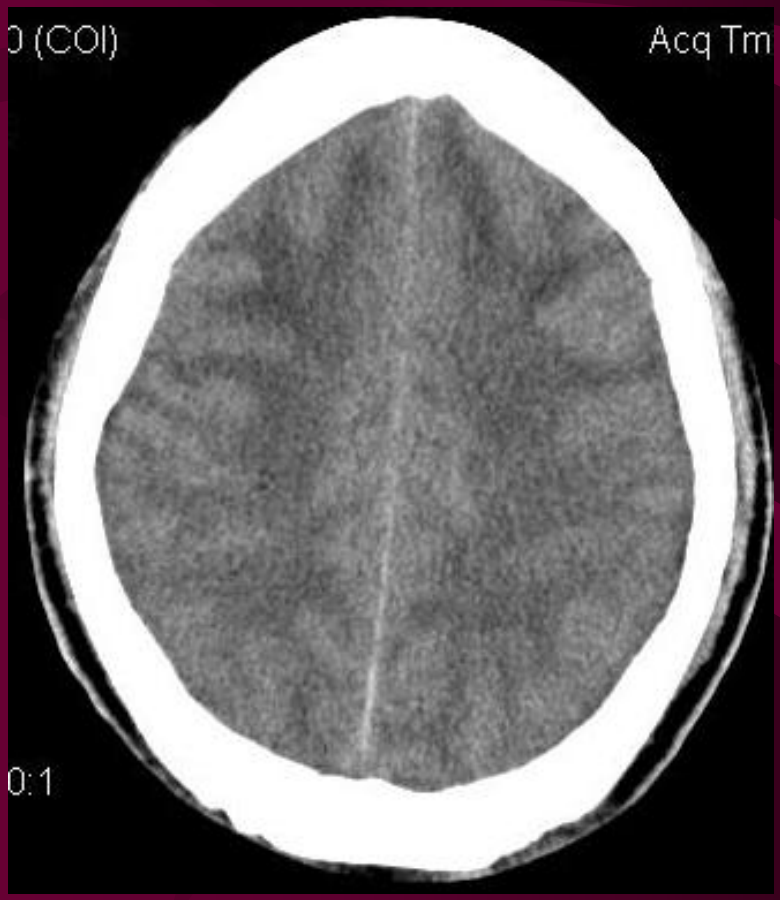
脑挫裂伤





脑挫裂伤





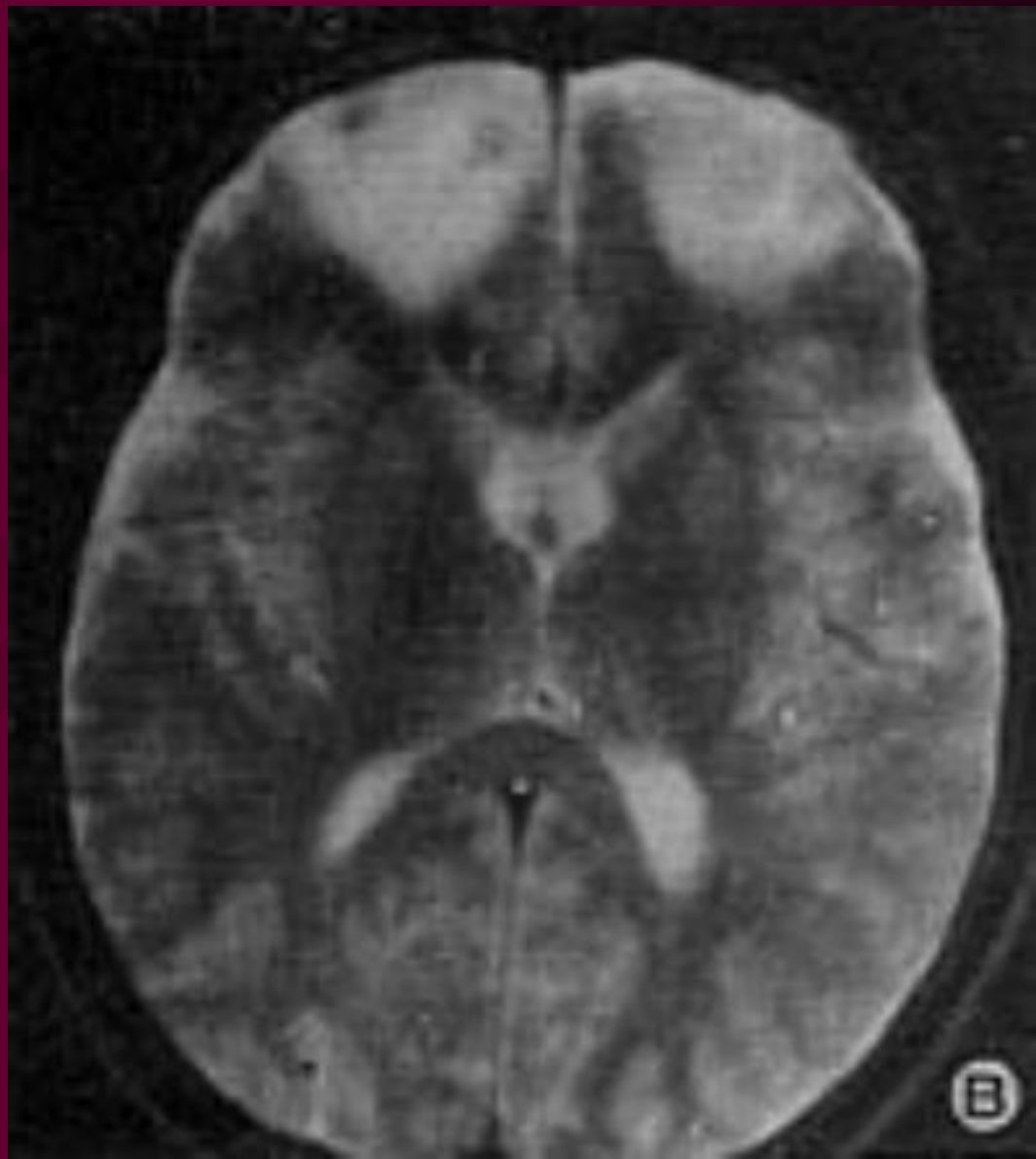
脑挫裂伤—CT表现

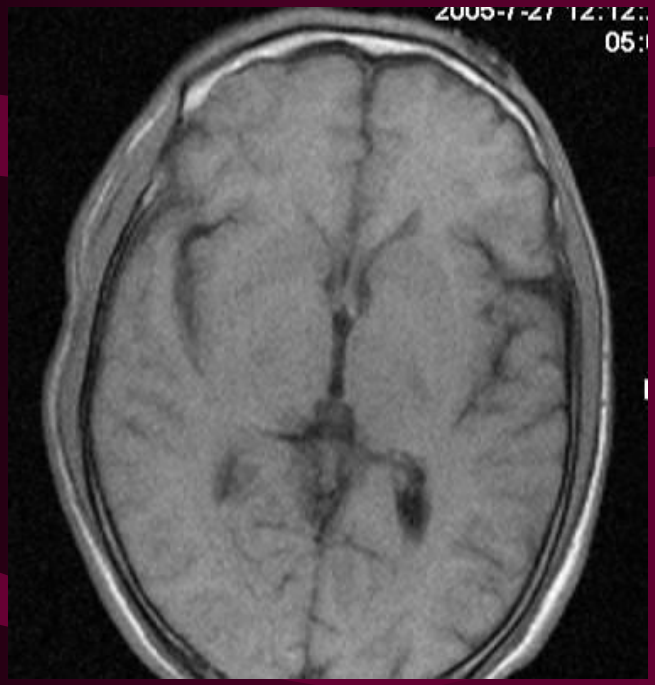
CT可显示伴发的脑内、外血肿和蛛网膜下腔出血，常见于纵裂池 。

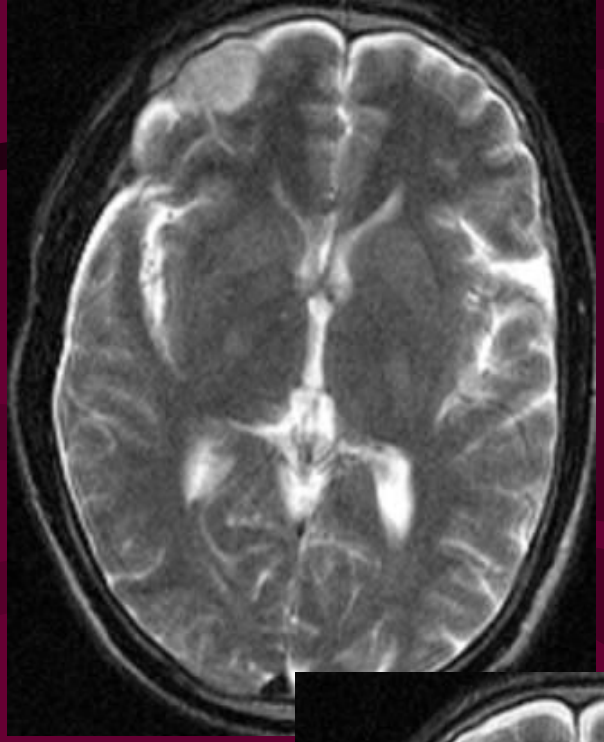
脑挫裂伤－MRI表现

T1W低信号

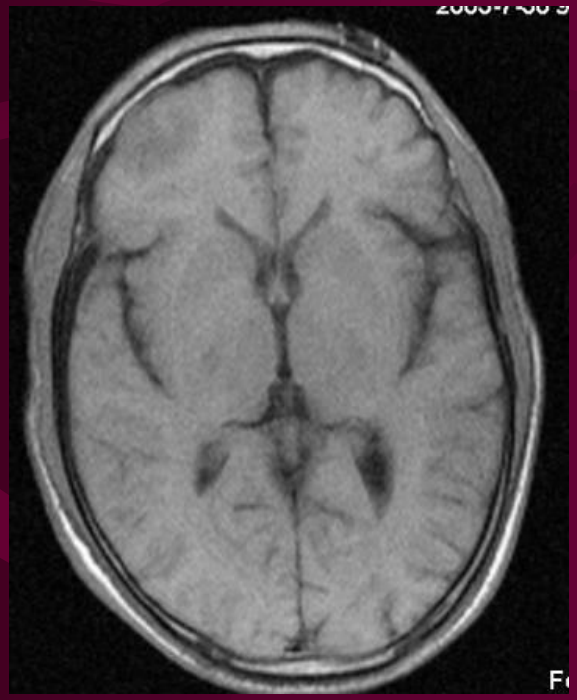
T2W高信号





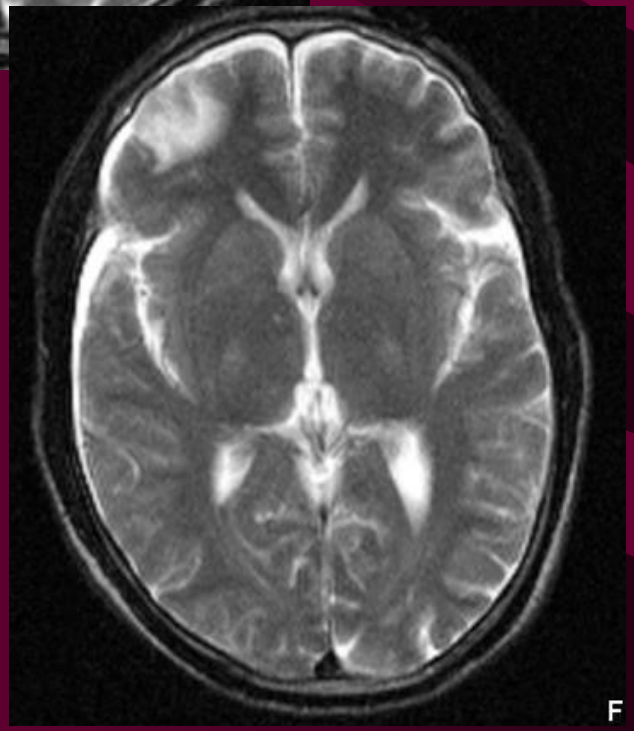


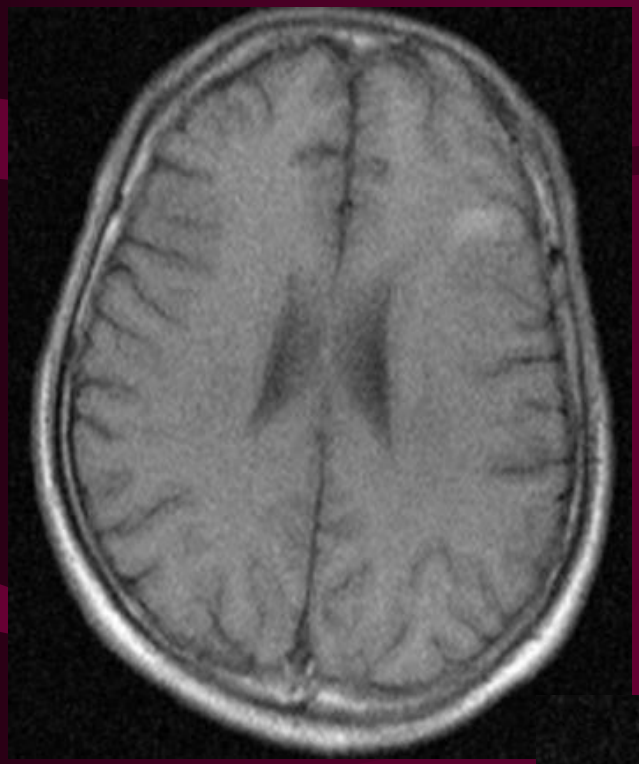
7月27日

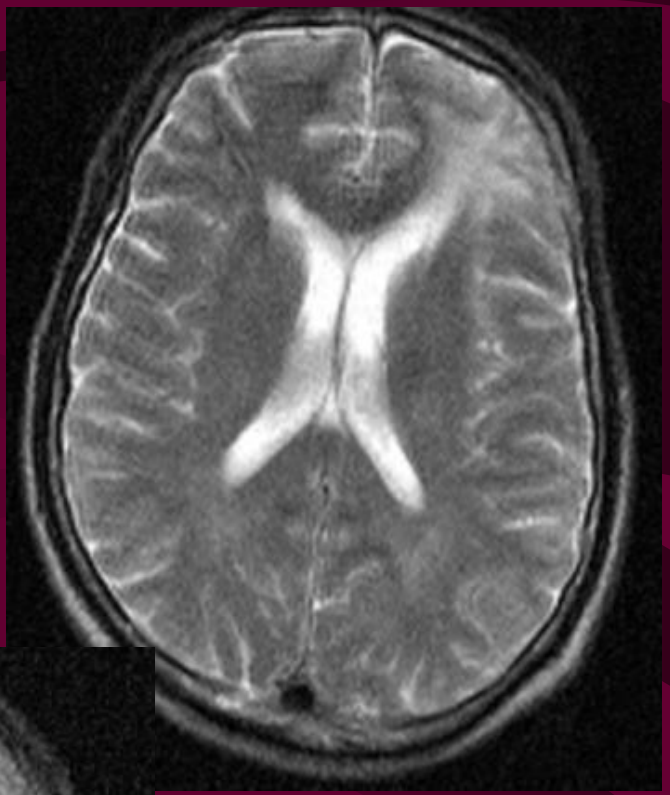


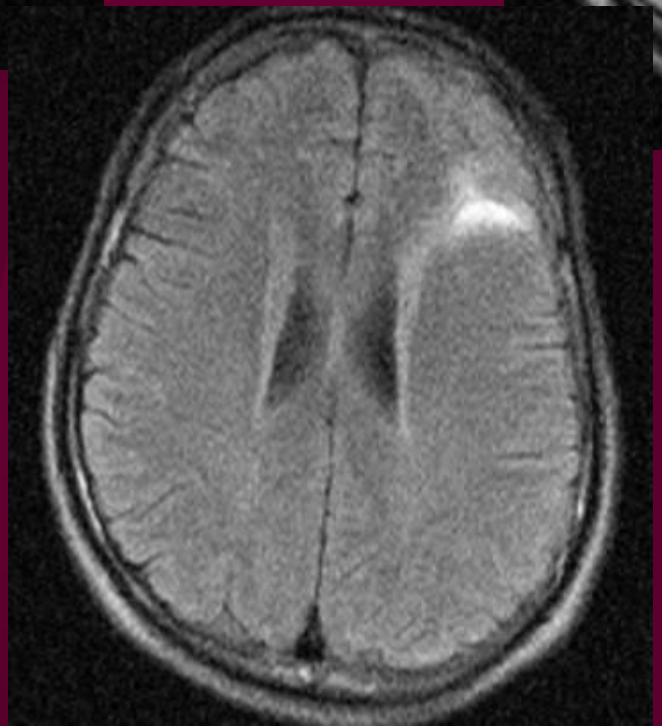
7月30日

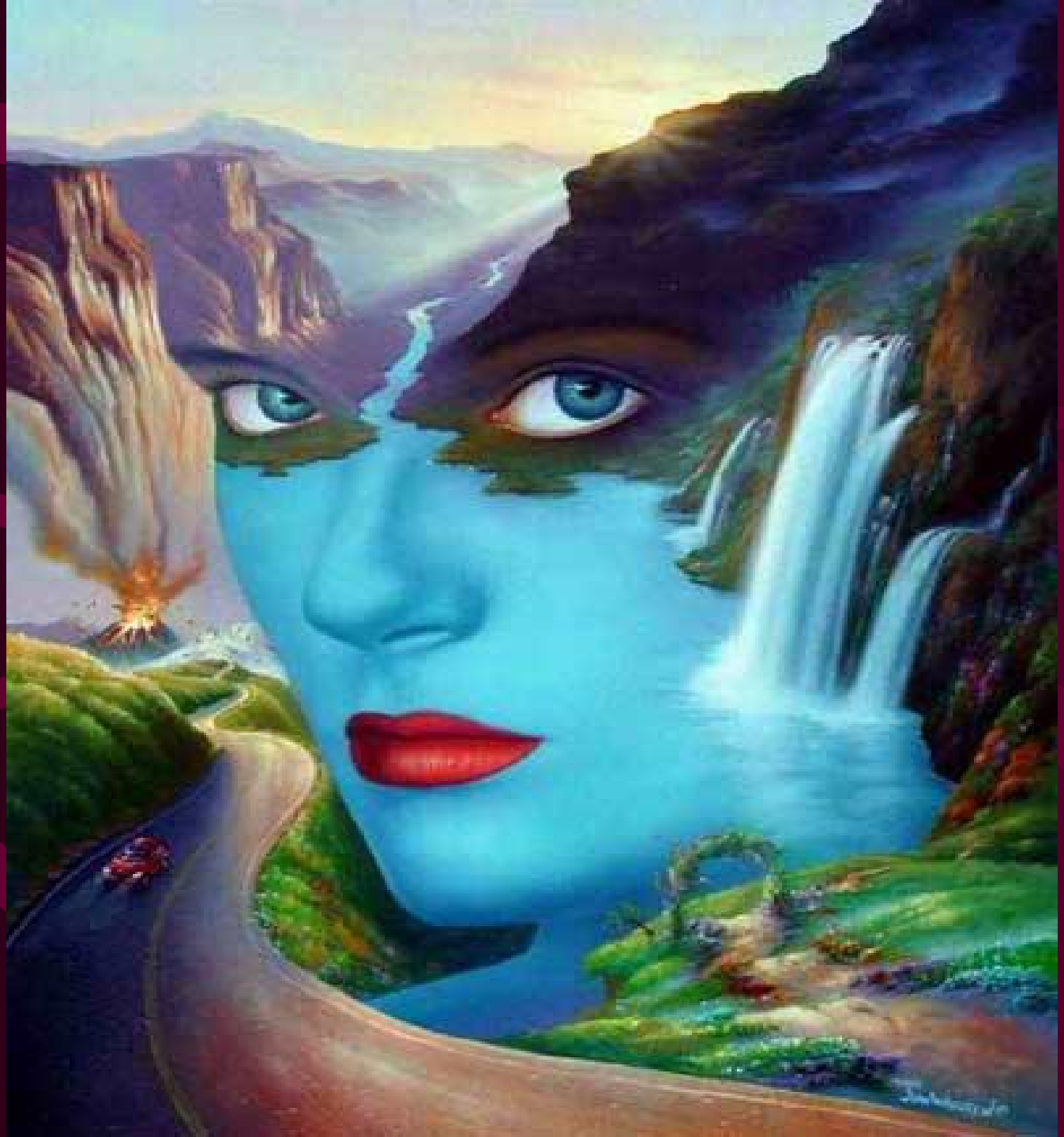
脑挫伤









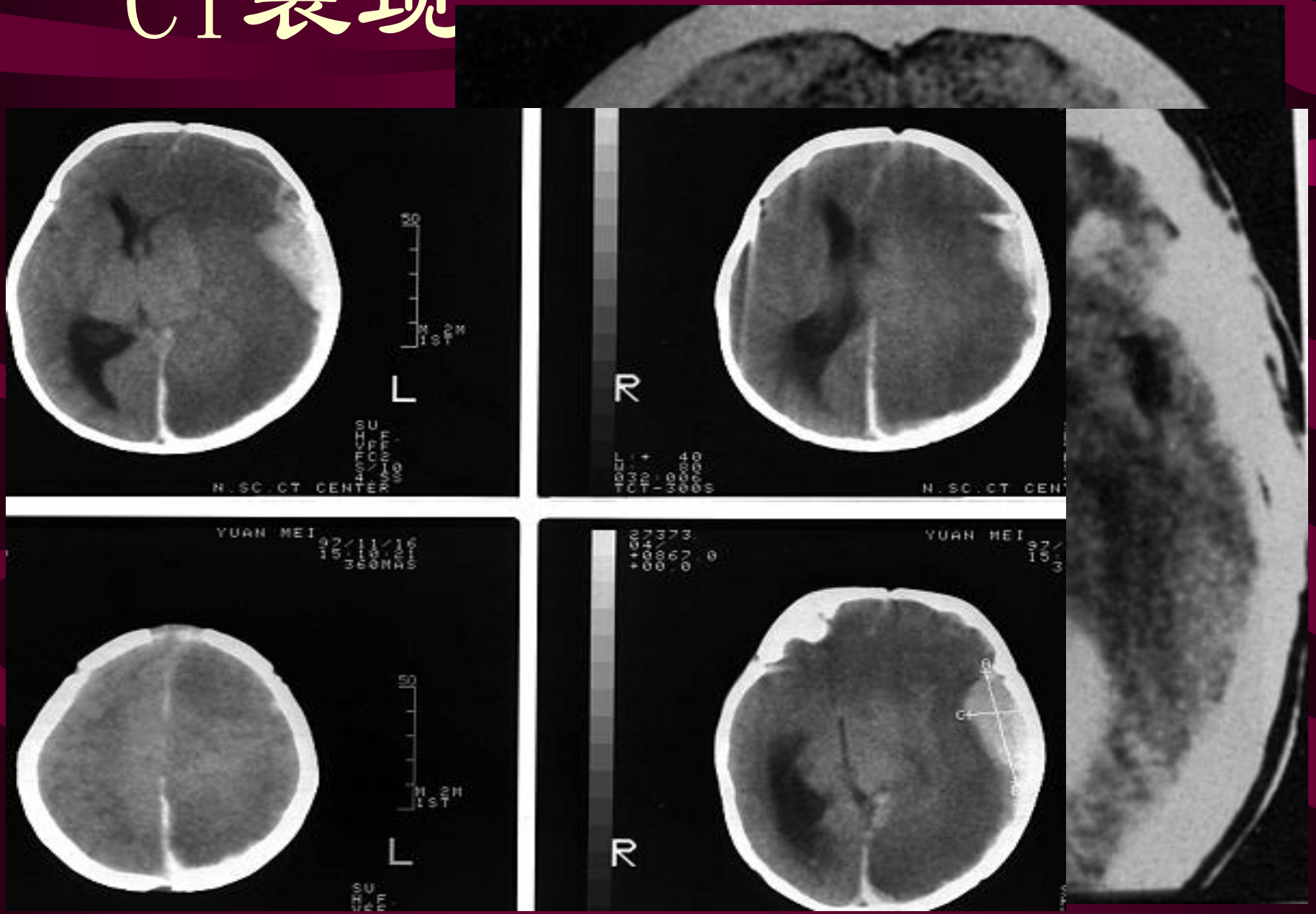


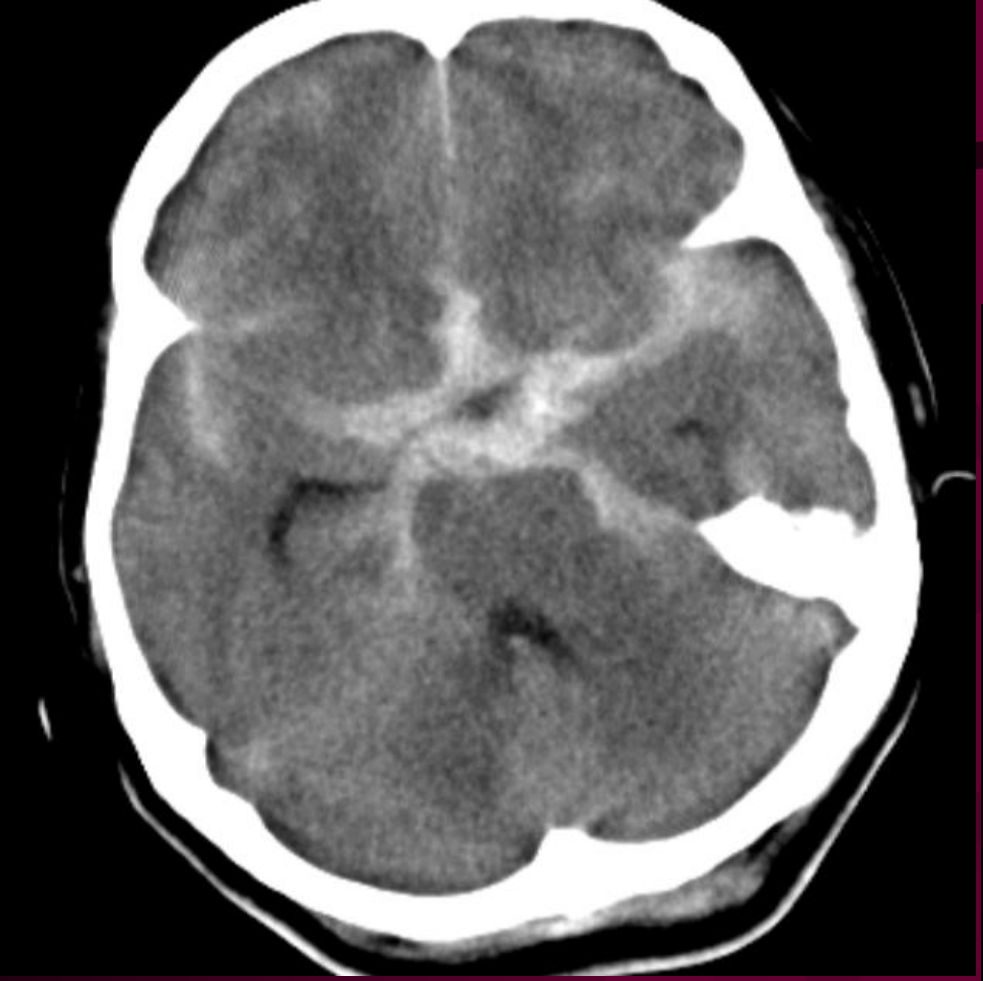
脑室和蛛网膜下腔出血

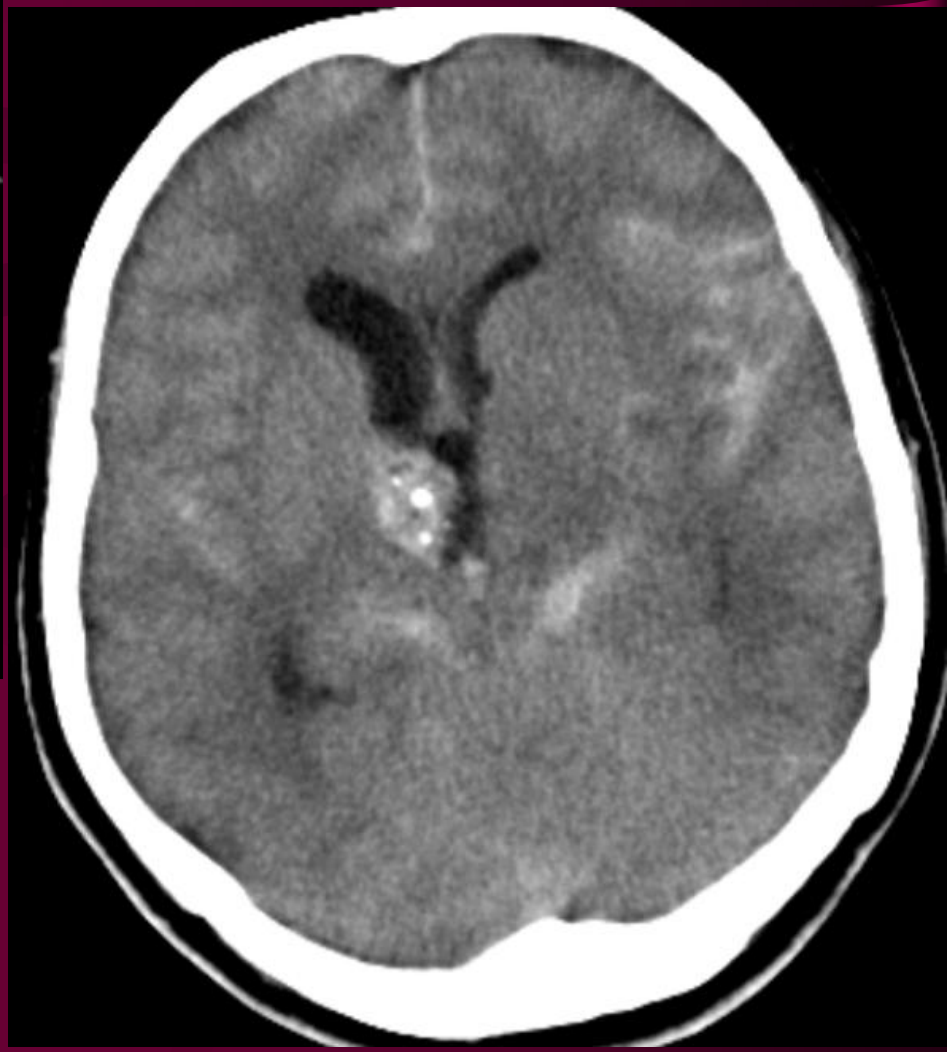
1、外伤性脑室出血少见。

2、蛛网膜下腔出血表现为脑池和脑沟增宽，或结构不清，密度增高

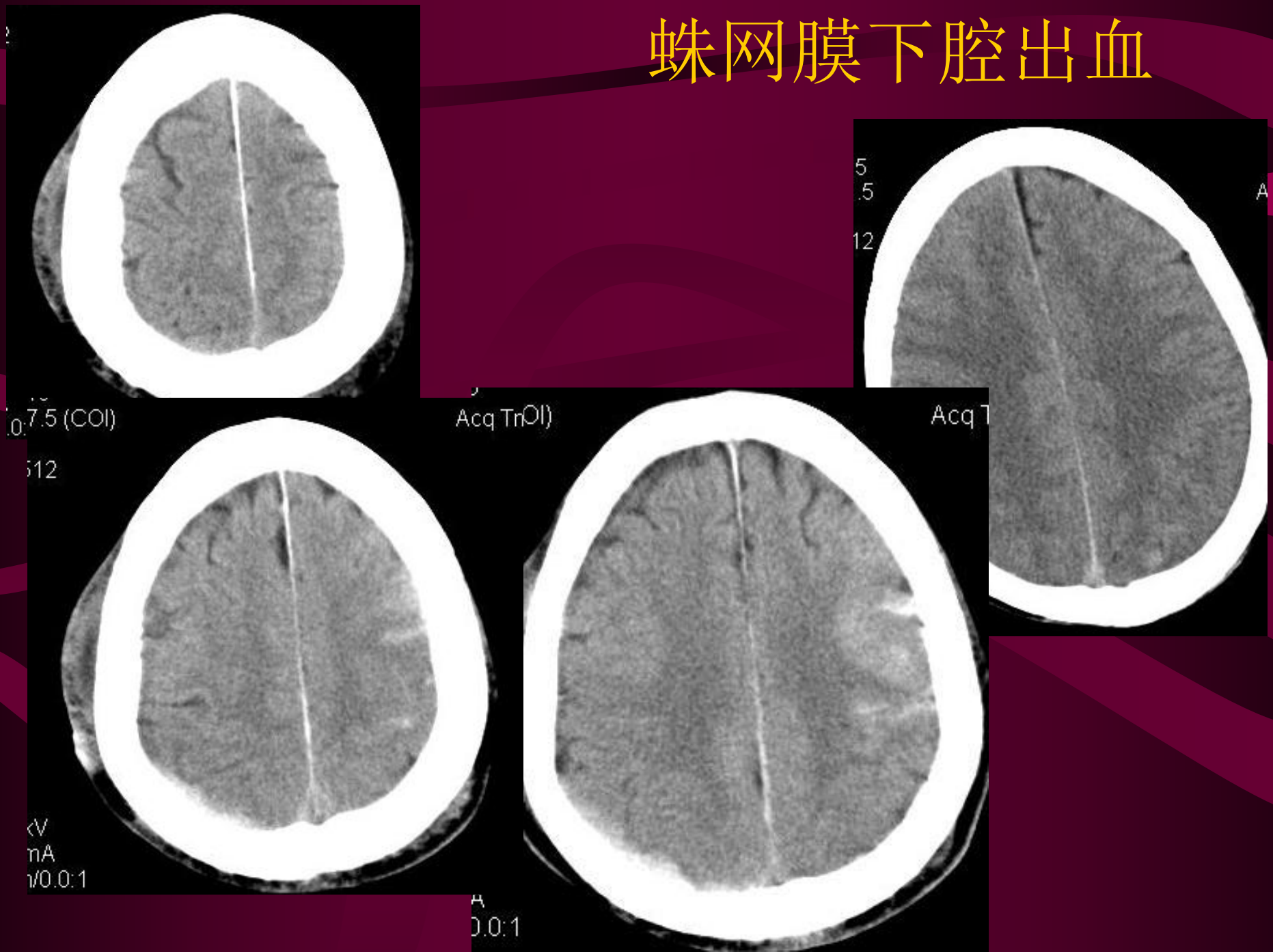
CT表现







蛛网膜下腔出血

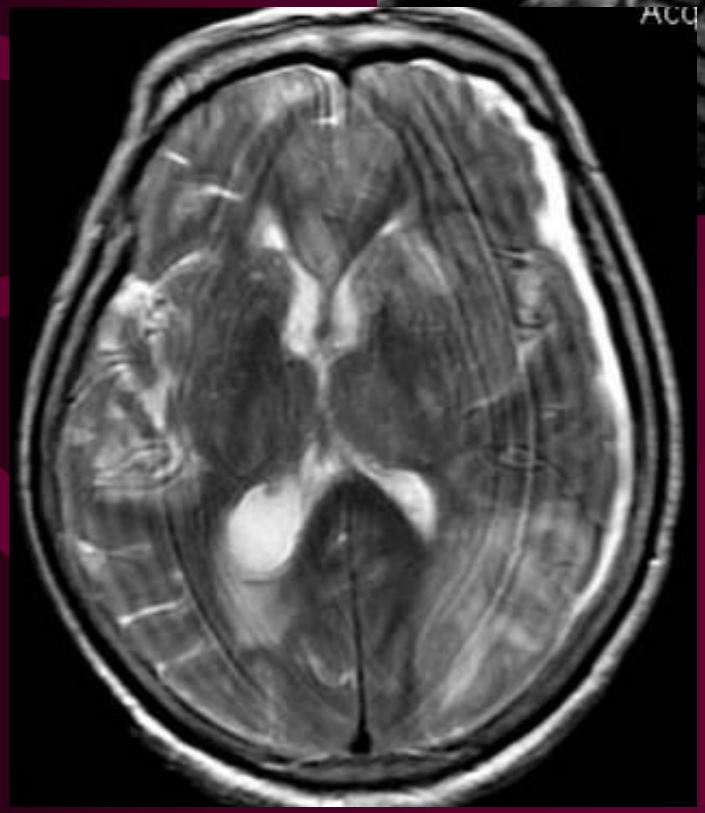


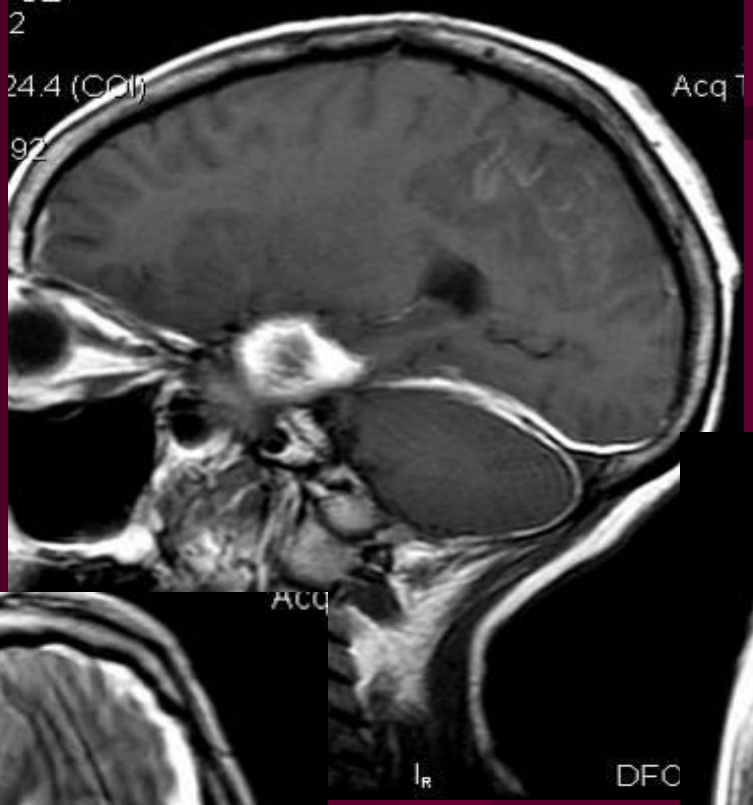
MRI表现

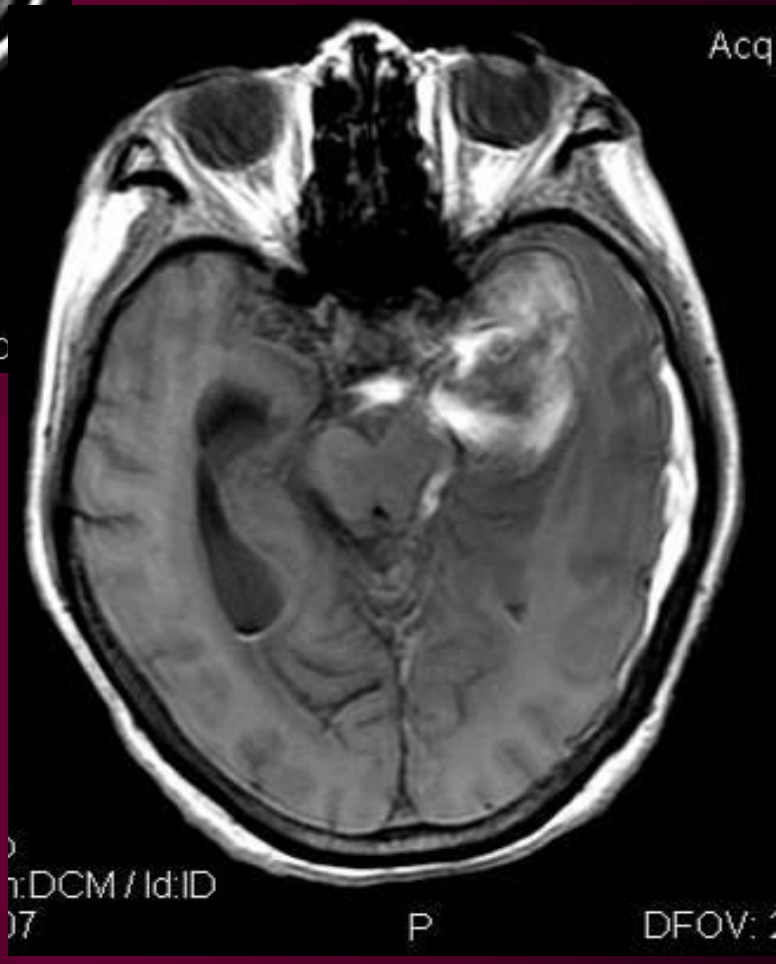
急性期：T1W和T2W的信号与脑脊液类似，难以显示

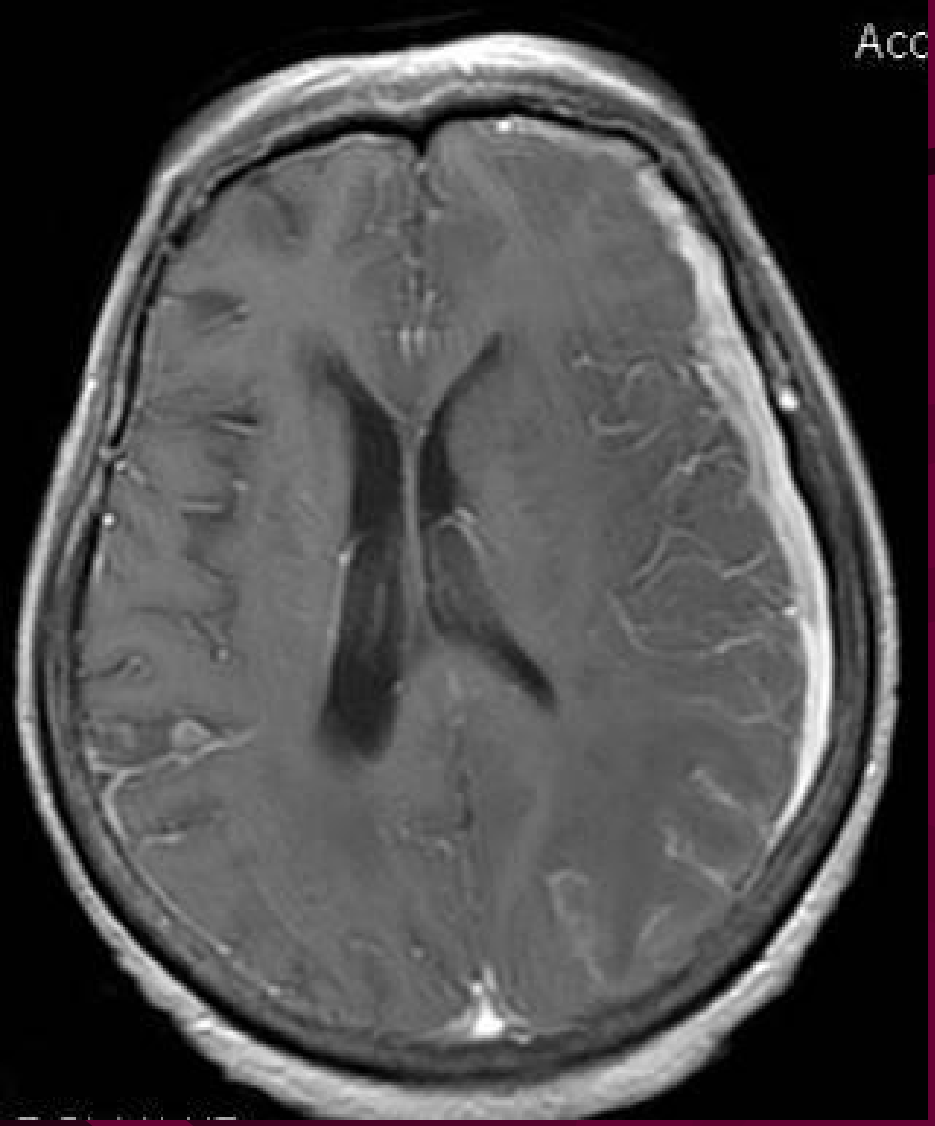
亚急性期：T1W和T2W均为高信号

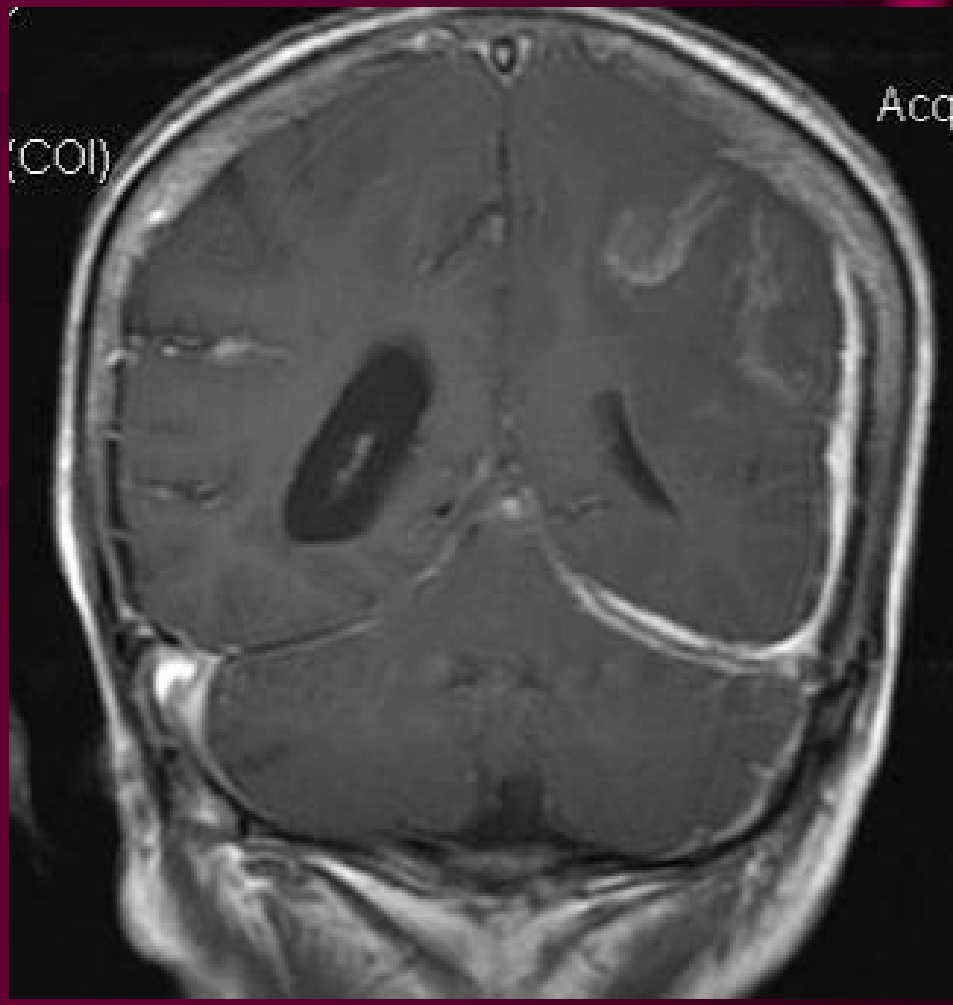
慢性期：同急性期


Acq


24.4 (COI)
Acq T
DFO


Acq
P
DFOV:





新武松打虎！

脑外伤并发症和后遗症

一、梗塞

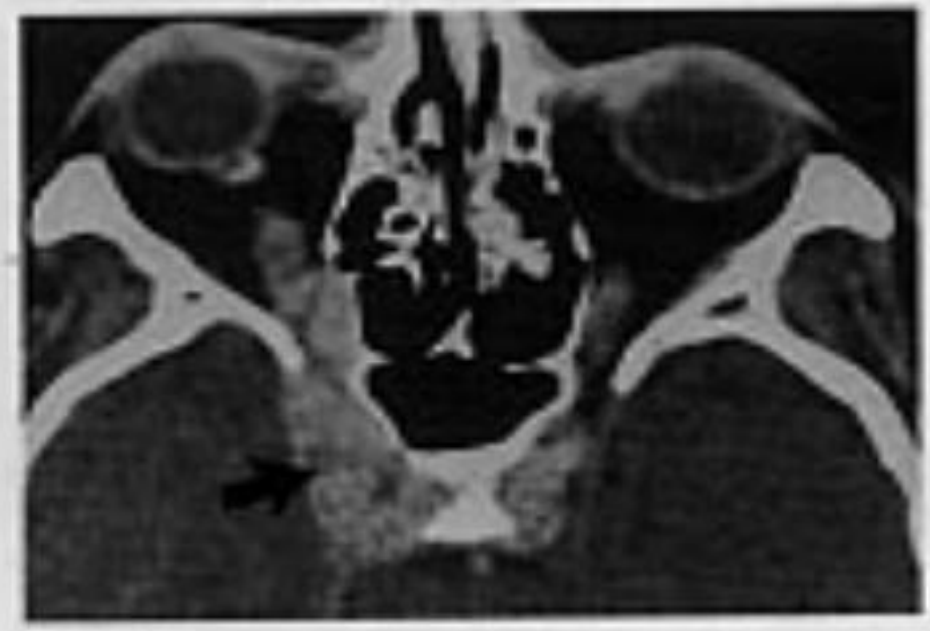
颅脑损伤后一周内最常见的并发症。多为脑内外血肿压迫周围脑实质的供血，也可为脑疝压迫基底动脉或继发于骨折的脂肪疝。

CT和MRI上表现为某一血管分布区域的脑梗塞。

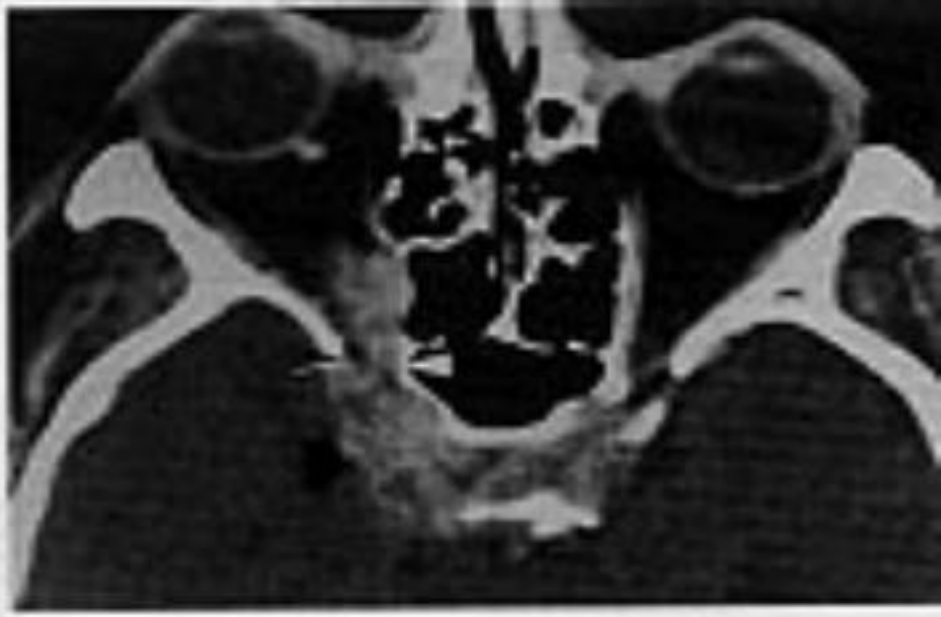
二、颈内动脉海绵窦瘘

海绵窦内颈内动脉和静脉直接交通，动脉压高于静脉压，产生眼静脉逆流。临床表现主要为搏动性突眼。

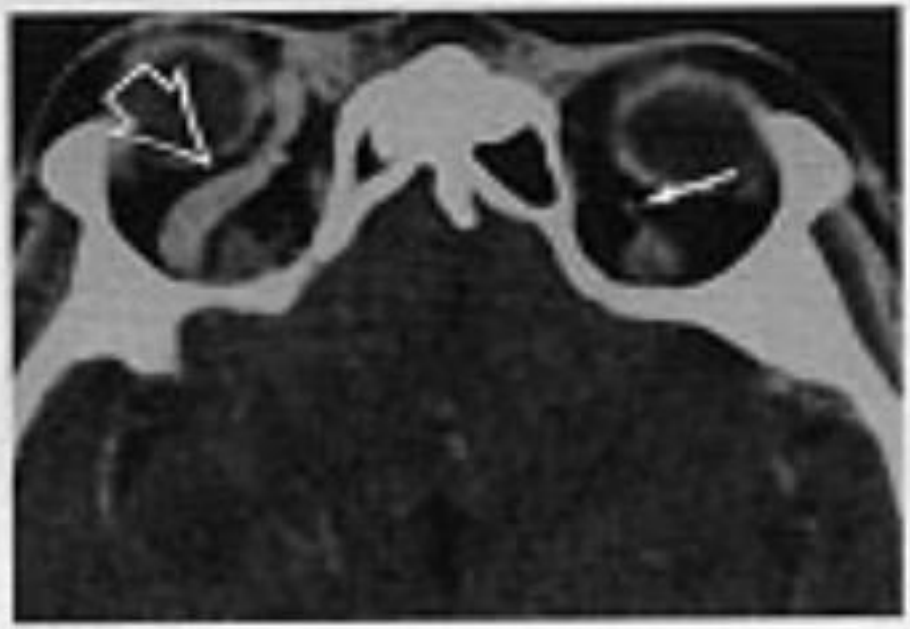
CT、MRI和DSA可显示粗大的眼静脉。

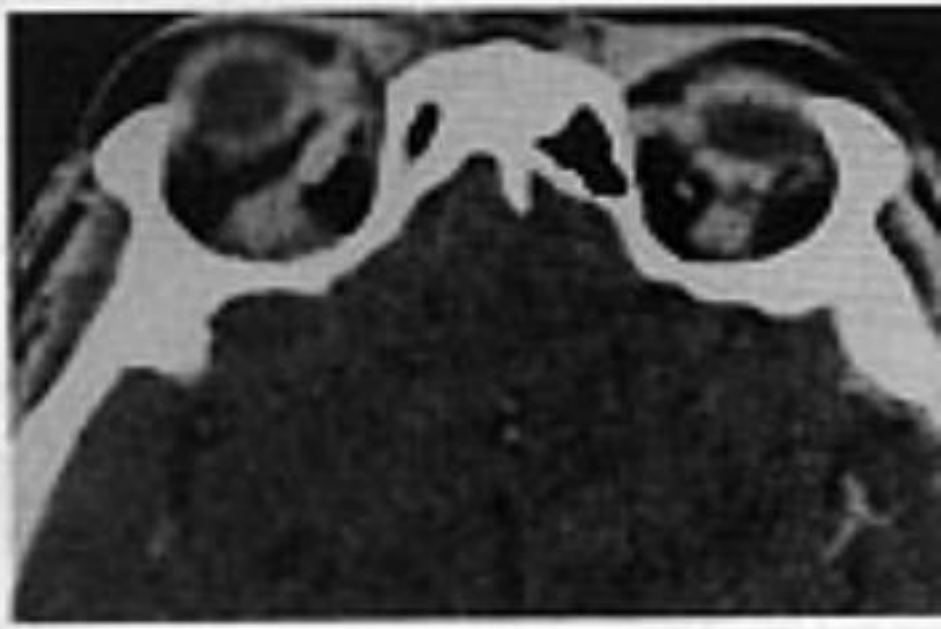


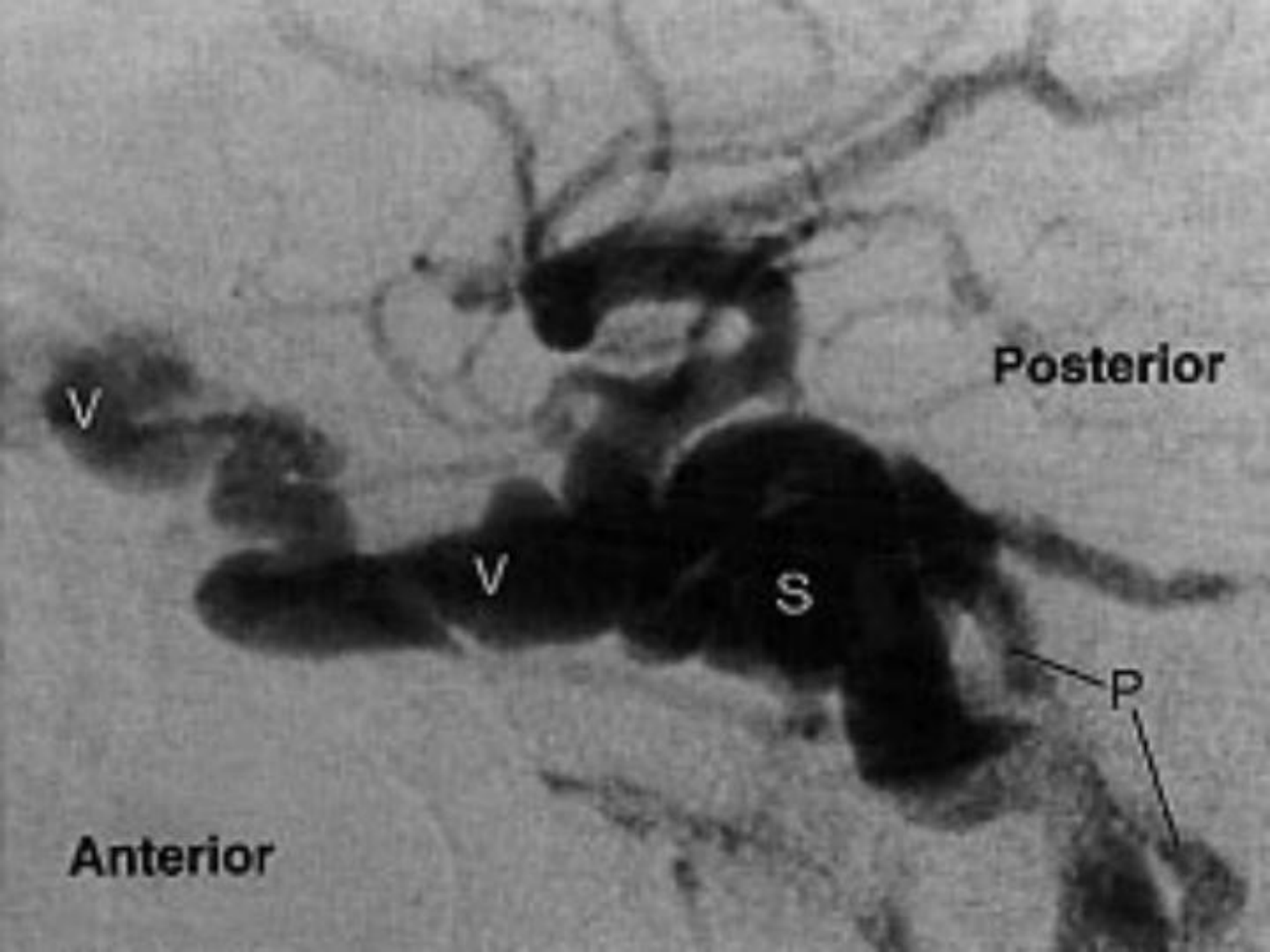
A



B






Posterior
V
V
S
P
Anterior

三、脑脓肿

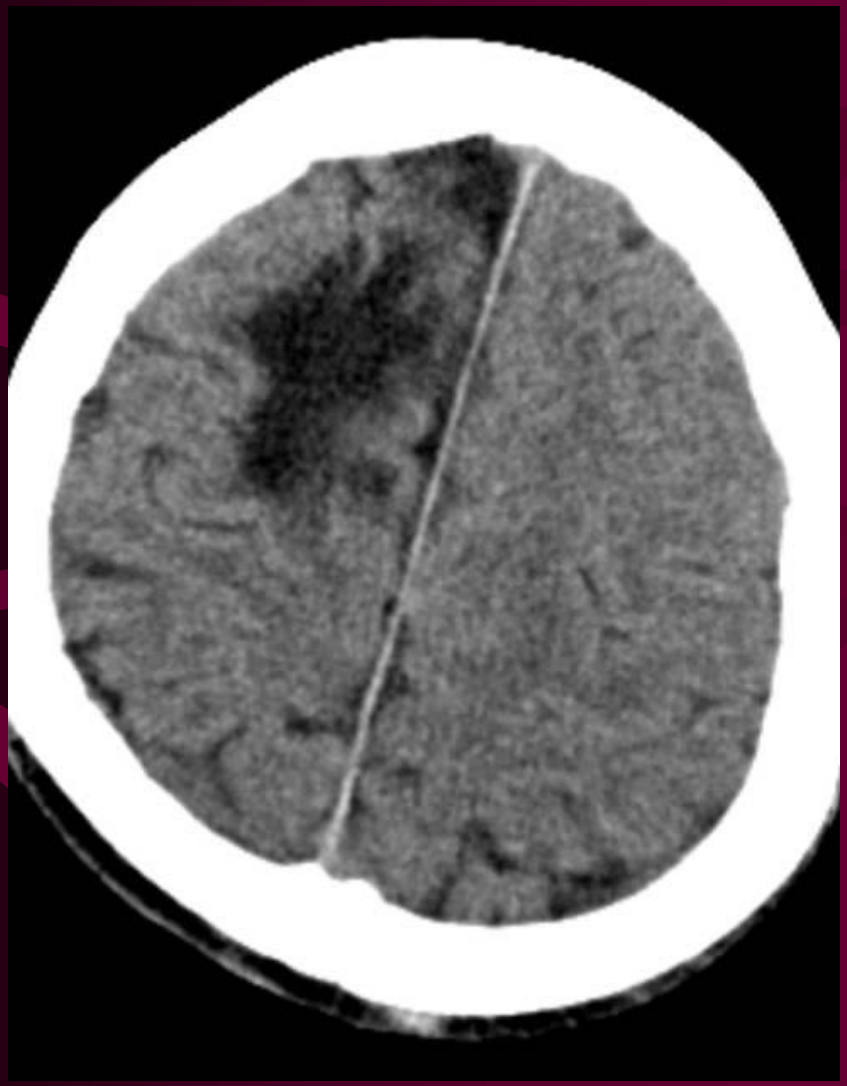
常继发于穿通性或开放性的脑外伤，也可为术后并发症。CT和MRI可显示脓肿和其周围的水肿。

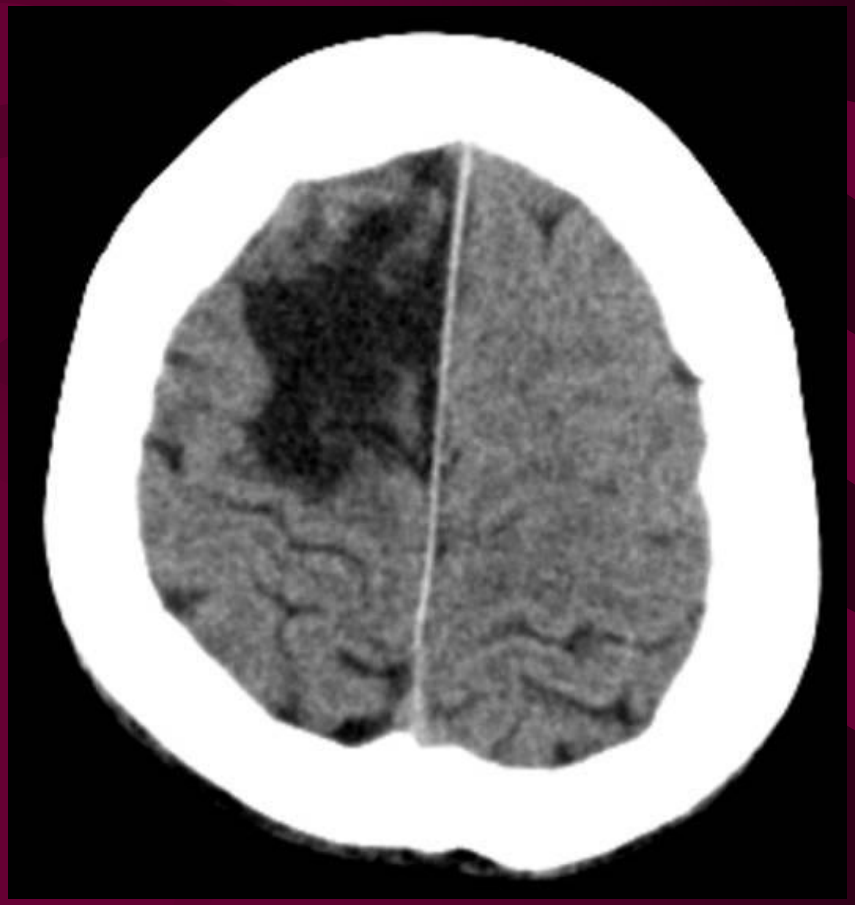
四、脑软化

常见于脑内血肿和脑挫裂伤后，也可为术后并发症。

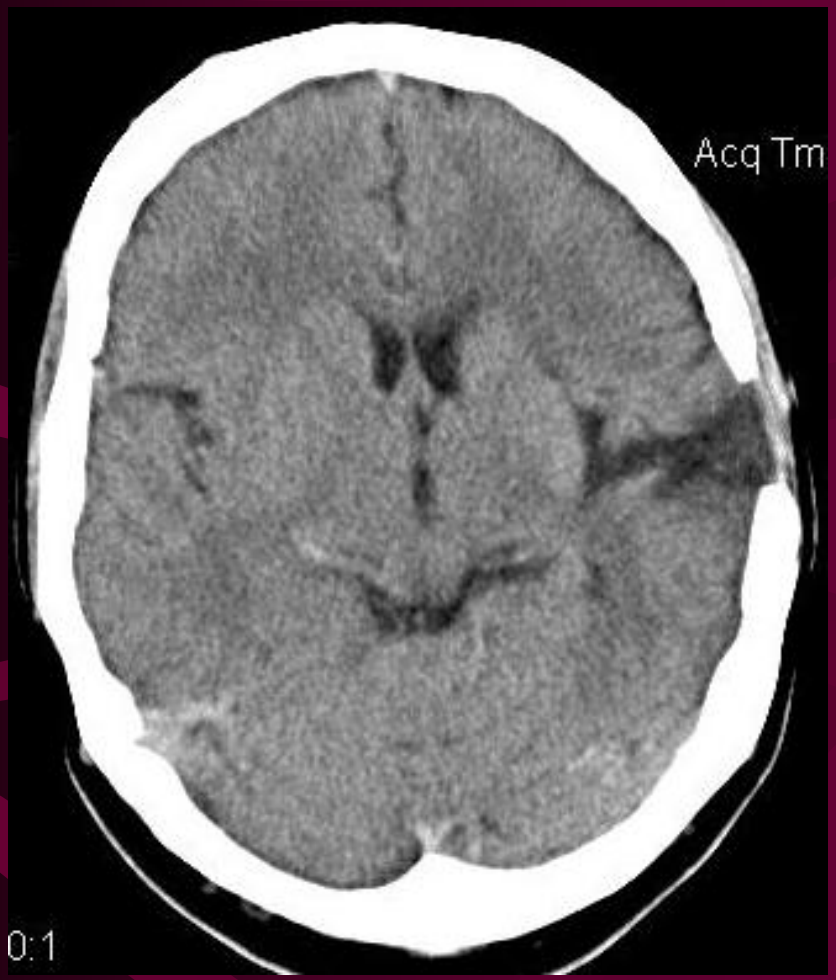
CT和MRI能清楚地显示软化灶和负占位效应。

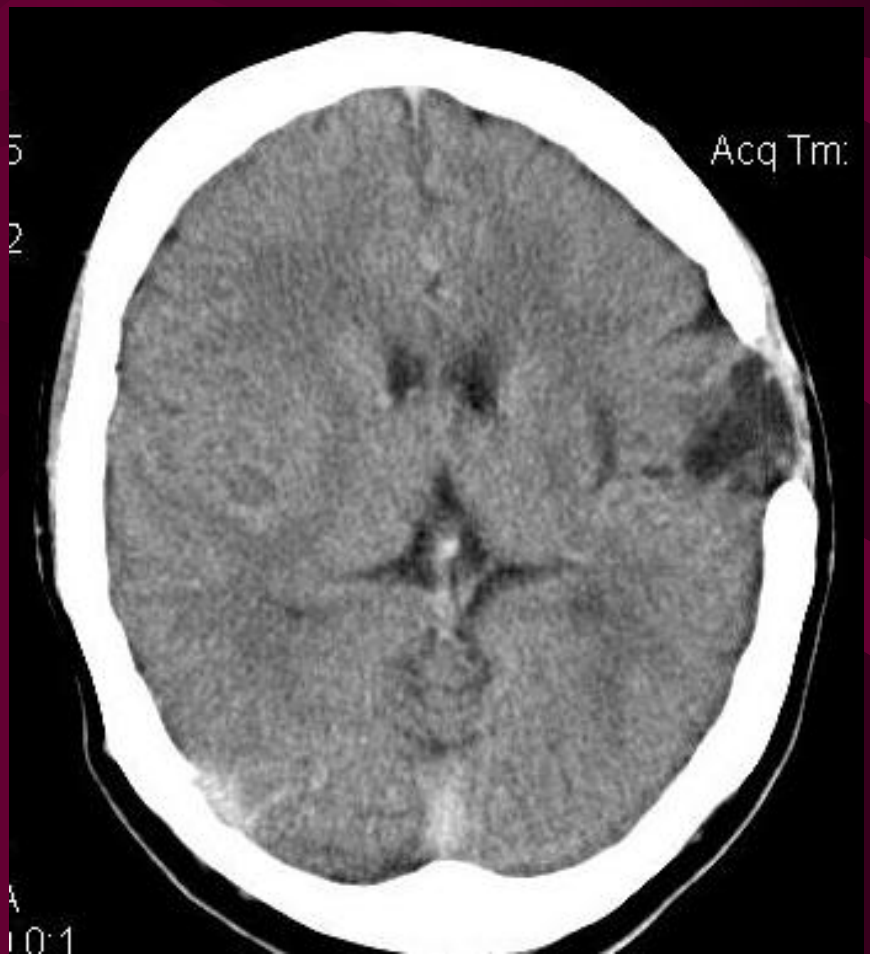
脑软化灶



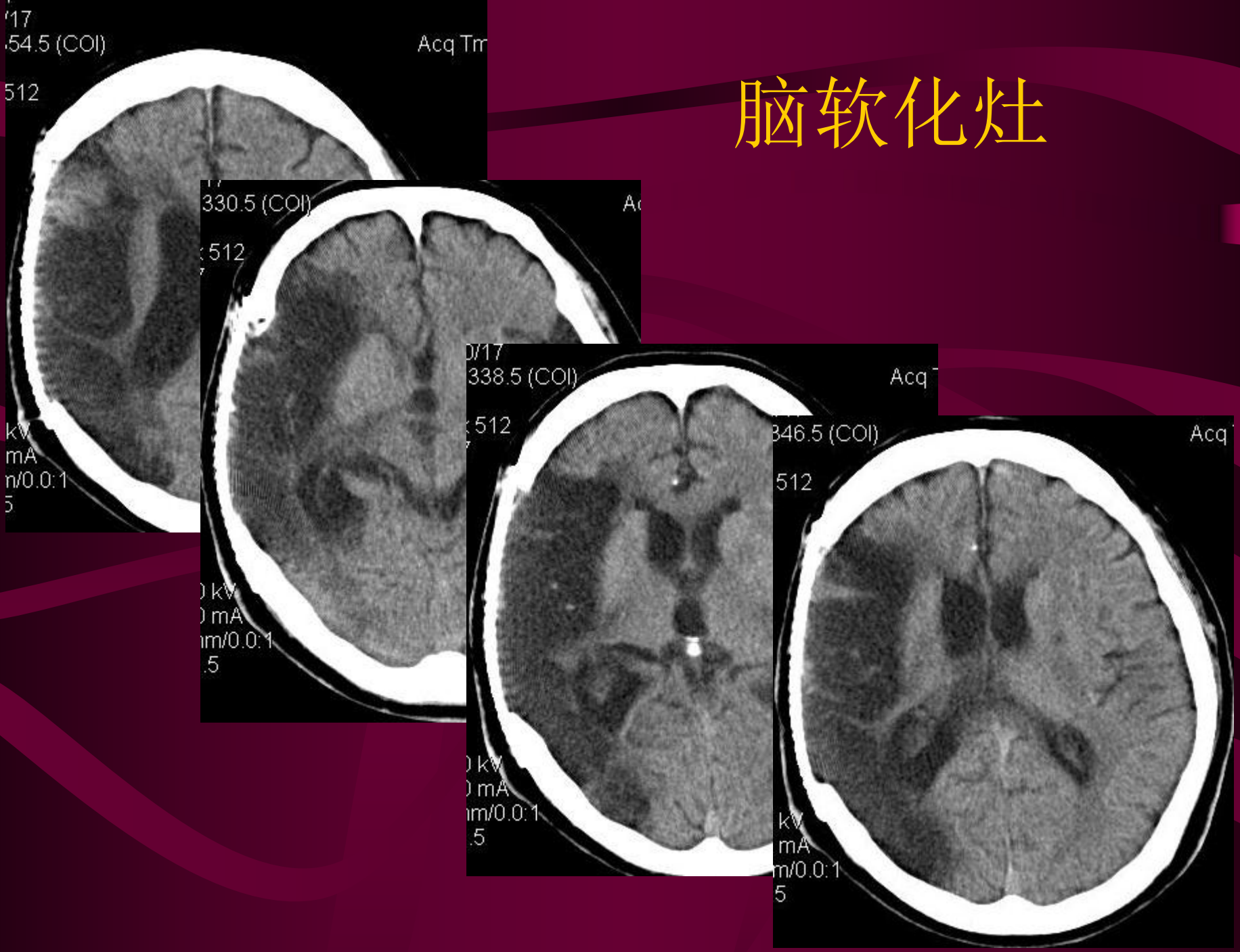


脑软化灶

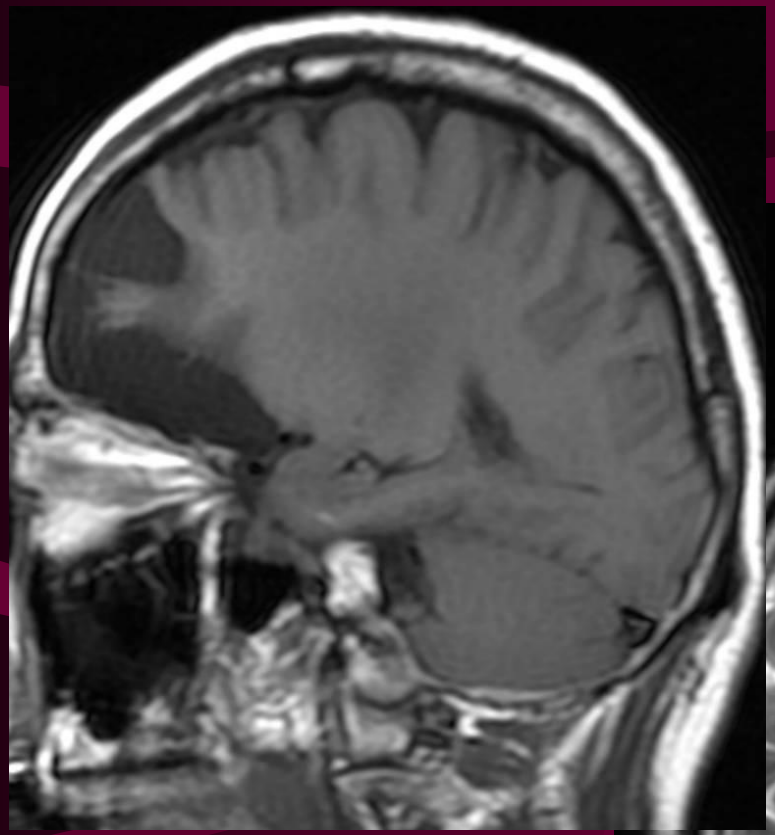


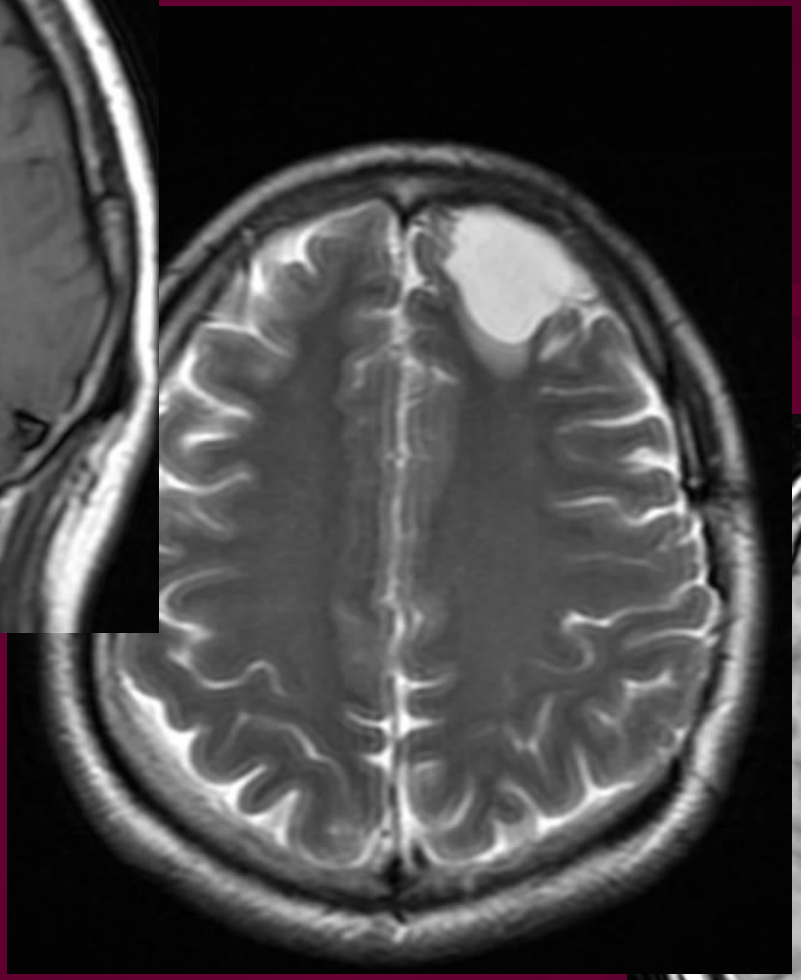


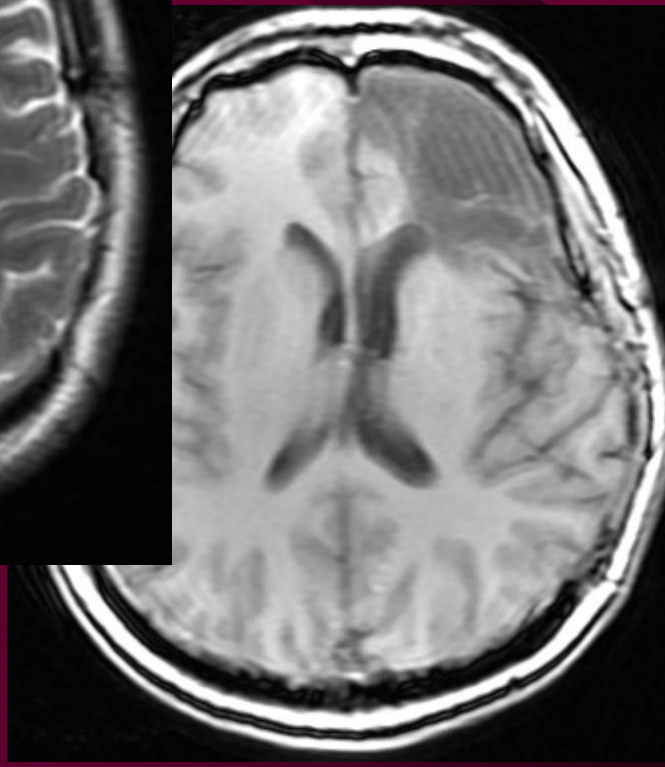
脑软化灶



脑软化灶形成







五、脑萎缩

严重脑外伤

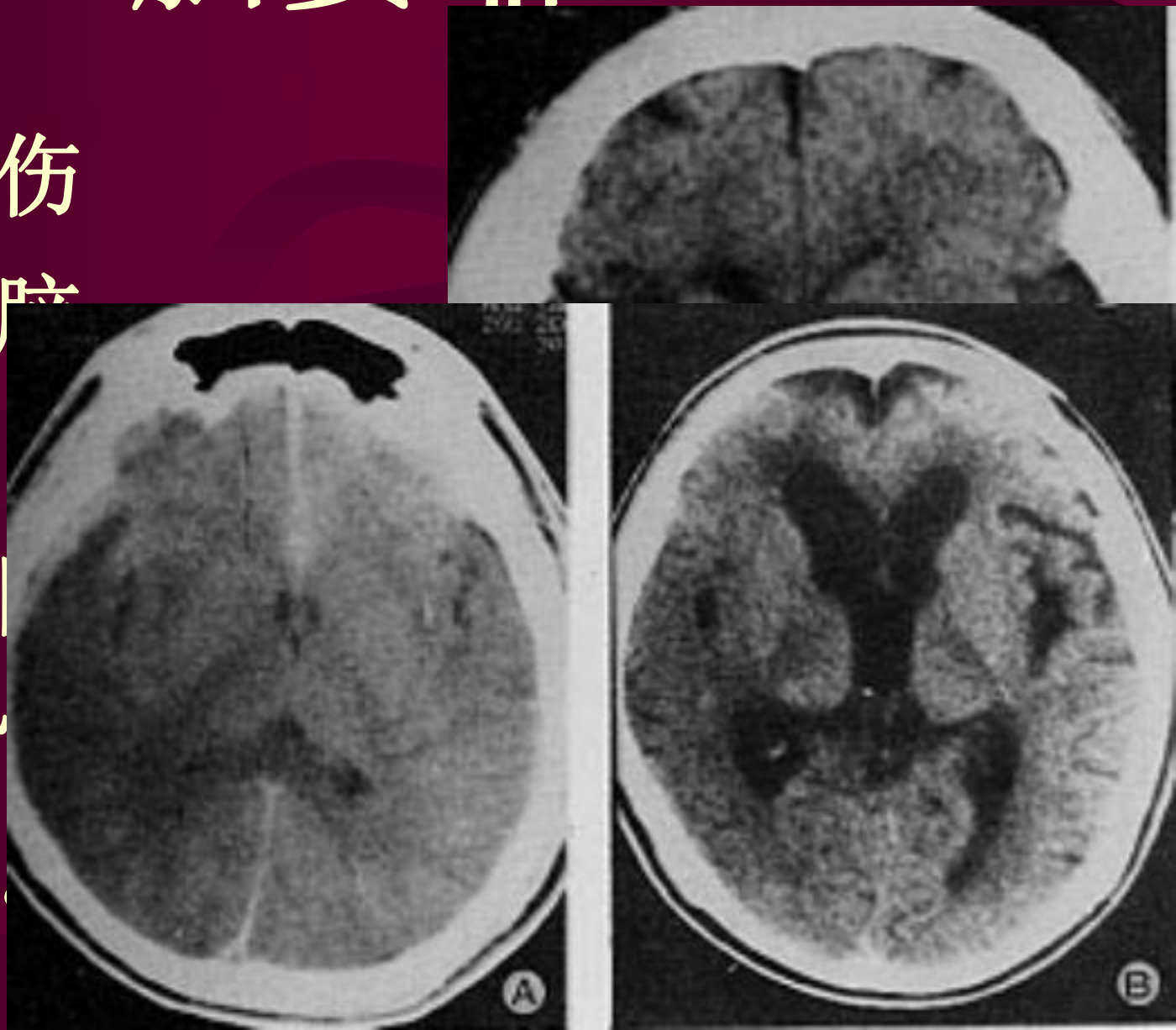
30%可见

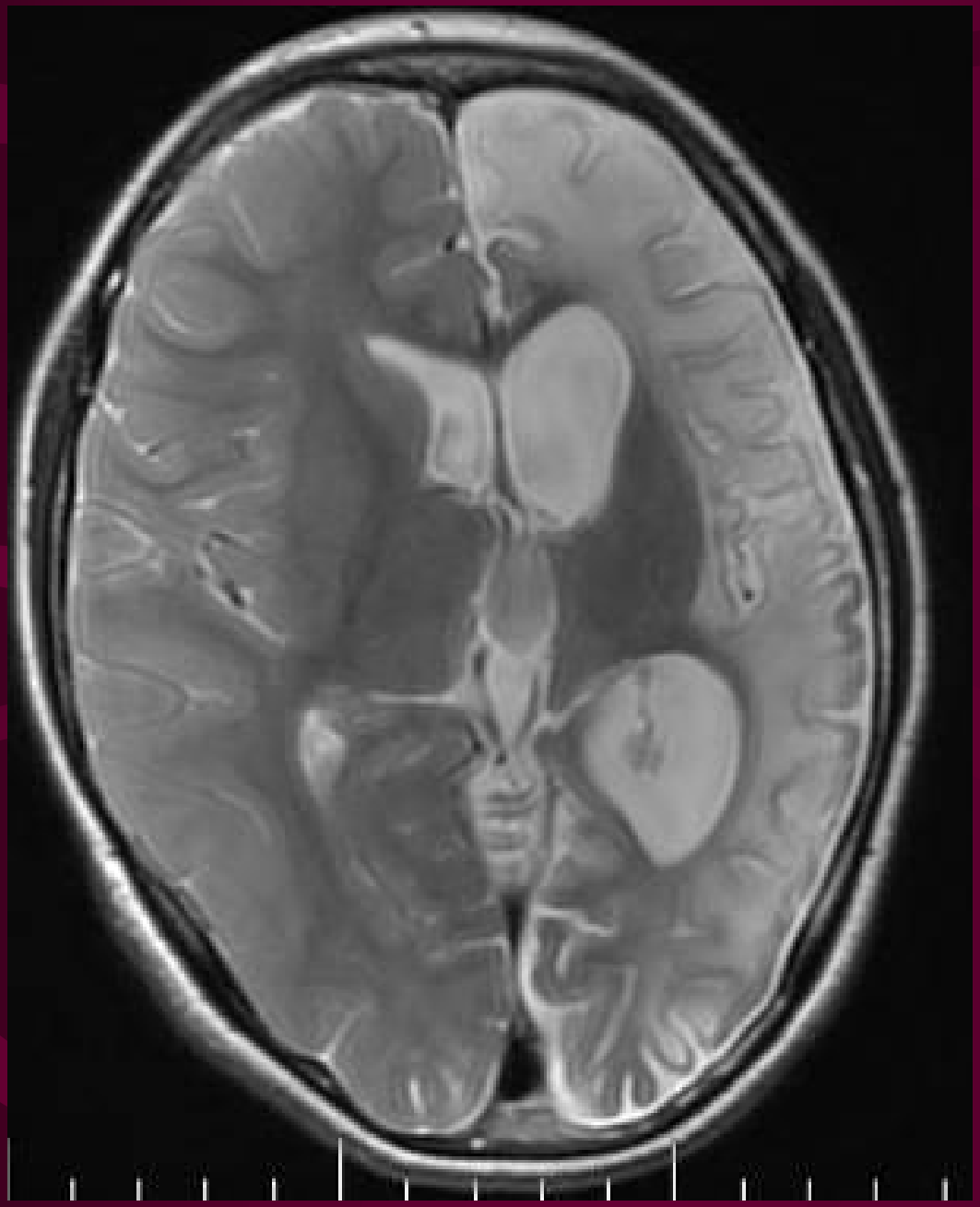
萎缩。

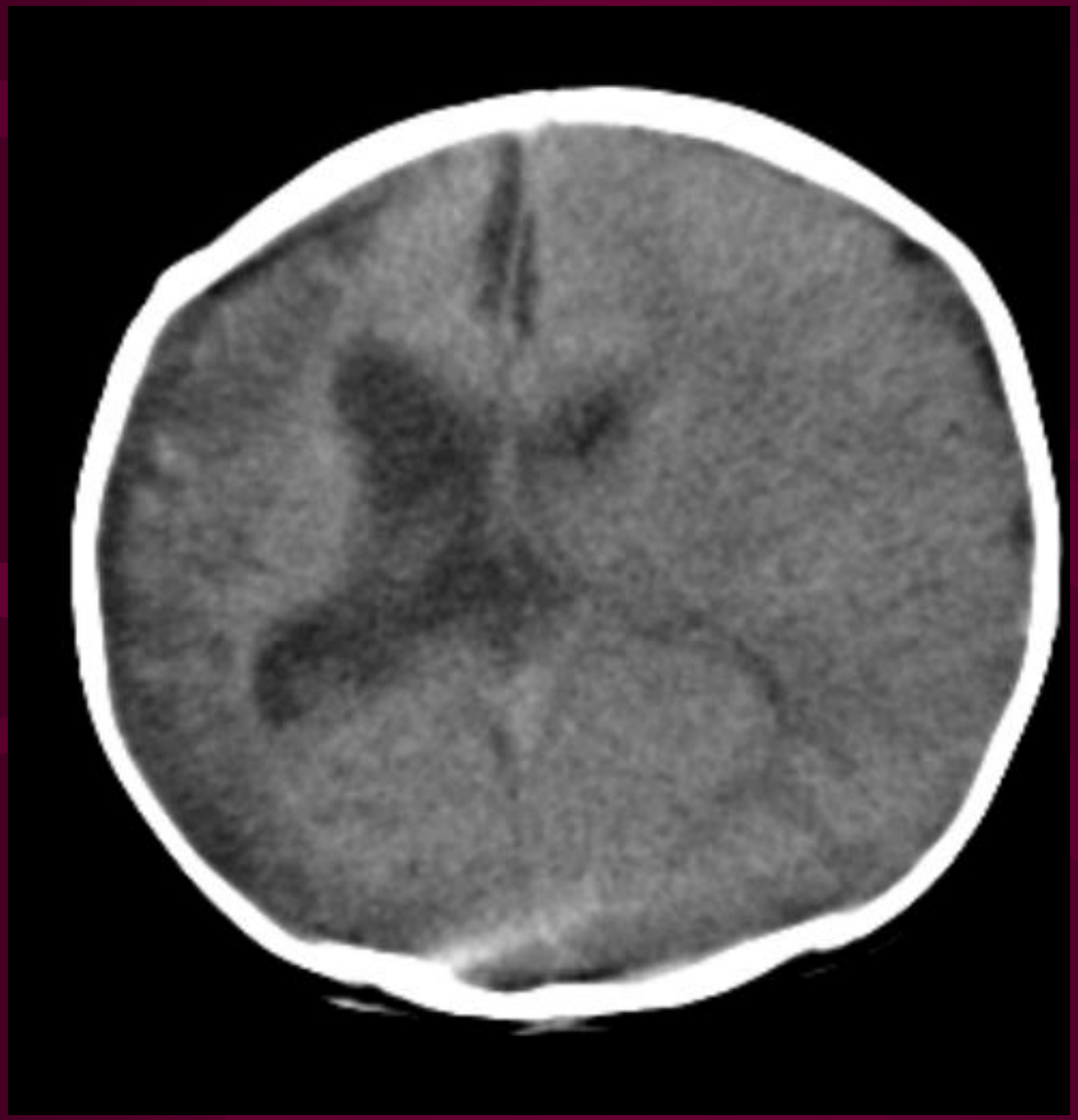
表现外局

性或弥漫

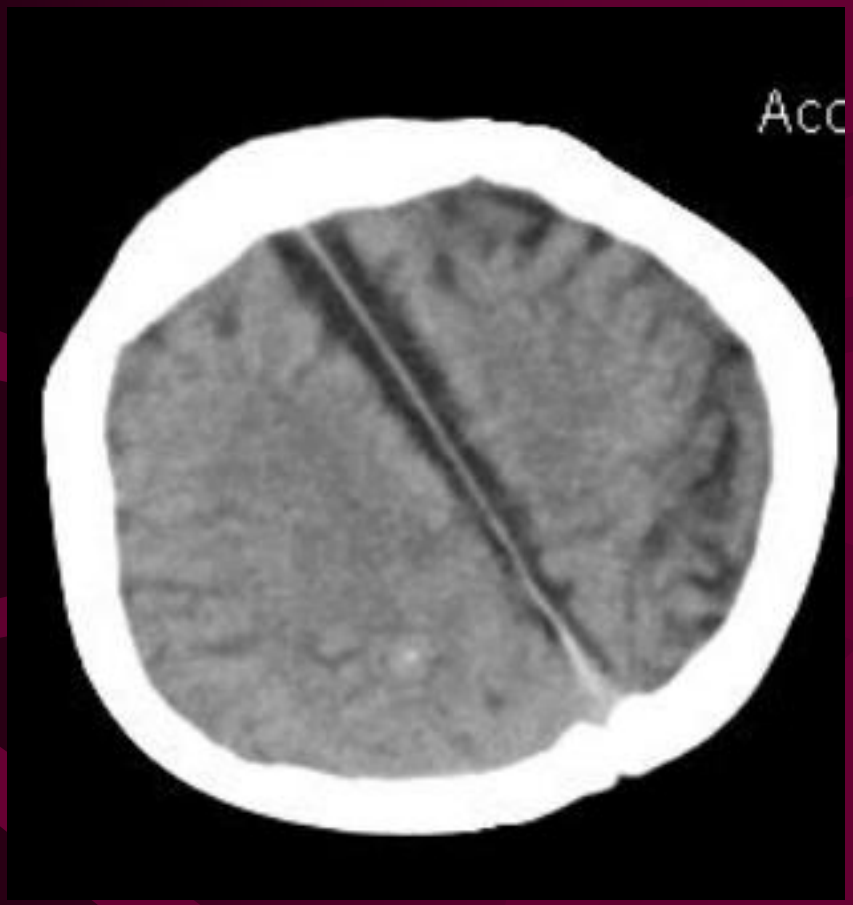
的脑萎缩

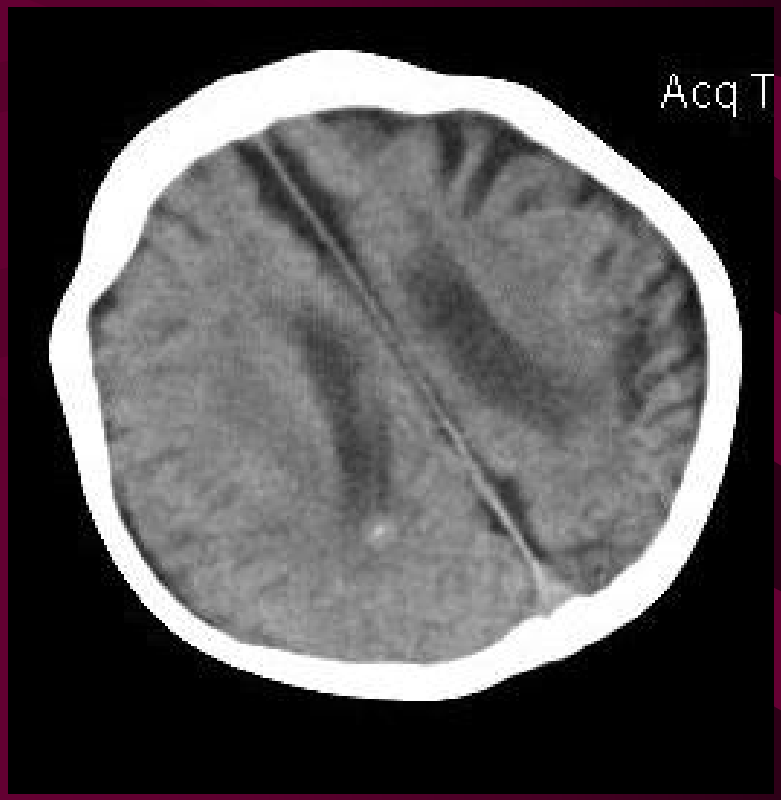






脑萎缩





六、脑积水

颅脑外伤可引起交通性或阻塞性脑积水。交通性脑积水可能为血液在蛛网膜下腔引起脑脊液通道的阻塞。

阻塞性脑积水可继发于脑室系统或导水管周围出血，阻塞脑室通道。

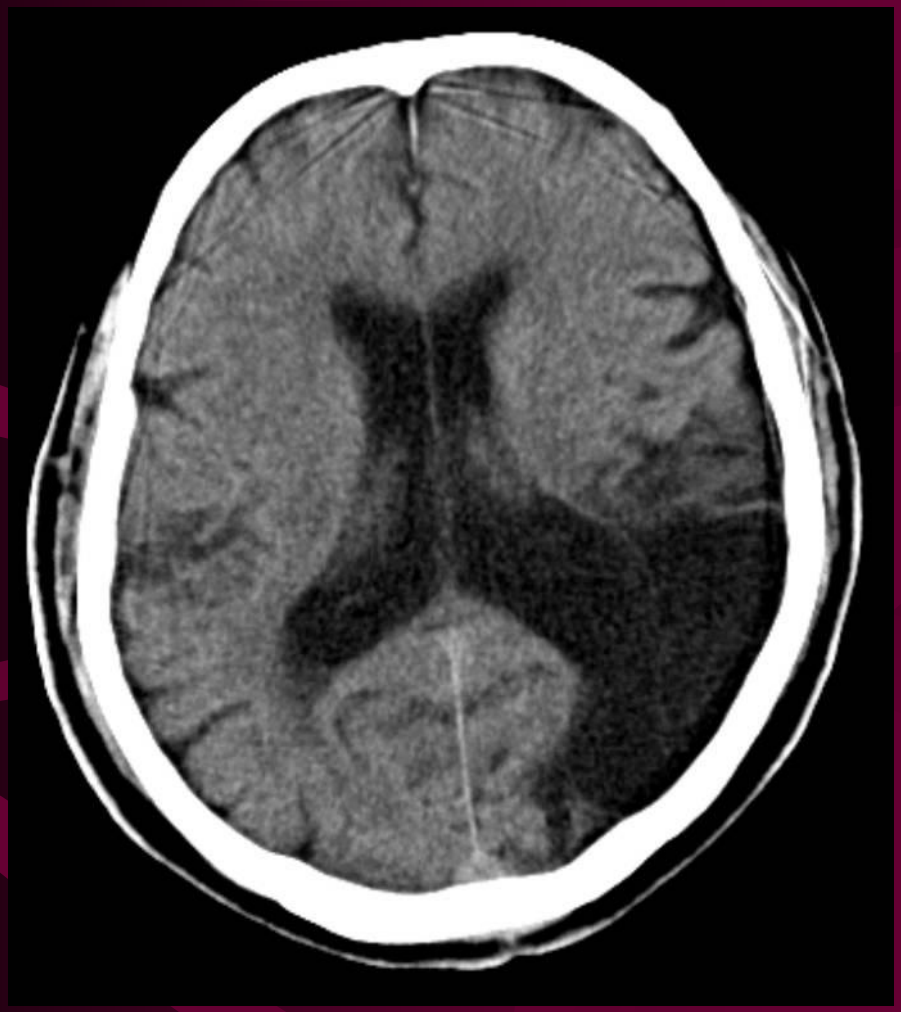
CT和MRI显示脑室扩大，但不伴脑沟加宽加深。阻塞导水管，第四脑室不大

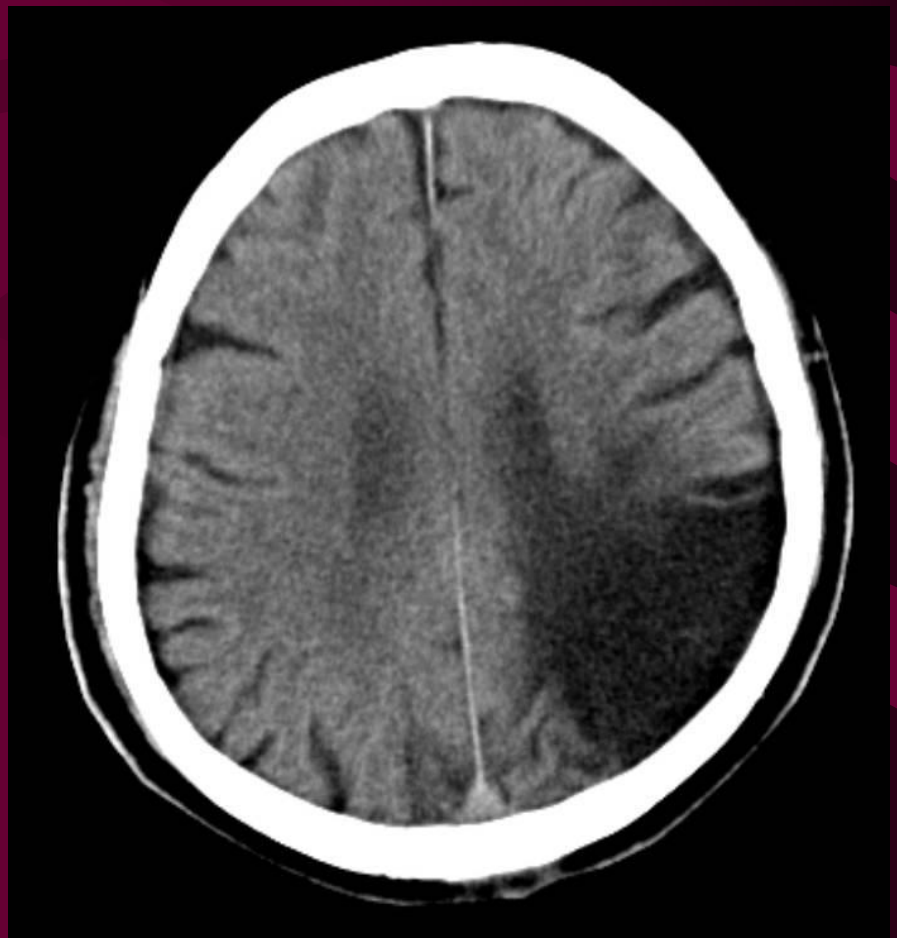
七、脑穿通畸形囊肿

脑内血肿或挫裂伤后脑组织坏死、吸收并与侧脑室相通

CT和MRI均可清楚显示。

脑穿通畸形





八、硬膜下水瘤

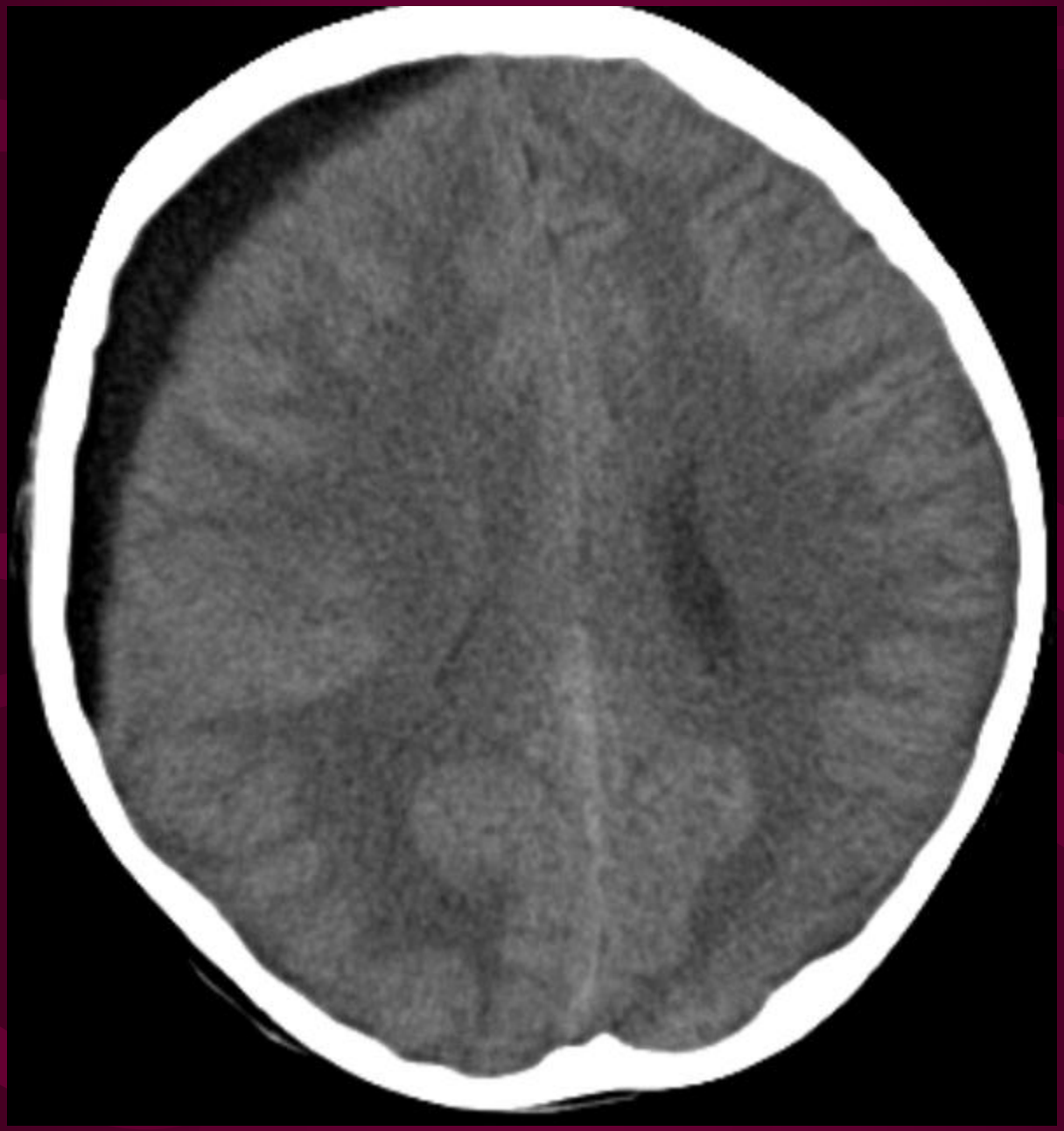
外伤引起蛛网膜撕裂，形成活瓣，使脑脊液进入硬膜下腔不能回流，也可因硬膜下血肿吸收后。

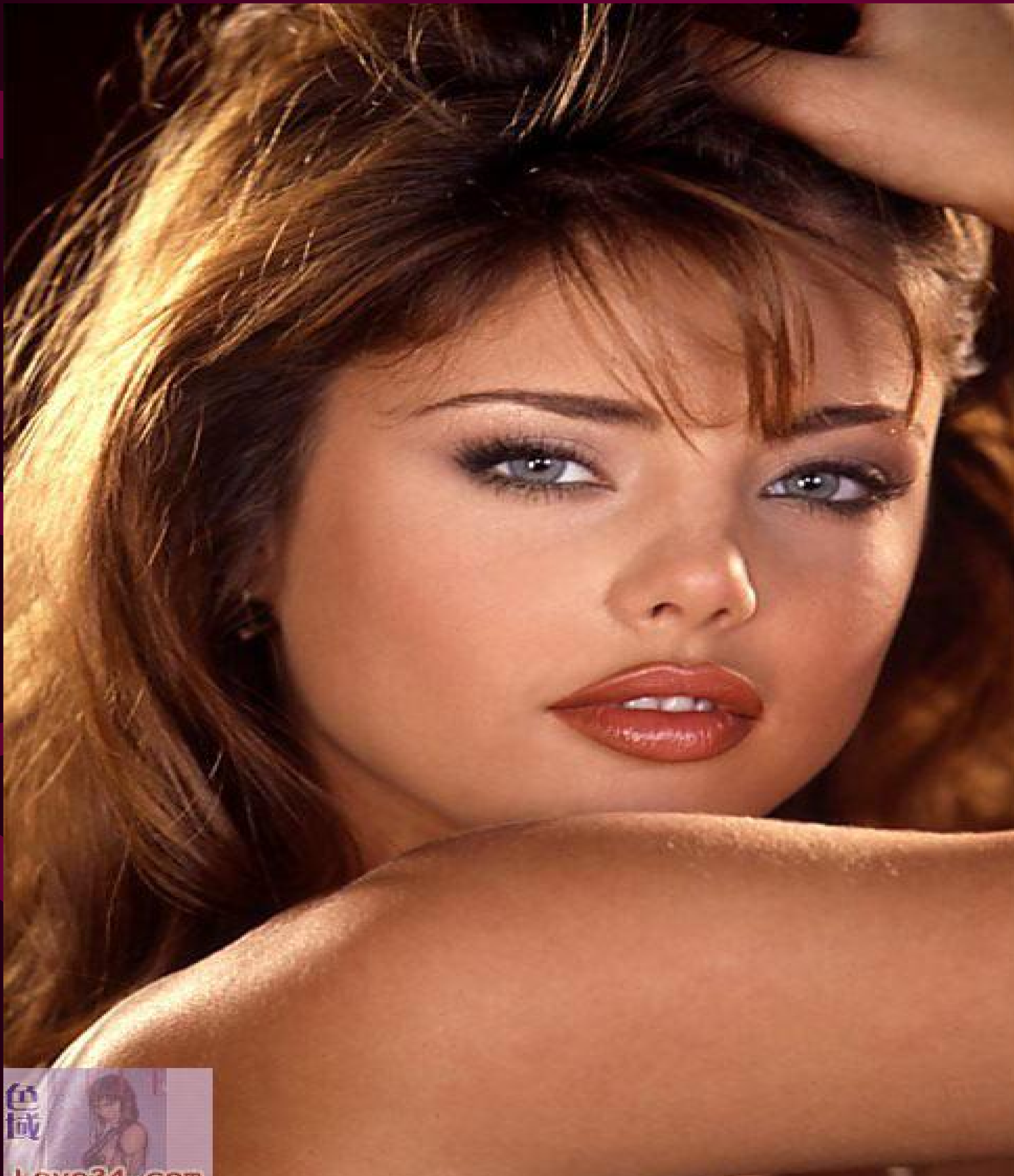
发生于颅骨内板下方。

CT表现为新月形低密度。

MRI T1W低信号，T2W高信号。

部分病例T1W和T2W均为高信号。





谢谢！