2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

Case of Bilateral Cerebral Abscess

COMPILED BY BY Dr. Rame Gowda Y **(RESIDENT)**

CASE GUIDE BY DR OM PRAKASH. A .R. (PROFESSOR)

DEPT OF RADIODIAGNOSIS

SUBBAIAH INSTITUTE OF MEDICAL SCIENCES AND RESEARCH INSTITUTE, SHIMOGA.

INTRODUCTION

- A **cerebral abscess** is a focal area of necrosis starting in an area of cerebritis surrounded by a membrane.
- It is a potentially life-threatening condition requiring prompt radiological identification and rapid treatment.
- Fortunately, MRI is usually able to convincingly make the diagnosis, distinguishing abscesses from other ring-enhancing lesions.

Mnemonics for the causes of cerebral ring-enhancing lesions are:

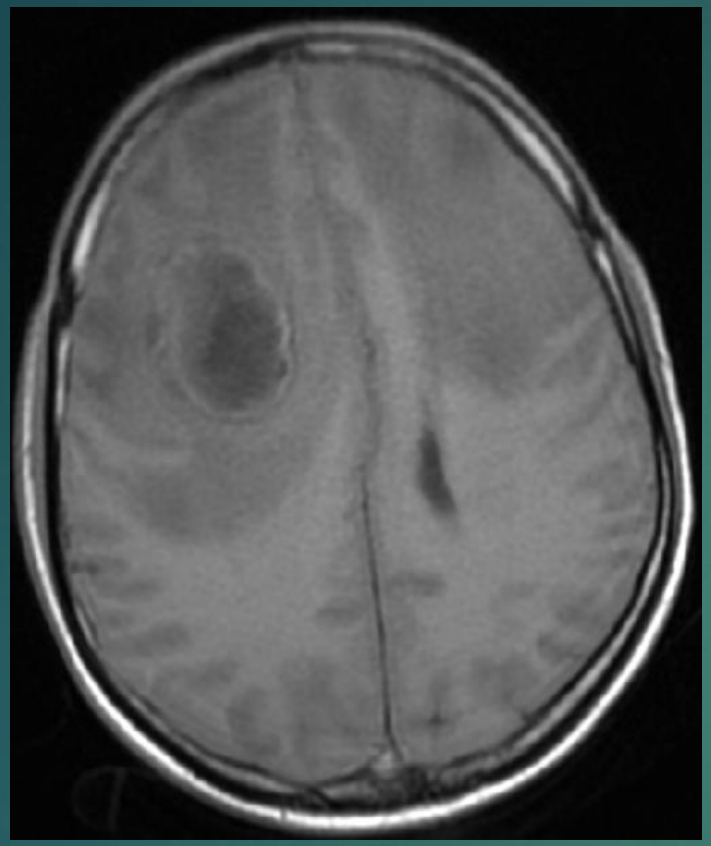
- **M:** metastasis
- **A:** abscess
- **G:** glioblastoma
- **I:** infarct (subacute phase) or inflammatory (neurocysticercosis, tuberculoma)
- **C:** contusion
- **D:** demyelinating disease (classically incomplete rim of enhancement)
- **R:** radiation necrosis or resolving hematoma

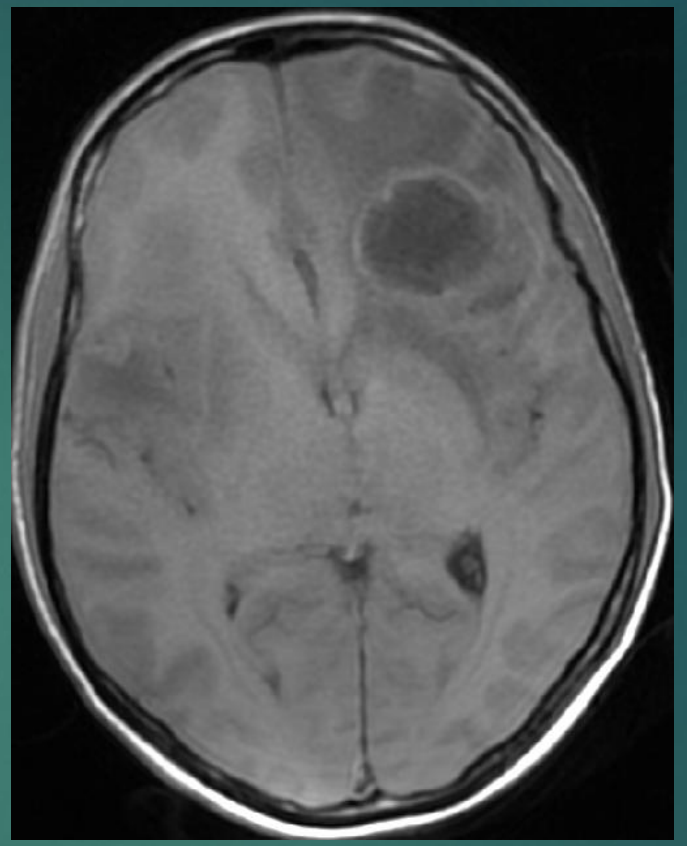
Clinical details

- A 49 year old man who is a K/C/O RVD, came to emergency with complaints of headache, decreased speech output and difficulty in walking.
- MRI Brain was done for further evaluation.

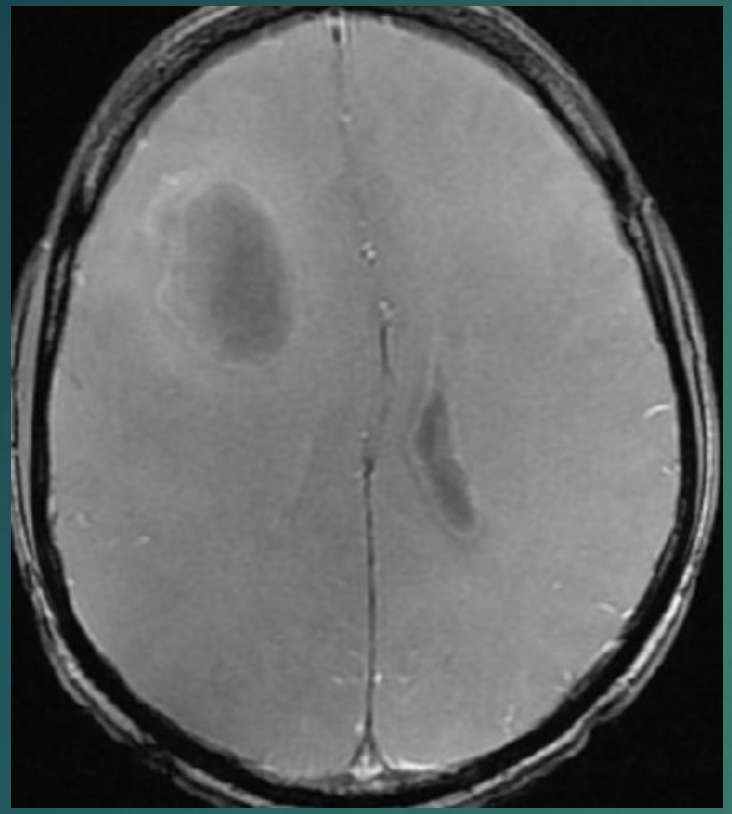
Imaging findings

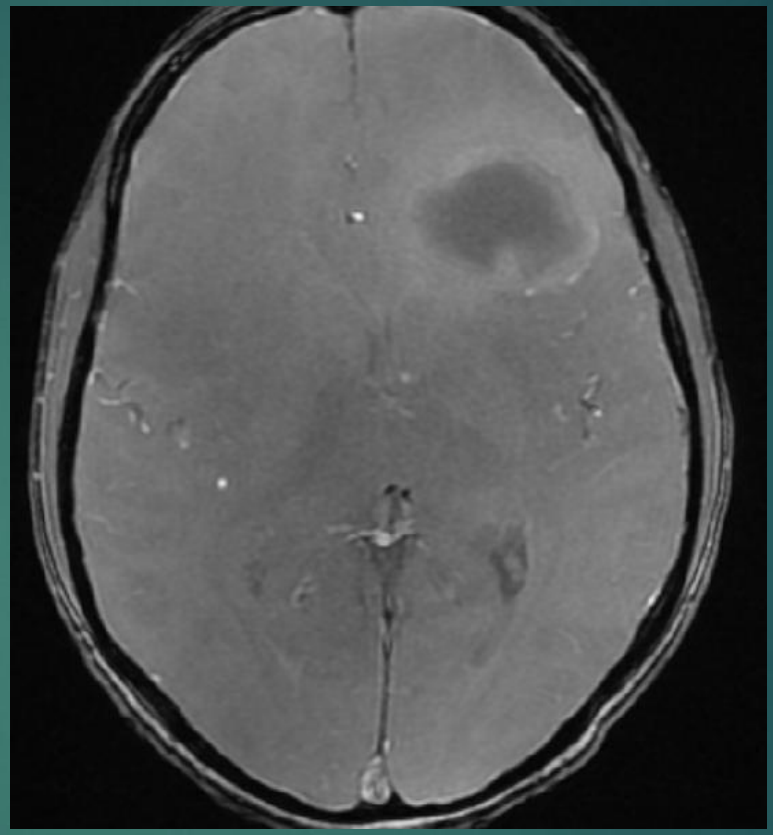
- **Two well-defined T1 hypointense, T2/FLAIR heterogeneous iso-hyperintense lesions in bilateral frontal lobes.**
- **(Right side – involving frontal lobe and basal ganglia & left side - involving anterior and basi-frontal lobe), measuring 4.2 x 3.2 x3.3cms on right side and 3.4 x 4.2 x 4.7cms on left side.**
- **The lesions show thick irregular wall which appear hypointense on T2 and hyperintense on T1 & MT T1 sequence.**
- **The lesions show central true diffusion restriction.**
- **On post contrast study thick irregular complete rim enhancement noted (wall irregularity is maximum at lateral wall of the lesions).**
- **Spectroscopy reveals Lipid lactate peak.**
- **Significant T2/FAIR hyperintense perilesional edema noted causing mass effect in the form of effacement of frontal horns of bilateral lateral ventricles noted.**
- **Sulci in bilateral cerebral hemisphere, sylvain fissure and basal cisterns are effaced - Diffuse cerebral edema.**





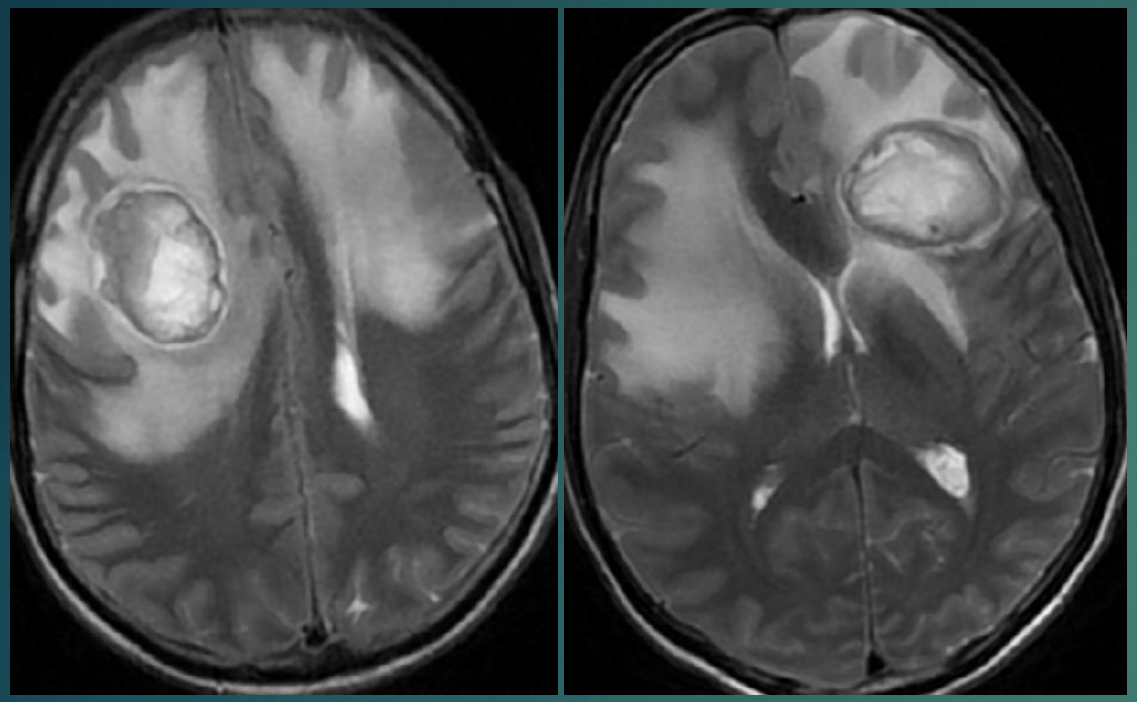
T1- hypointense



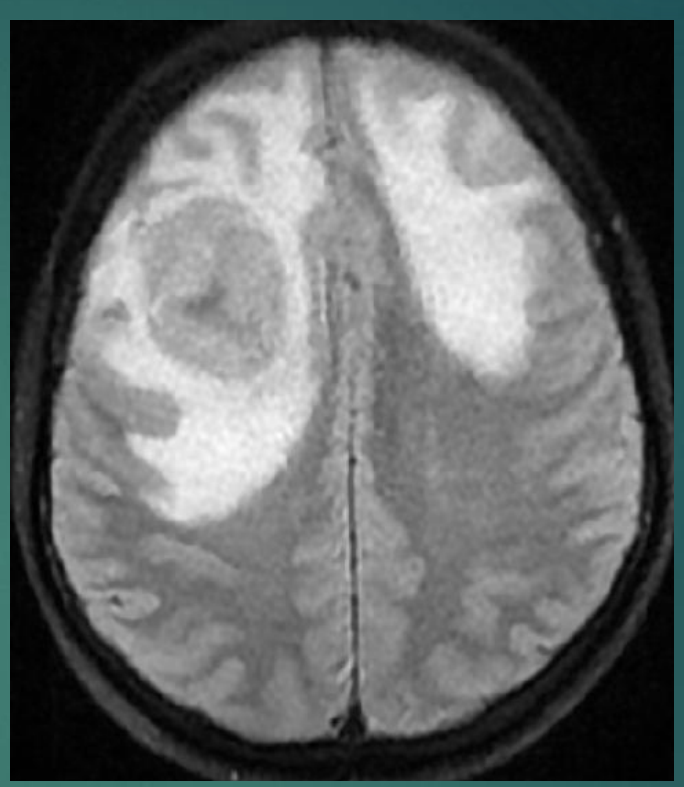


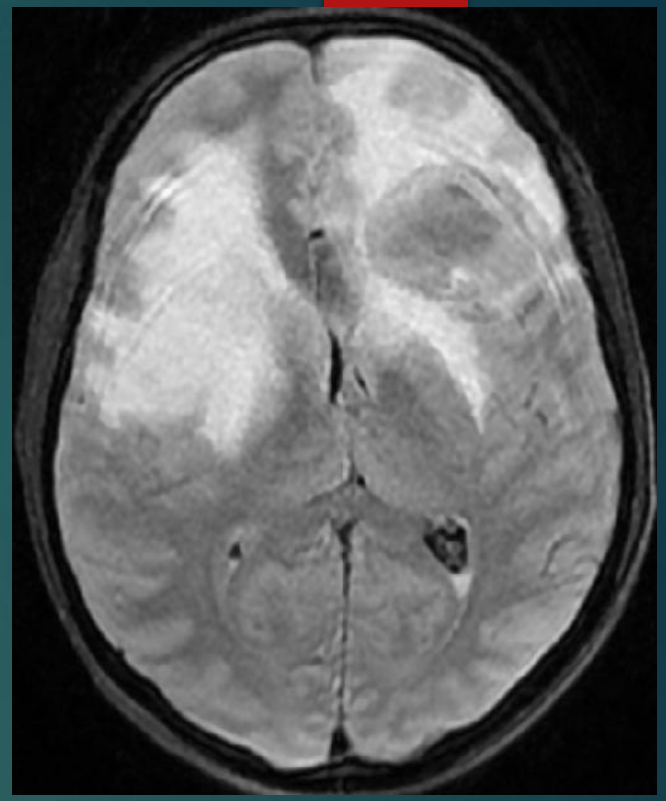
T1MT

T2



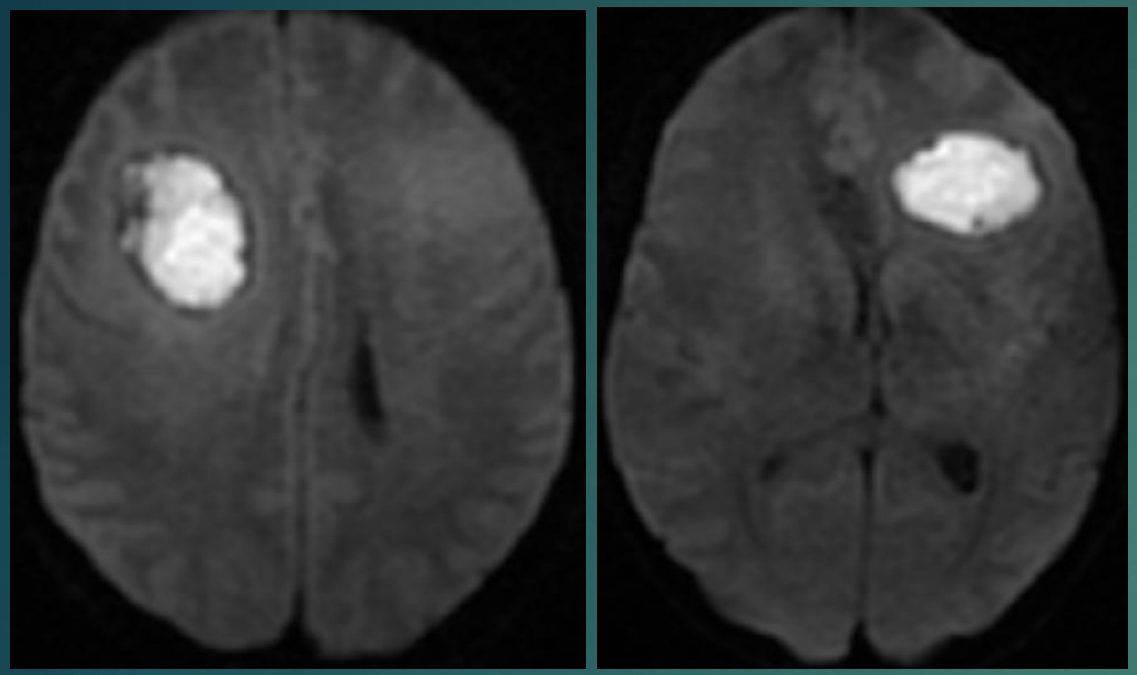
FLAIR



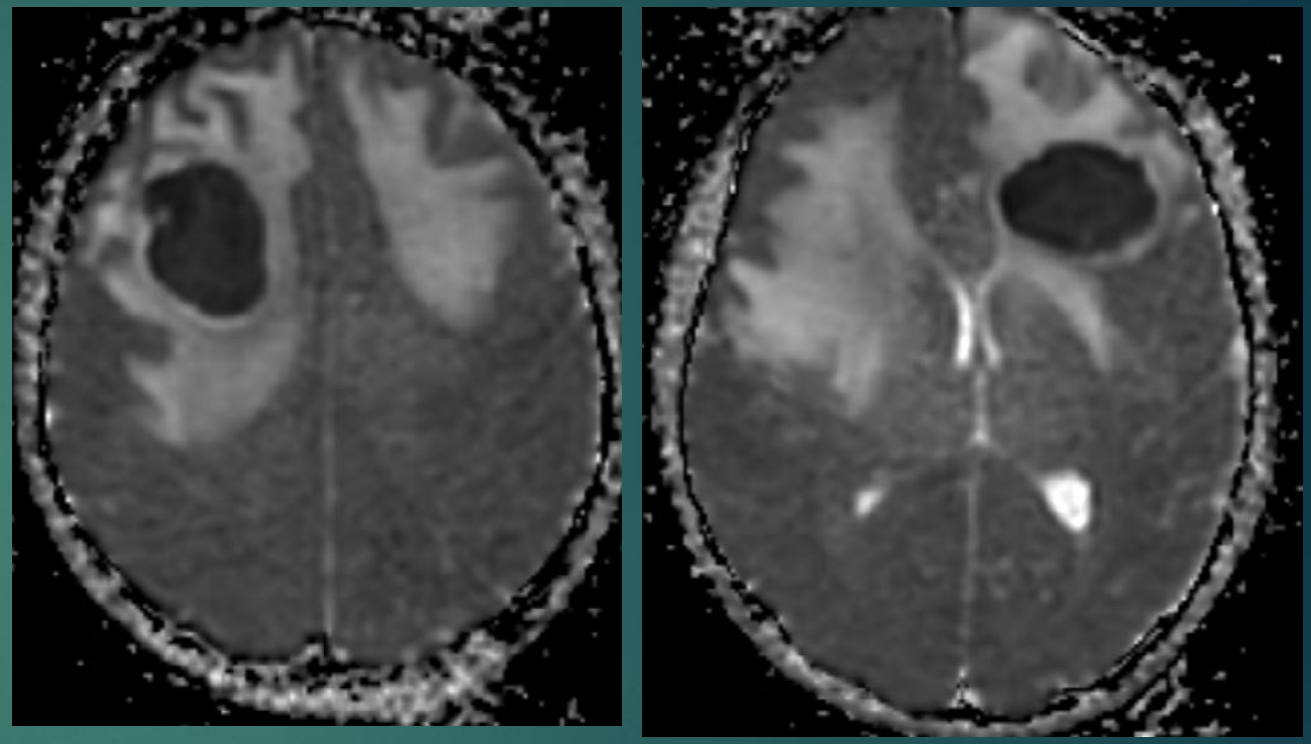


T2/FLAIR – heterogenous iso-hyperintense
with significant perilesional edema,
Mass effect on bilateral frontal horns of lateral ventricles
Diffuse cerebral edema - Sulci in bilateral cerebral hemisphere, sylvain fissure and basal cisterns are effaced

DWI

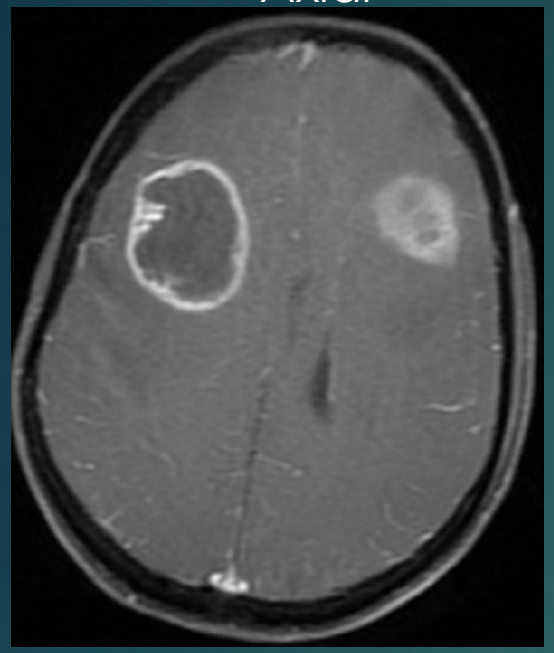


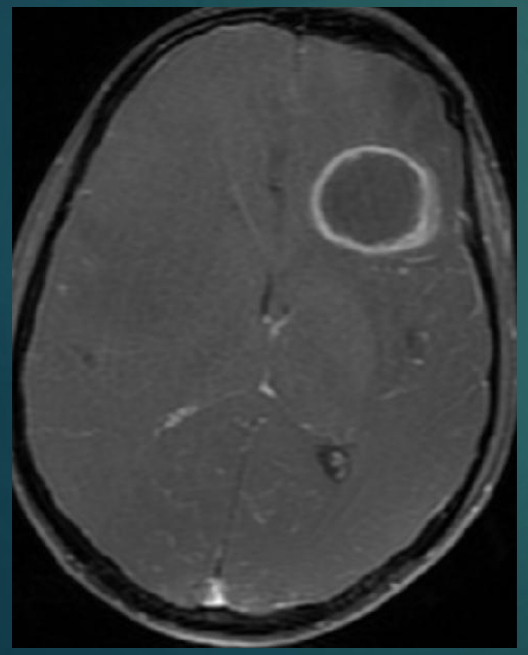
ADC



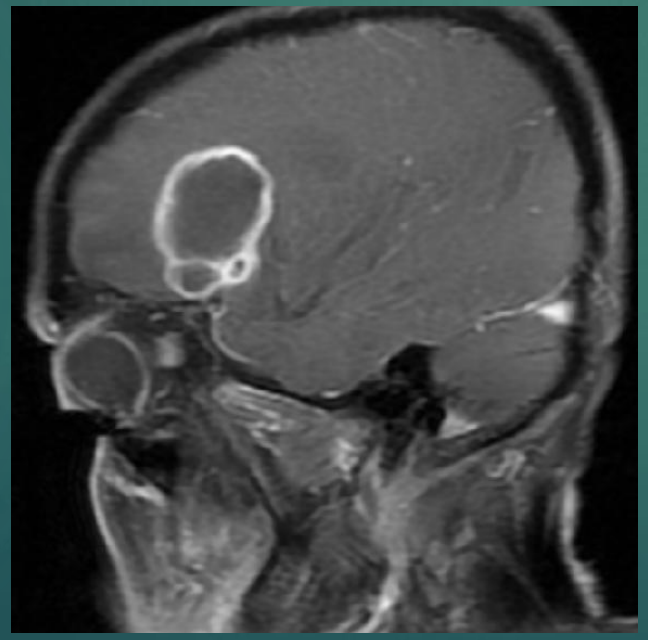
True diffusion restriction

Axial

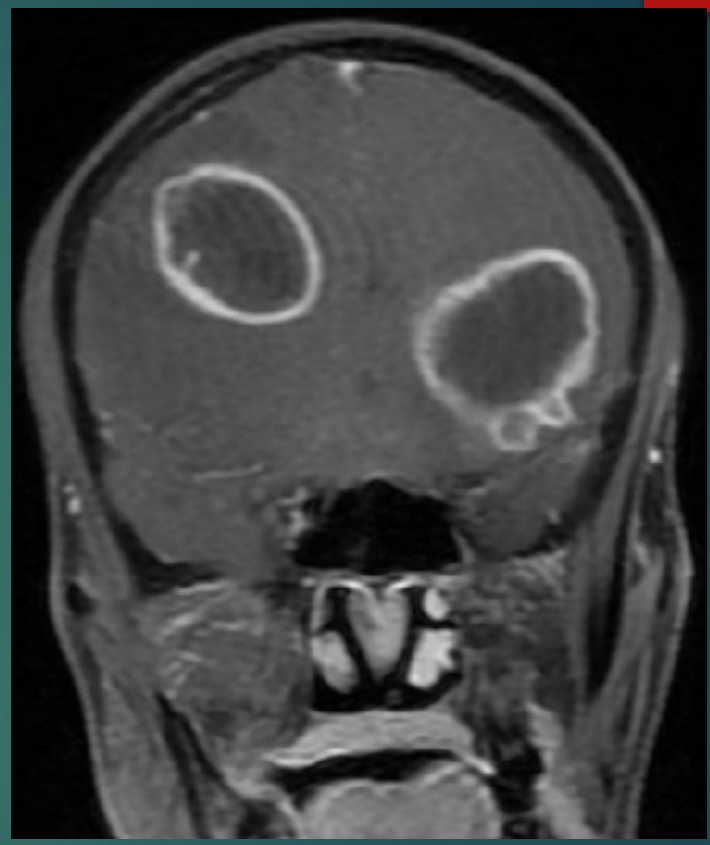




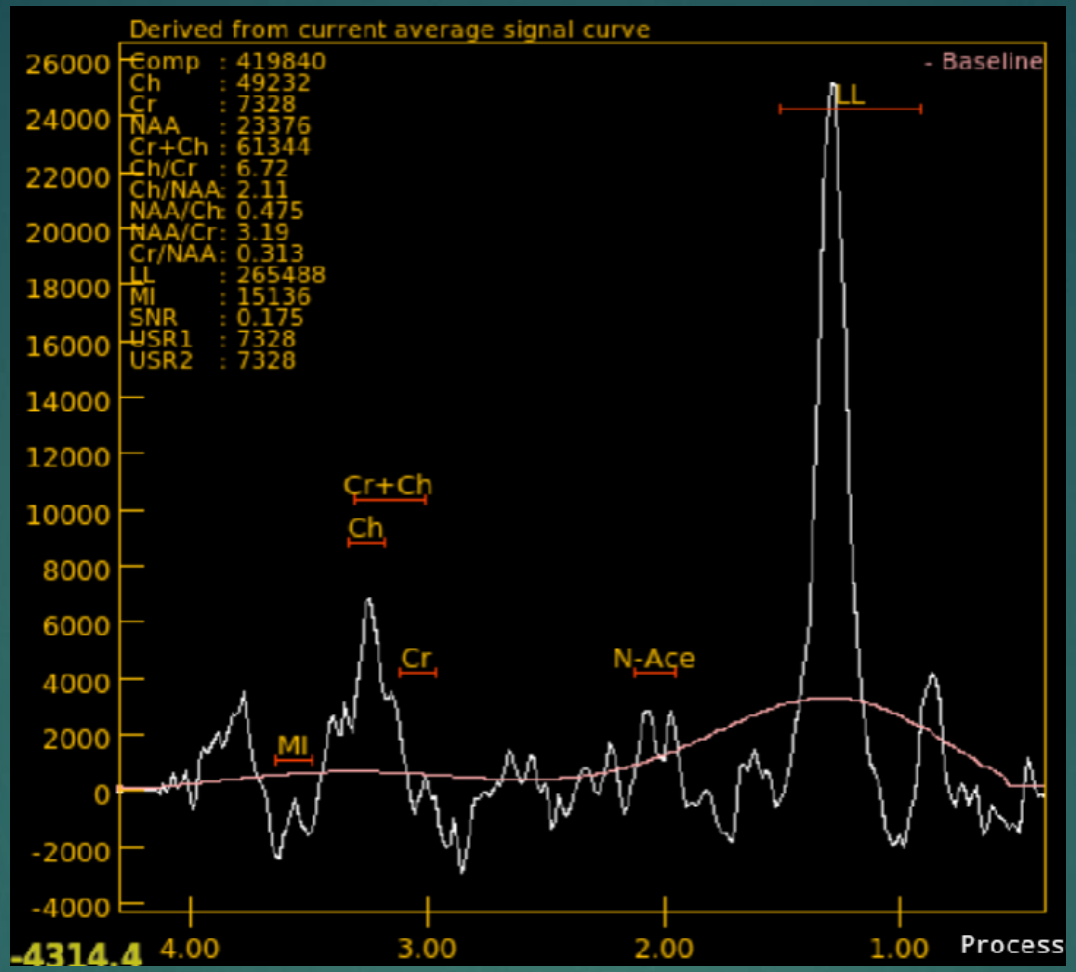
Sagittal



Coronal



T1 post contrast – complete rim enhancement



MR Spectroscopy - **Lipid lactate peak**

Discussion

- Cerebral abscesses result from pathogens growing within the brain parenchyma. Initial parenchymal infection is known as cerebritis, which may progress into a cerebral abscess.
- Historically direct extension from sinus or scalp infections was the most common source.
- More recently, hematological spread has become most common. Direct introduction by trauma or surgery accounts for only a small minority of cases.
- Cerebral infection is commonly divided into four stages with distinct imaging and histopathologic features:

1. **early cerebritis** (a focal infection without a capsule or pus formation, can resolve or develop into frank abscess).
2. **late cerebritis.**
3. **early abscess/encapsulation** - may occur 10 days after infection.
4. **late abscess/encapsulation** - may occur >14 days after infection.

Thank You.