KREP

2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

CASE PRESENTATION

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KAHER UNIVERSITY
J.N.MEDICAL COLLEGE ,BELAGAVI

CASE PRESENTATION

CLINICAL HISTORY

- A 9 yrs old male accompained by his parents came on 30th sep 2023 with the complaints of

- Imbalance while walking since 4 months
- Intermittent vomitings since 4 months (vomitus contained ingested food material)
- Intermittent headache (generalised)
- Complaints of decreased appetite and generalised weakness since 2 months

- C/o giddiness since 4-5 days
- No h/o blurring of vision
- No h/o fever
- No features of the precocious puberty
- Birth and developmental history – normal
- Clinical Examination ie; vitals were stable

INVESTIGATIONS

- COMPLETE BLOOD COUNTS were within normal limits
- CSF ANALYSIS :
  - GLUCOSE -16.6 mg/dl (n – 40 -85 mg/dl)
  - PROTEINS -91mg/dl (15-45 mg/dl)
  - AFP - 0.9 ng/mL (>3.8 ng/ml)
  - BETA HCG - 23.3 IU/L(>8-10 IU/l)

https://eurjmedres.biomedcentral.com/articles/10.1186/s40001-016-0204-2

- PREVIOUS IMAGING –CECT BRAIN (AT DHARWAD SCAN CENTRE 0N 19/09/23)

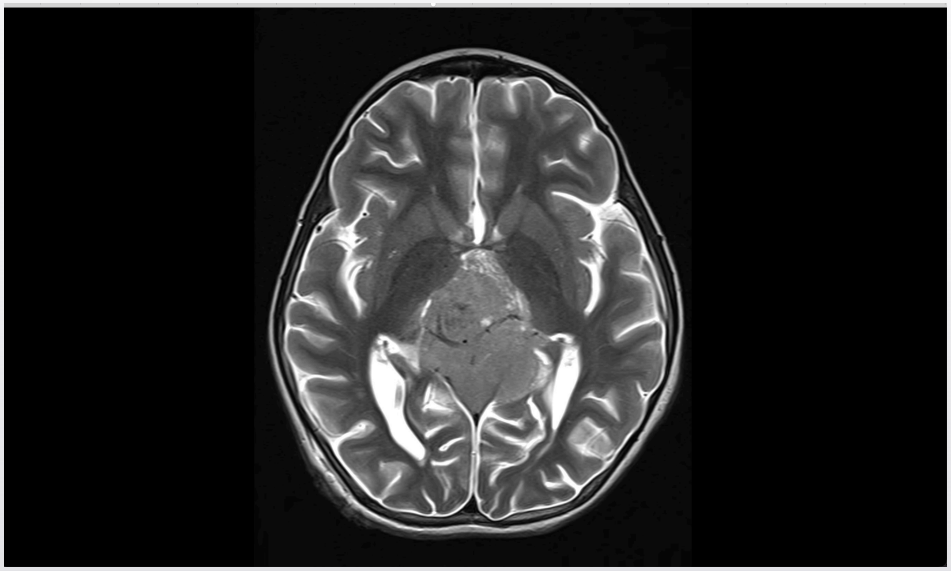
➢ Well defined heterogeneously enhancing mass lesion with specks of calcification in the 3rd ventricle showing few adjacent cystic components , causing mass effect on the adjacent structures , resultant periventricular seepage of CSF, suggestive of neoplastic aetiology

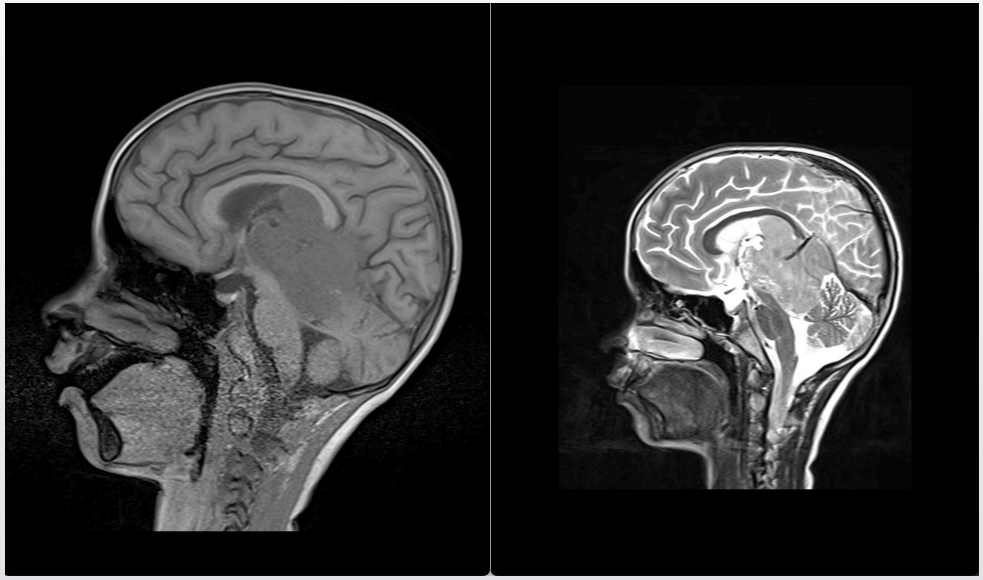
➢ Differentials to be considered

1. Ependymoma , 2. central neurocytoma

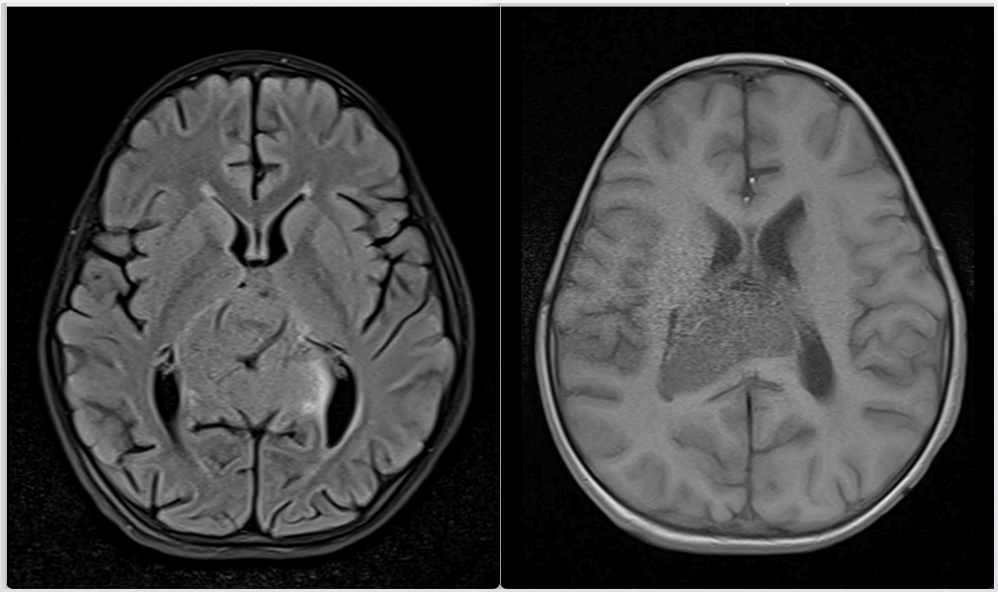
- Post imaging Ventriculo peritoneal shunting was done to the patient (23/09/23) at KLE
- Despite the treatment , the patient was not improving and was advised MRI BRAIN (plain + contrast)
- MR SPINE screening and Test CT Brain were done

T2 W AXIAL AND T1 & T2 W SAGGITAL IMAGES

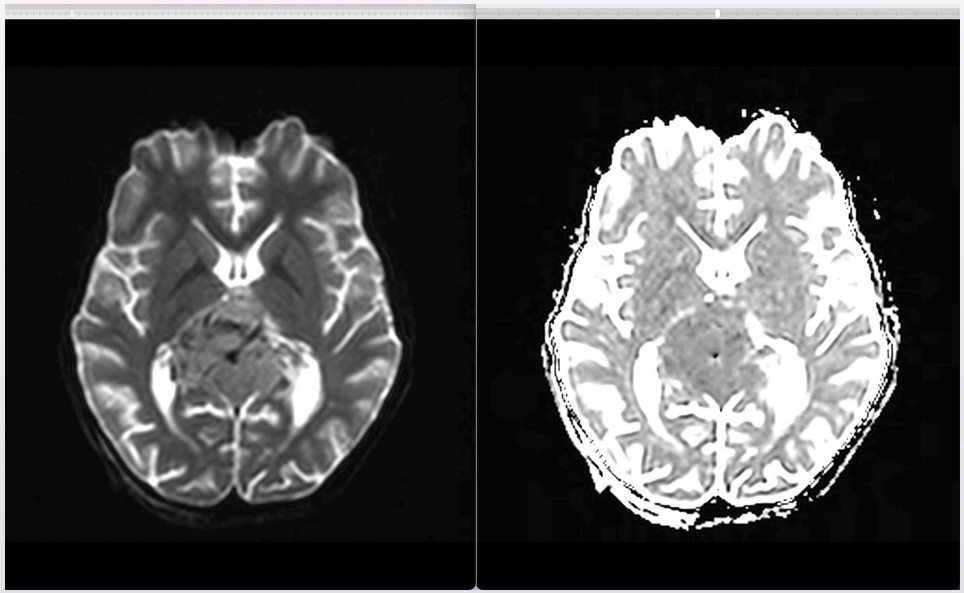




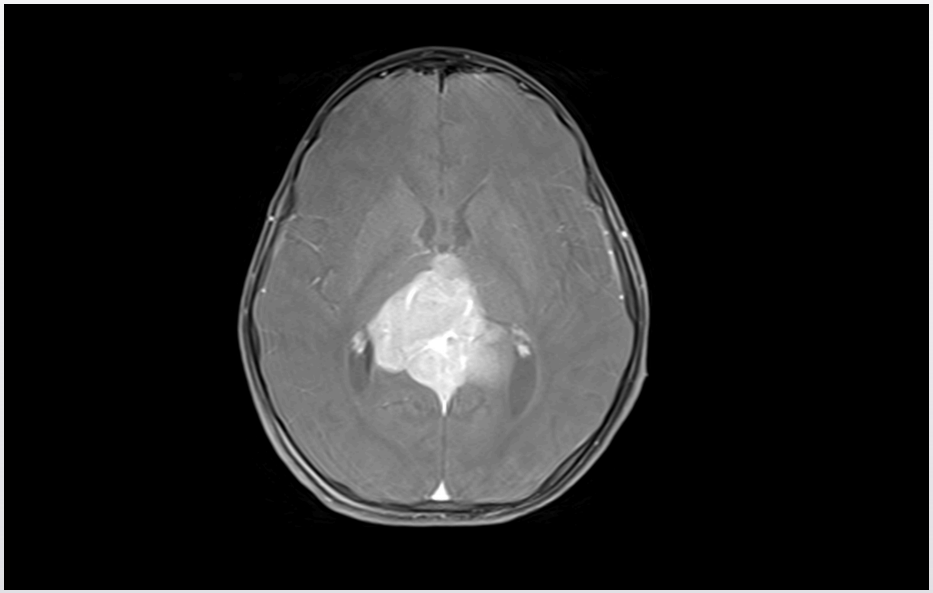
FLAIR AND T1W AXIAL IMAGES



DWI AND ADC IMAGES



POST CONTRSAT T1 W IMAGE



MRI BRAIN (PLAIN + CONTRAST) FINDINGS

- Heterogeneously enhancing T2 & FLAIR hyperintense and T1 hypointense lobulated mass lesion noted in the pineal region approximately measuring 5.9 (AP) x 5.3 (ML) x 6.6 (CC) cms with multiple tiny cystic areas
- The lesion shows multiple peripheral areas on blooming on SWI sequence suggestive of multiple specks of peripheral calcifications
- The lesion is seen to show diffusion restriction on DWI sequence

- Superiorly the lesion is seen to extend into the 3rd ventricle and the right lateral ventricle with encasement of the bilateral internal cerebral vein and P3 segment of the bilateral PCA .
- The lesion is seen to cause mass effect on the splenium of the corpus callosum
- Antero inferiorly the lesion is seen to cause mass effect on the tectal plate and the aqueduct of sylvius

- Posteroinferiorly the lesion is seen to cause mass effect on the superior cerebellar lobe and superior cerebellar peduncle
- Laterally the lesion is seen to cause mass effect on the bilateral thalami
- VP shunt noted with its tip lying in the occipital horn of the right lateral ventricle .

TEST CT FINDINGS

- Fairly well defined hyperdense lesion noted likely to be arising from the pineal region with peripherally located hyperdensities suggestive of calcifications
- The lesion is seen to extend into the right lateral ventricle, and the 3rd ventricle
- The lesion is seen to cause mass effect on the splenium of the corpus callosum
- The lesion is seen to encase the internal cerebral veins .

Differentials to be considered

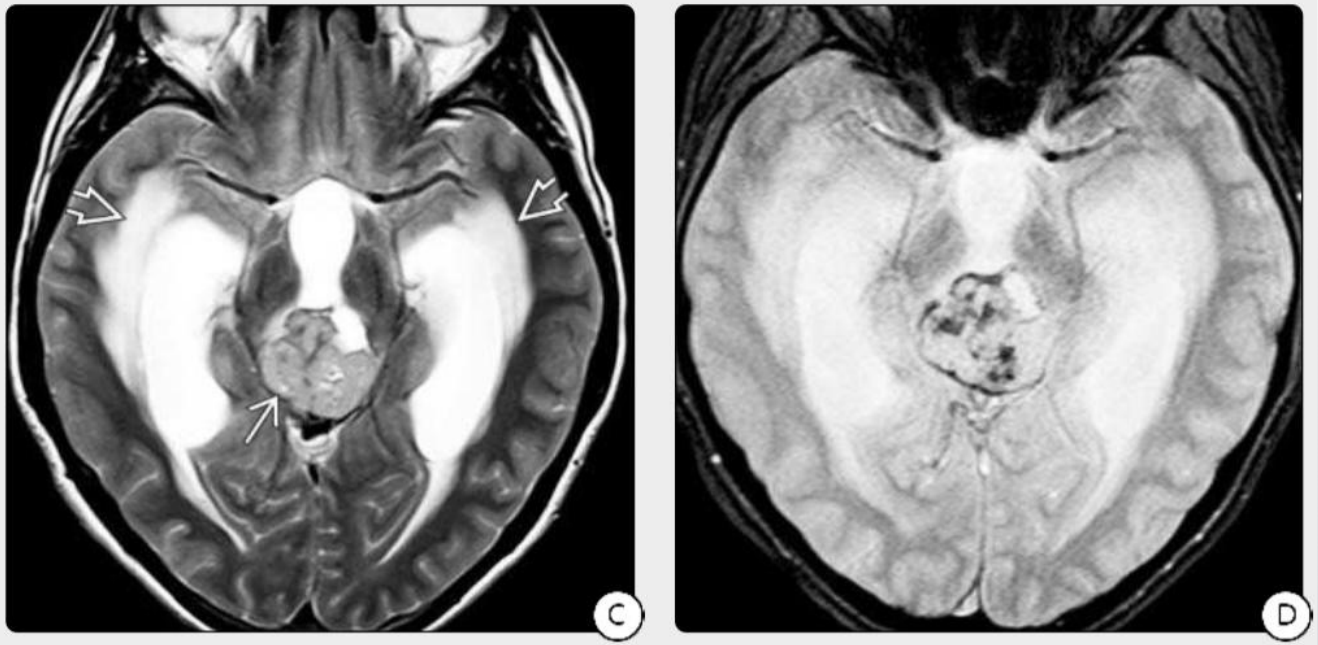
- PINEAL GERMINOMA
- PINEOBLASTOMA
- PINEAL PARENCHYMAL TUMOR OF INTERMEDIATE DIFFERNTIATION
- PRIMARY INTRACRANIAL CHORIOCARCINOMA
- TECTAL GLIOMA

PINEAL GERMINOMA

POINTS IN FAVOUR	POINTS AGAINST
Age of the patient (more common in the first 2 decades of life) peak presentation 10-14yrs of age	No evidence of the spinal metastases
Males >> Females Elevated CSF β hcg levels (not very common)	
CT findings – Hyperdense lesion with internal hyperdensities(calcifications) The lesion is seen to engulf the calcification	
MRI findings – T1 – iso to hypointesne to the grey matter T2 – iso to hyperintense to the grey matter DWI – ADC – low values of ADC (shows diffusion restriction) SWI – shows areas of blooming (calcification/hemorrhage)	
T1 contrast –heterogenous enhancement	

PINEAL GERMINOMA

PINEAL GERMINOMA



PINEAL GERMINOMA

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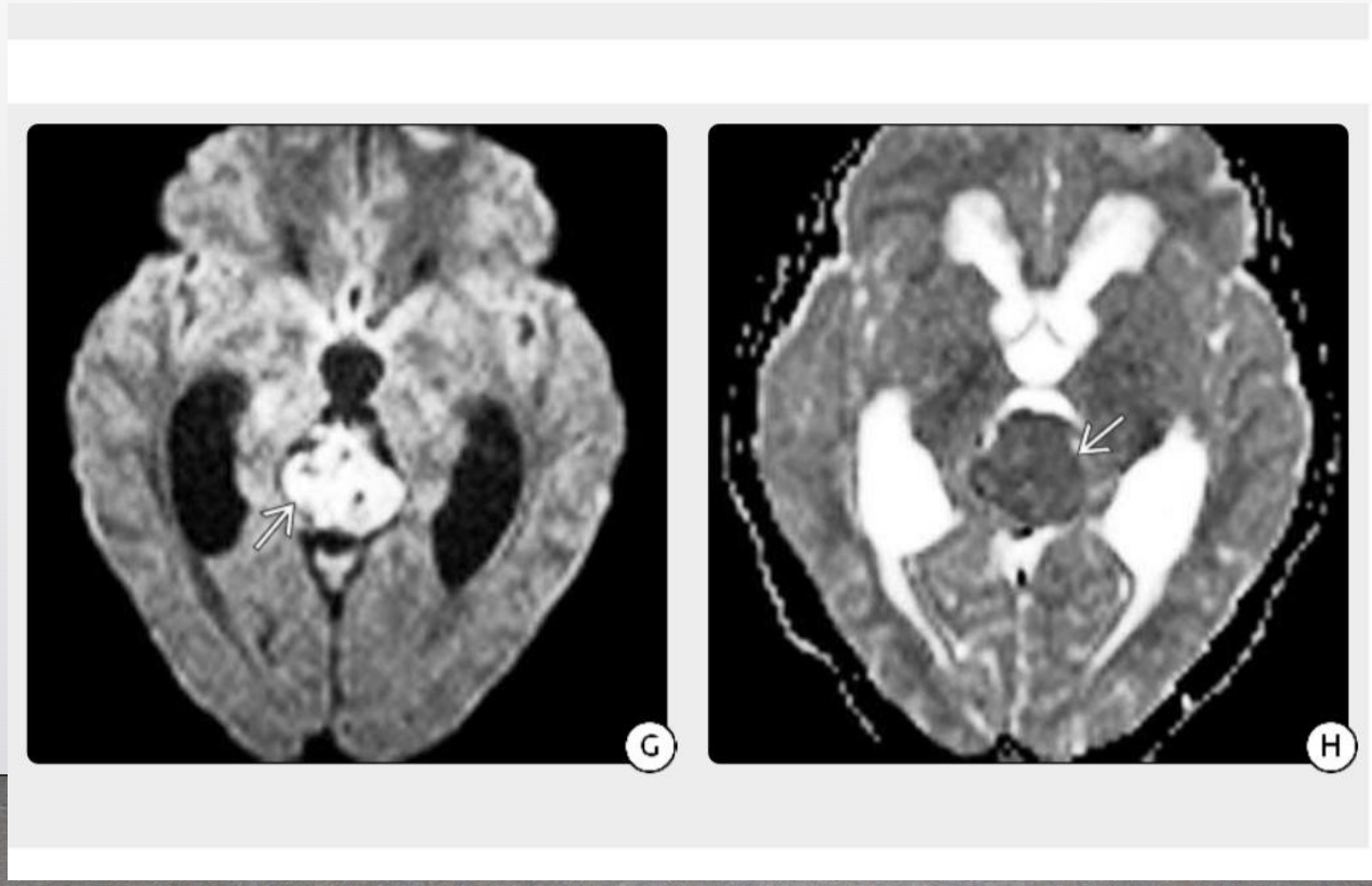
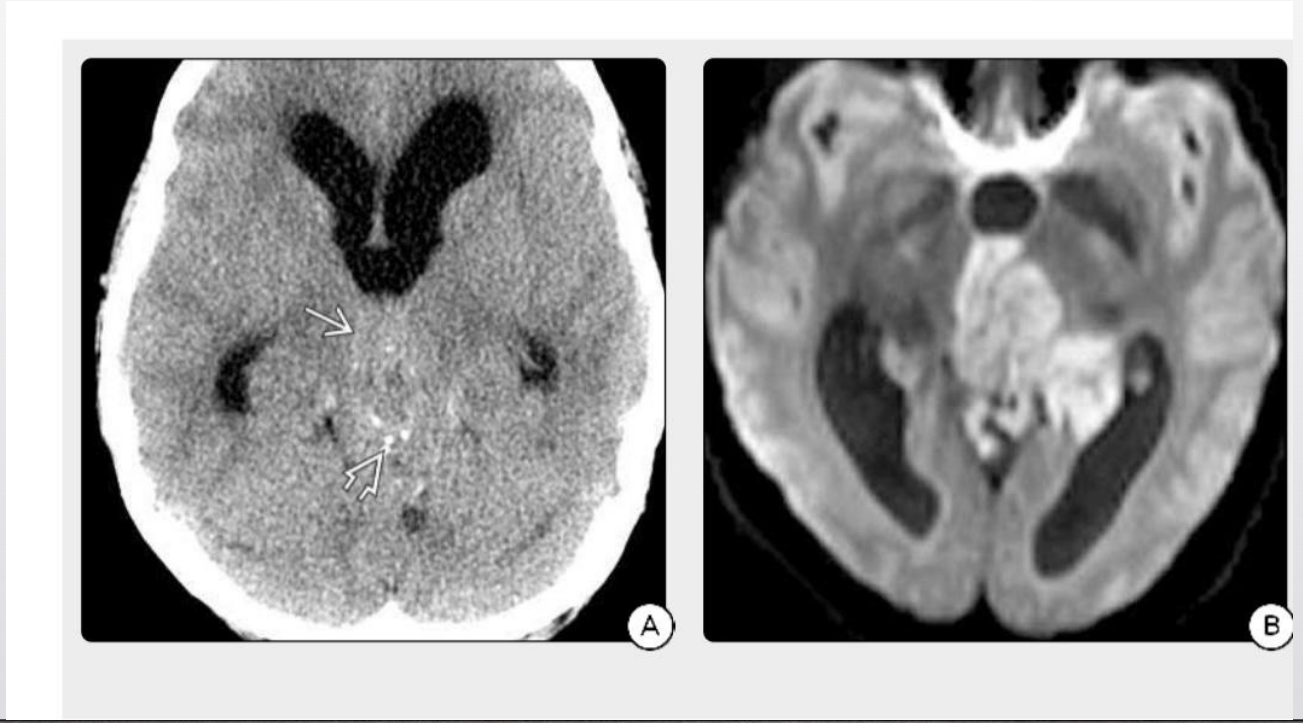


PINEOBLASTOMA

POINTS IN FAVOUR	POINTS AGAINST
Age of the patient (most common in first 2 decades of life)	Evidence of elevated CSF markers (pineoblastoms do not produce oncoproteins)
Symptoms of elevated intracranial pressure are present	No evidence of necrosis and intratumoral haemorrhage (frequently demonstrate) Pineoblastomas usually explode the calcifications to the periphery
CT findings – Hyperdense mass lesion with calcifications	No evidence of the spinal metastases
MRI findings – T1 – Iso to hypointense compared to the brain parenchyma T2 – Iso to hyperintense DWI & ADC – low ADC values (diffusion restriction)	
T1 + contrast – Heterogenous enhancement	

PINEOBLASTOMA



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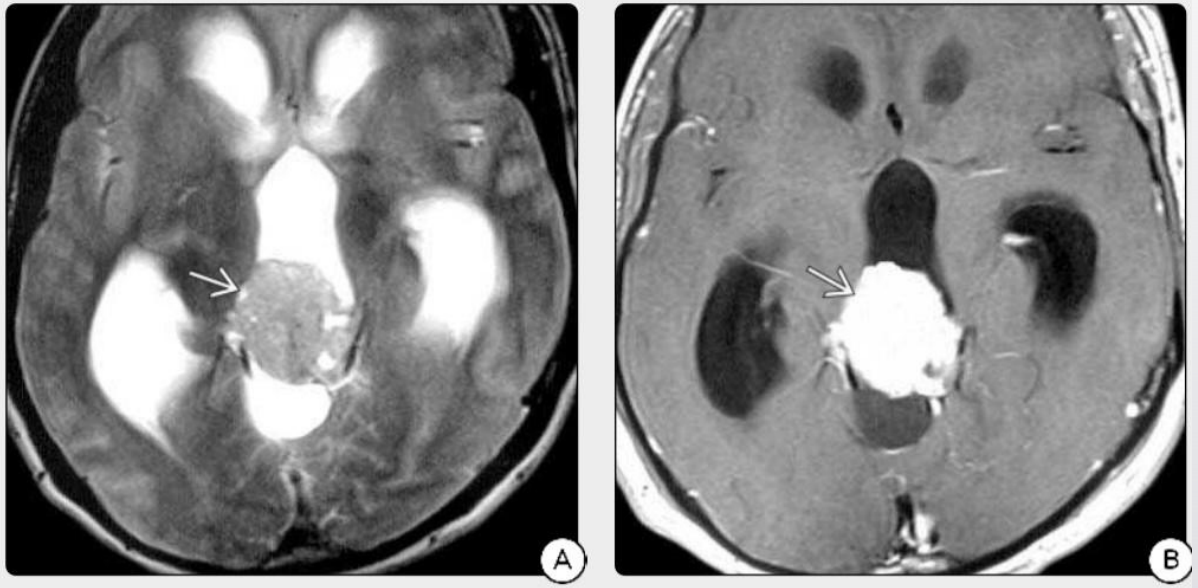

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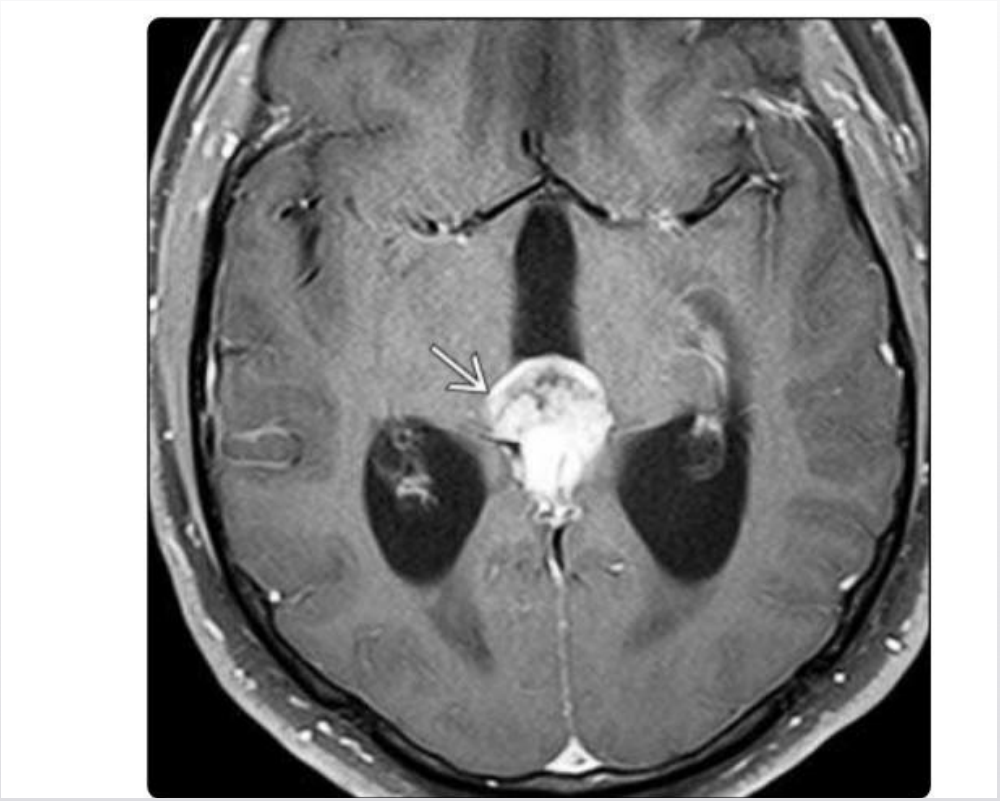
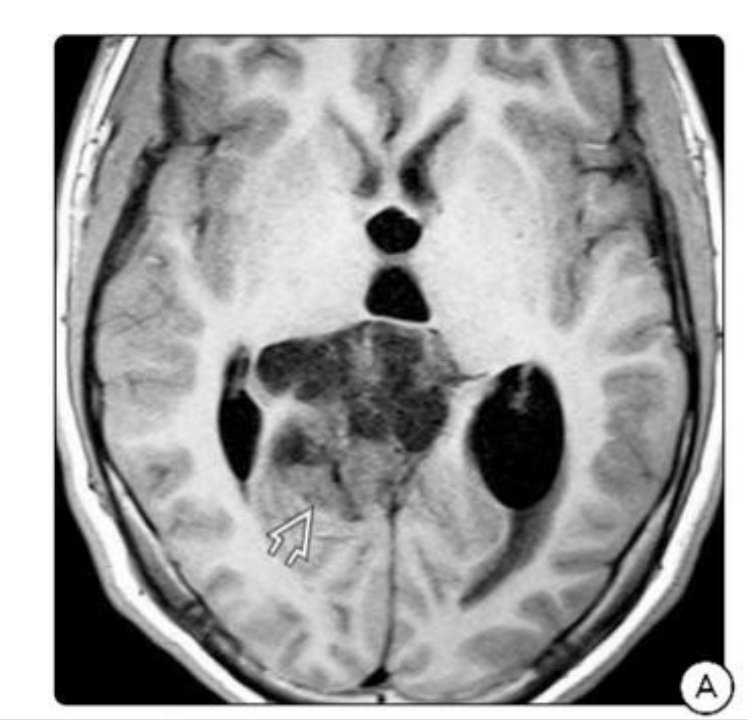


PINEAL PARENCHYMAL TUMOR OF INTERMEDIATE DIFFERENTIATION

POINTS IN FAVOUR	POINTS AGAINST
CT Findings – Hyperdense lesion with calcifications	Usually occurs in middle aged adults (this patient is 9 year old male)
MRI –T1W Iso to hypointense FLAIR – hyperintense SWI – hypointense blooming foci	Evidence of elevated CSF markers (PPTID do not produce oncoproteins)
T1 +c – heterogenous enhancement	Usually PPID are heterogenous lesions with solid and cystic components

PINEAL PARENCHYMAL TUMOR OF INTERMEDIATE DIFFERENTIATION



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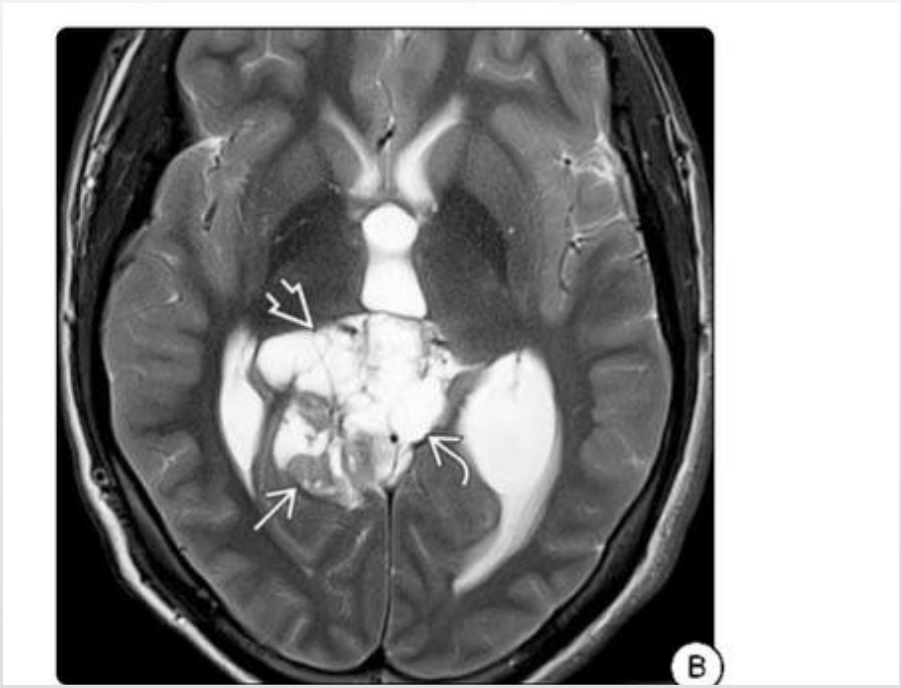
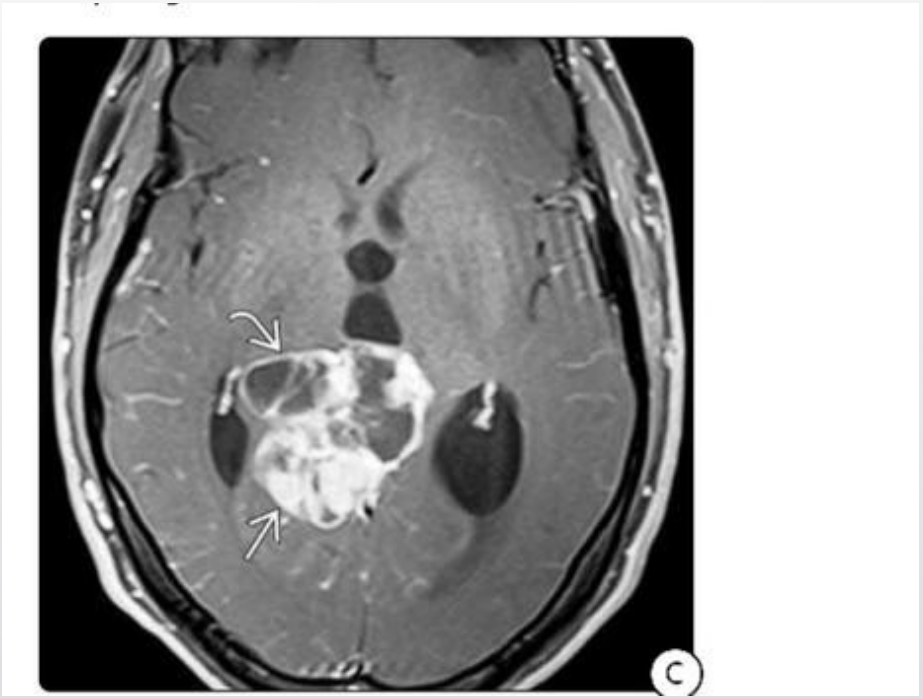
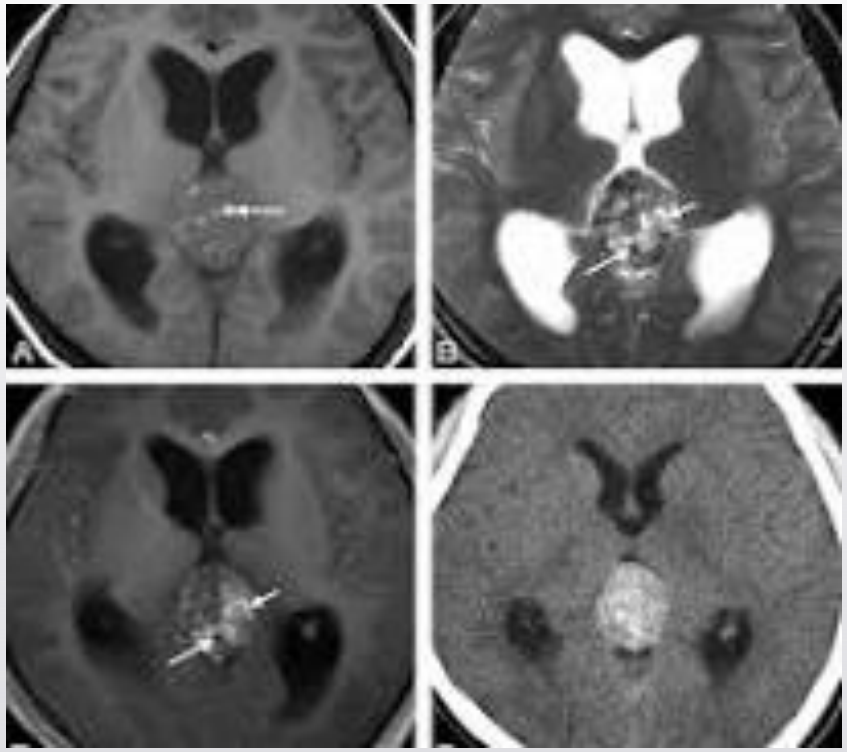




PRIMARY INTRACRANIAL CHORIOCARCINOMA

POINTS IN FAVOUR	POINTS AGAINST
Age of presentation (3- 20 yrs of age)	No evidence of any precocious puberty
Males :females (4:1)	CT – Hypodense with or without calcifications . T2W MRI- Patchy hypointensities
Elevated levels of the β HCG is common	Heterogenous rim / nodular enhancement is common

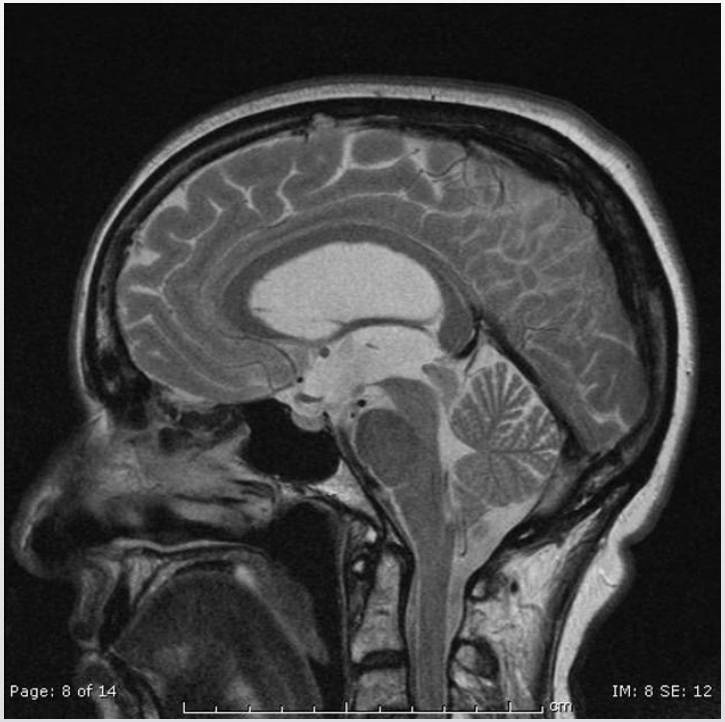
PRIMARY INTRACRANIAL CHORIOCARCINOMA



TECTAL GLIOMA

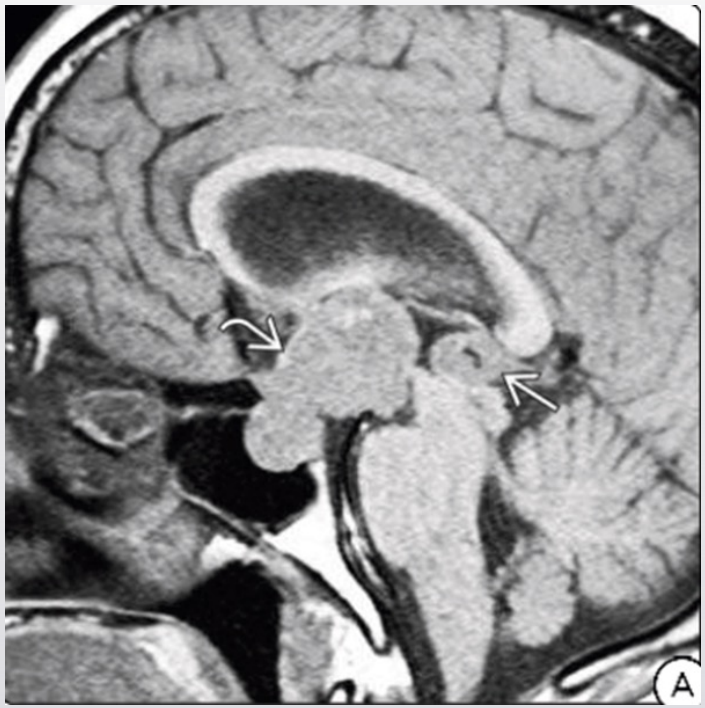
POINTS IN FAVOUR	POINTS AGAINST
Age of the patient (usually seen in children and adolescent age group)	No symptoms of the Parinaud syndrome (usually seen in patients with tectal glioma)
Male predominance	On CT – Isodense to the grey matter (the current lesion is hyperdense)
Cause hydrocephalus	T1 CONTRAST – No enhancement (the current lesion shows enhancement)
Imaging –T1 iso to hypointense to the brain parenchyma	

TECTAL GLIOMA



EMBRYONAL CARCINOMA

POINTS IN FAVOUR	POINTS AGAINST
MIDLINE LOCATION ELEVATED β HCG levels	NO FEATURES OF THE PRECOCIOUS PUBERTY MOST OF THE TIME SELLAR / SUPRSELLAR MASS LESIONS WILL BE PRESENT ALONG WITH THE PINEAL MASS
T1 CONTRAST – HETEROGENOUS ENHNACEMENT	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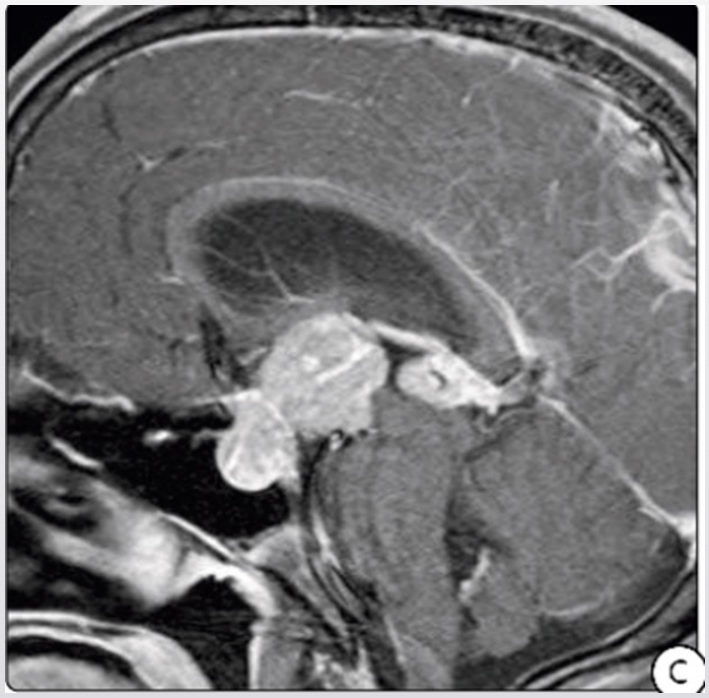
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FOLLOW UP

- Supracerebellar infratentorial approach for pineal lesion excision was done and the sample was sent to **NIMHANS BENGALURU .**
- Patient was extubated after the procedure and was kept under observation in **PICU .**
- On post operative day 4 patient developed 1 episode of GTCS , patient was then reintubated was under ventilator support .
- The following day patient deteriorated and expired .

National Institute of Mental Health and Neuro Sciences
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Department of Neuropathology

M-2792

UHID:	EXT23019475	**Referring Hospital:**	Dr. Prakash Mahantshetti, KLE's Dr. Prabhakar Kore Hospital, Belagavi-590010
MRD No :		**Referring Dept:**	
Patient Name:	**Master. SAMARTH PRAKASH DANI**	**Sample Collection Date:**	17/10/2023 04:30 PM
Age :	9 years	**Lab Reference No:**	X-5211/23
Gender:	Male	**Report Generated Date:**	23/10/2023 01:07 PM
Ward Name/Collection Centre:	Biopsy Room	**Lab Name:**	Neuropathology

Sample Details : H-2310170030 (Tissue)

SURGICAL BIOPSY - Date: 23/10/2023 01:07 PM

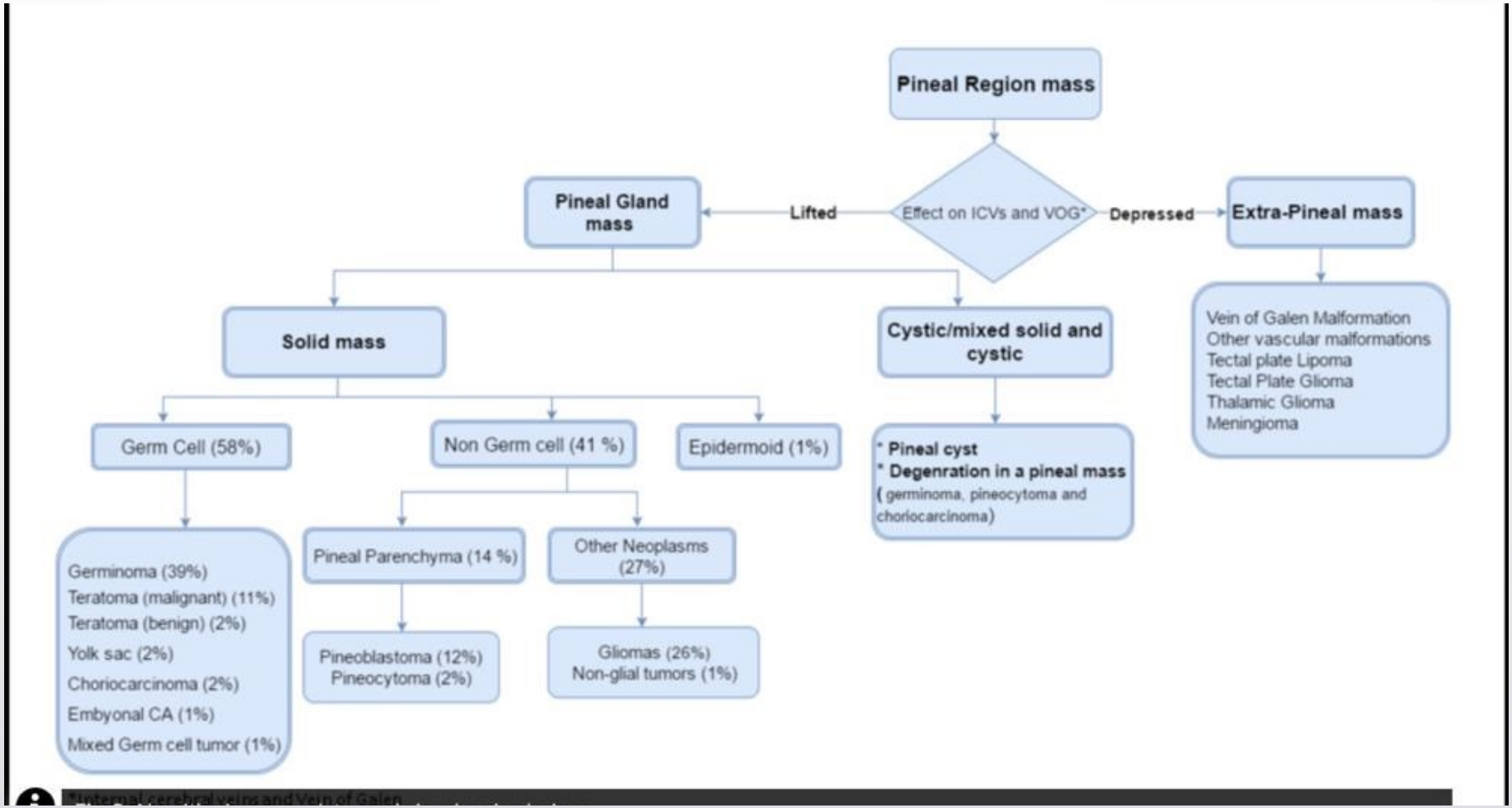
Nature Of Specimen:
Received multiple grey brown tissue pieces altogether measuring 0.4x0.2x0.1cm. All processed-A1.
Grossed By Dr. Preethi Chawla on 18/10/2023

Histopathology Report:
Section shows fragments of a germ cell neoplasm composed of polygonal to round large cells with prominent cell borders and prominent macronucleoli. Interspersed lymphocytes are seen. Mitosis is brisk. Apoptosis is also noted.
IHC-
PLAP- positive
AFP, Beta- HCG, CD30- negative
MIB1 labelling index -40%

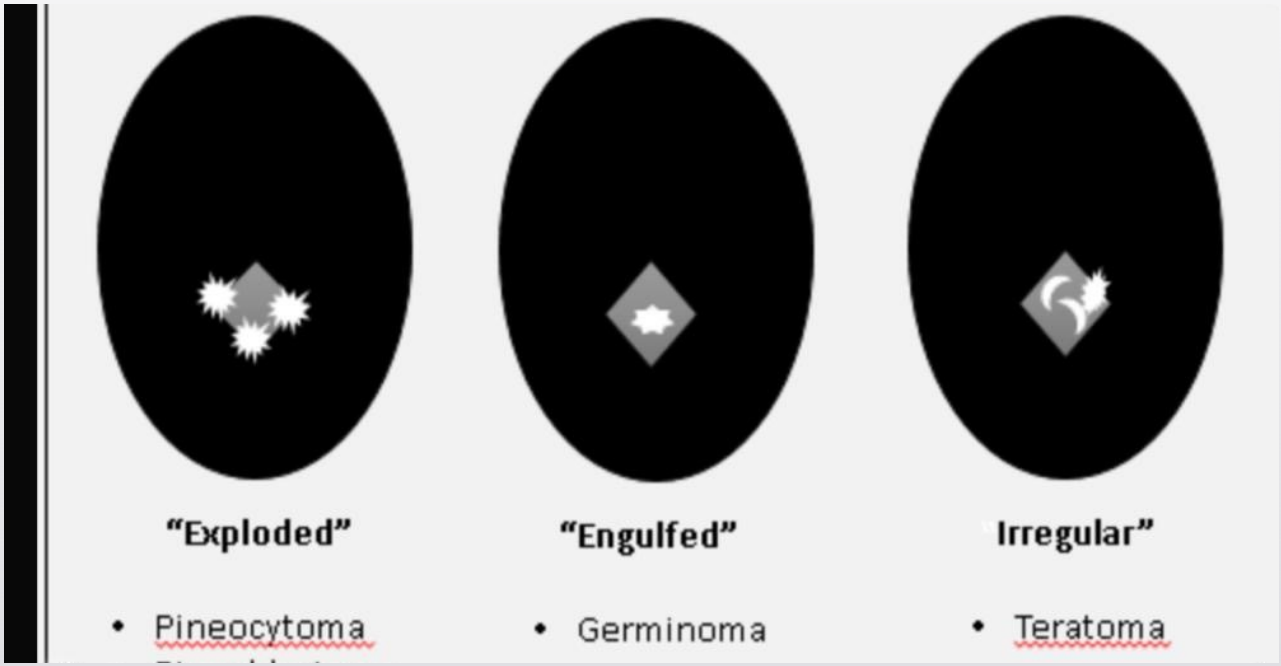
Final Impression:
Germinoma, pineal region

Drafted By:
Dr. Abhishek Chowdhury
DM Resident
23/10/23

Reported By:
Dr. Yasha TC
Senior Professor
23/10/23



https://dx.doi.org/10.1594/ecr2018/C-1187


"Exploded"
"Engulfed"
Irregular"
• Pineocytoma
• Germinoma
• Teratoma

REFRENCES

- Osborn's Brain Imaging, Pathology and Anatomy 2nd Edition Chapter 20
- Chapman & Nakielny's Aids to Radiological Differential Diagnosis 7th Edition
- https://radiologyassistant.nl/neuroradiology/brain-tumor/systematic-approach
- https://pubs.rsna.org/doi/epdf/10.1148/radiographics.12.3.1609147
- Radiopaedia Case/Articles

THANK YOU .