KREP

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KARNATAKA RADIOLOGY EDUCATION PROGRAM

CASE PRESENTATION

Case of Dandy Walker

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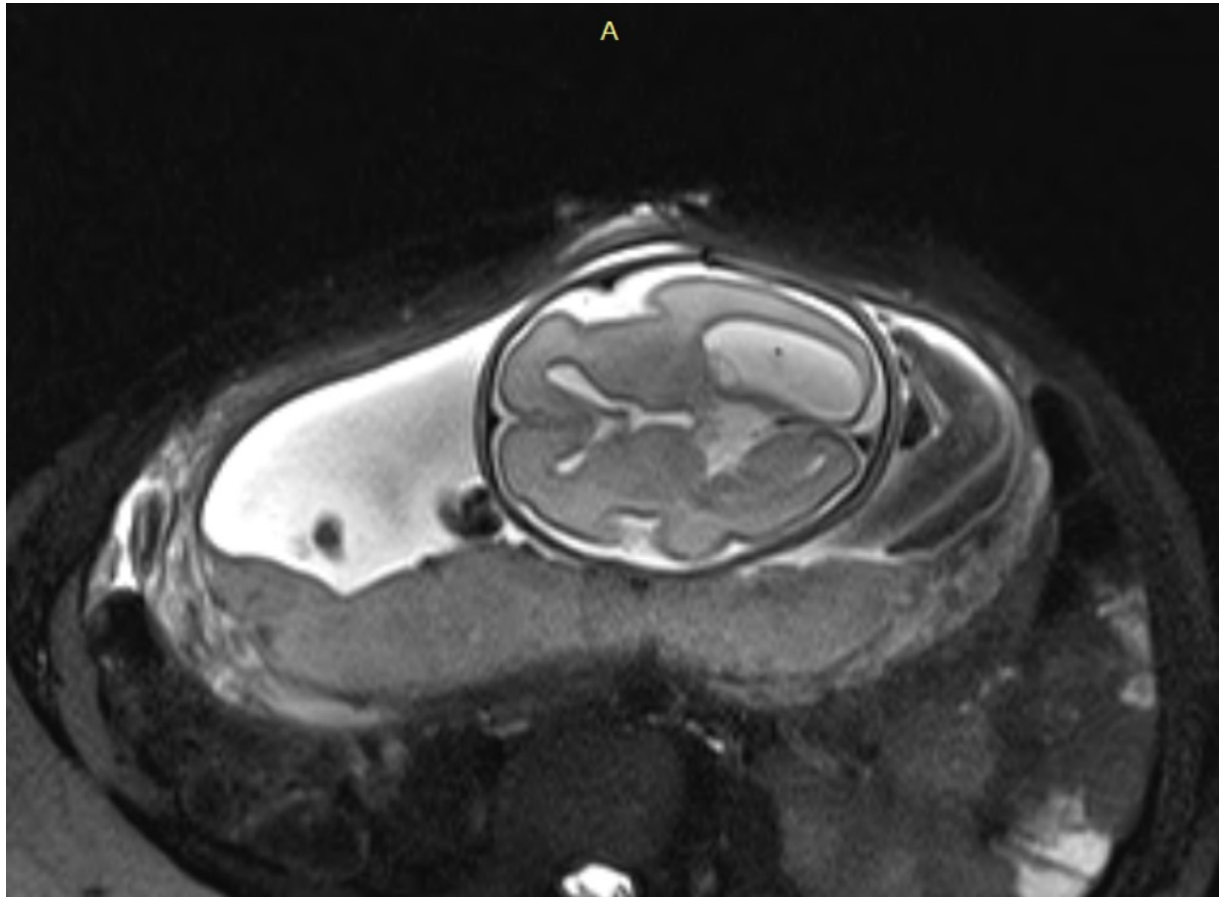
HISTORY

- 21 year old primigravida with 26 weeks 4 days gestational age underwent an ANC scan

USG FINDINGS

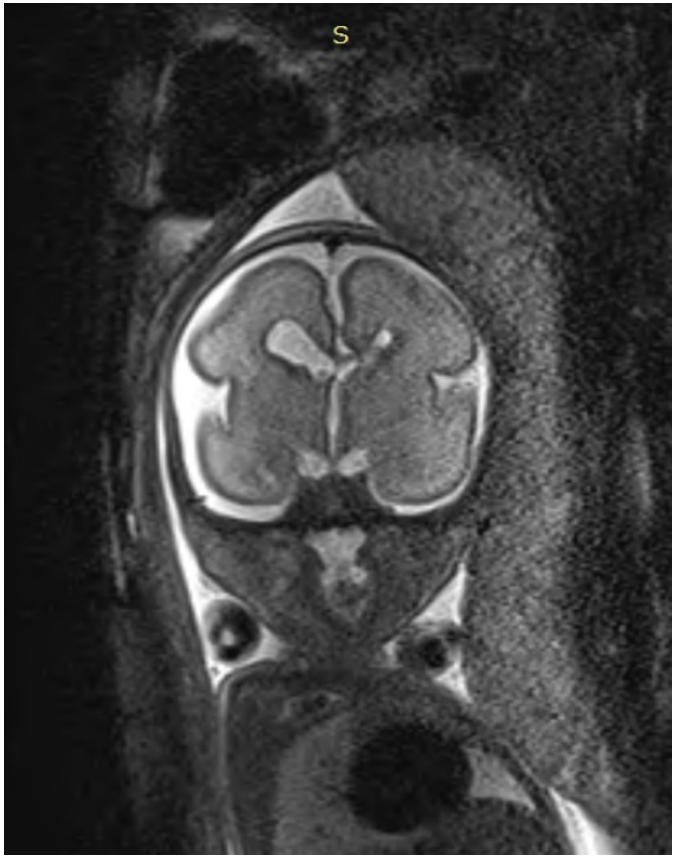
- Inferior vermis could not be visualized
- 4th ventricle seen to communicate with the cisterna magna
- Left lateral ventricle enlargement

- Patient was advised Fetal Brain MRI for further evaluation



T2 WI AXIAL

CASE 2



T2 WI
CORONAL

T2 WI
SAGITTAL

FINDINGS

FETAL BRAIN MRI:

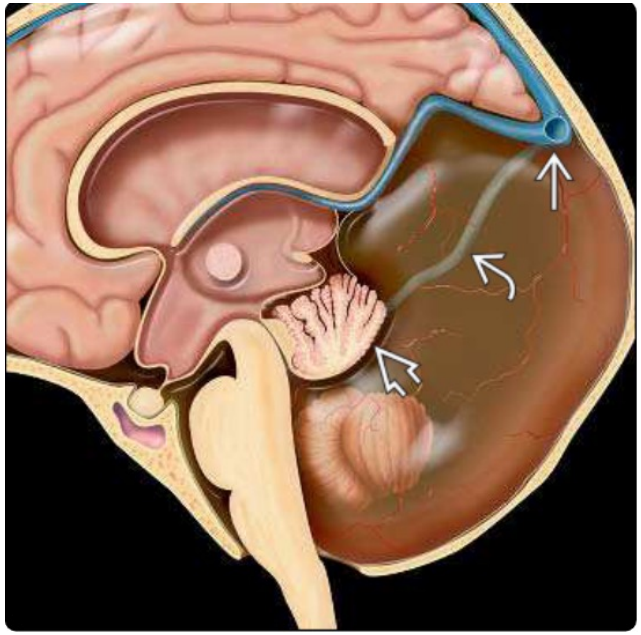
- Large T2 hyperintense cystic area noted involving the posterior aspect of the posterior fossa communicating with the 4th ventricle
- Inferior vermis appears hypoplastic
  - Vermian cranio-caudal diameter 1.2 cms (normal for age is 1.4 cms)
  - Inferior to superior vermis ratio < 2:1
- Raised tegmento-vermian angle (38˚)
- Fastigial angle 121˚ (normal 30-60˚)
- Infero lateral displacement of tenia-tela choroidae complex
- Asymmetrical dilatation of left lateral ventricle, atria measuring 1.6 cms
- Normal brainstem

DIFFERENTIALS TO BE CONSIDERED

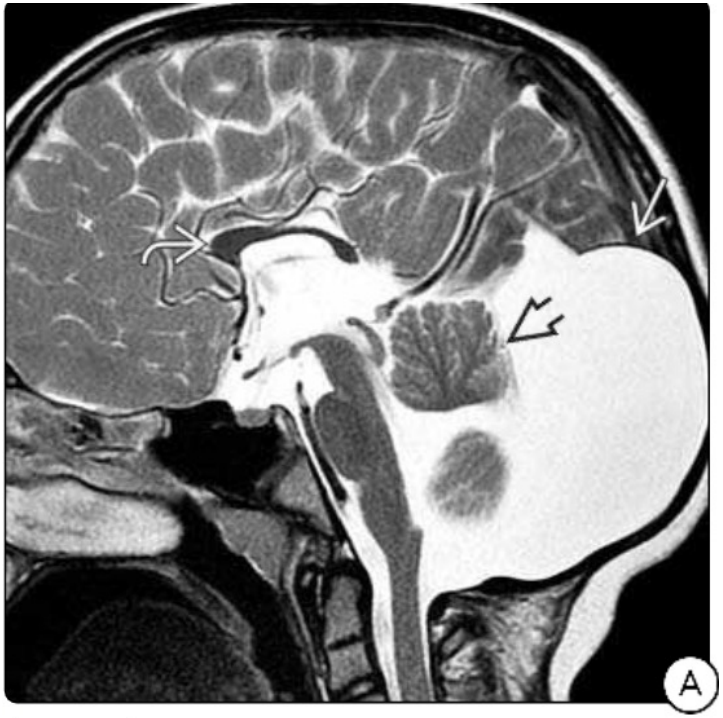
- Posterior fossa cystic malformations can be:
  - Dandy walker malformation
  - Vermian hypoplasia
  - Blake pouch cyst
  - Mega cisterna magna
  - Posterior fossa arachnoid cyst

Dandy walker malformation

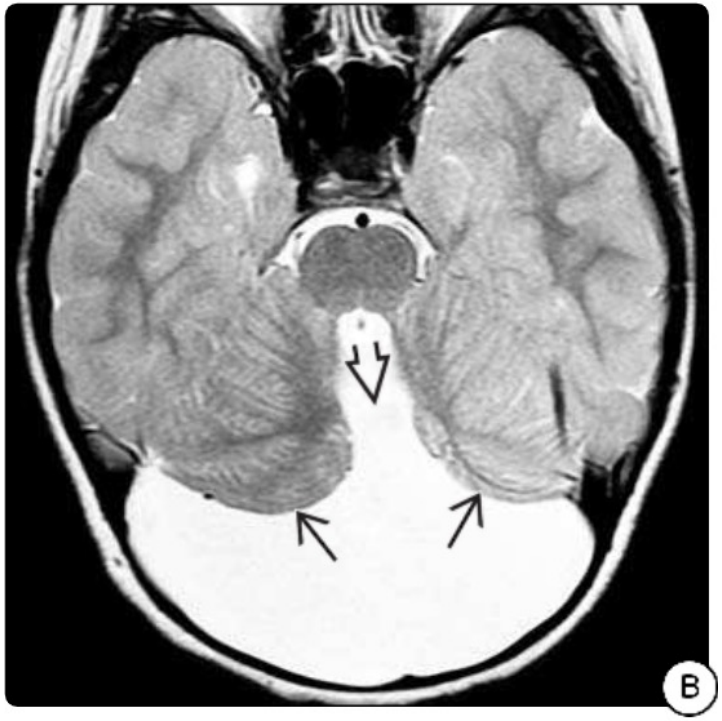
- Dandy-Walker malformation (DWM) is a generalized disorder of mesenchymal development
- It consists of a large posterior fossa with a high-inserting venous sinus confluence (torcular-lamboid inversion), large posterior fossa cyst extending dorsally from the fourth ventricle, and varying degrees of vermian and cerebellar hemispheric hypoplasia.



(36-34) Elevated torcular ➡, steeply angled TS ➡, superiorly rotated hypoplastic cerebellar vermis ➡, and hydrocephalus reveal DWM.

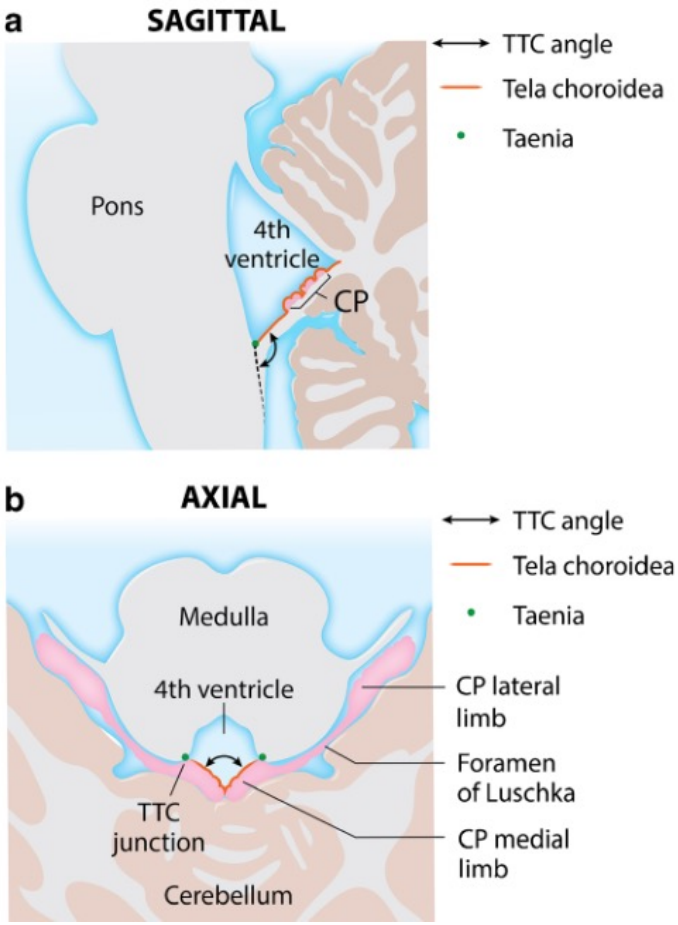


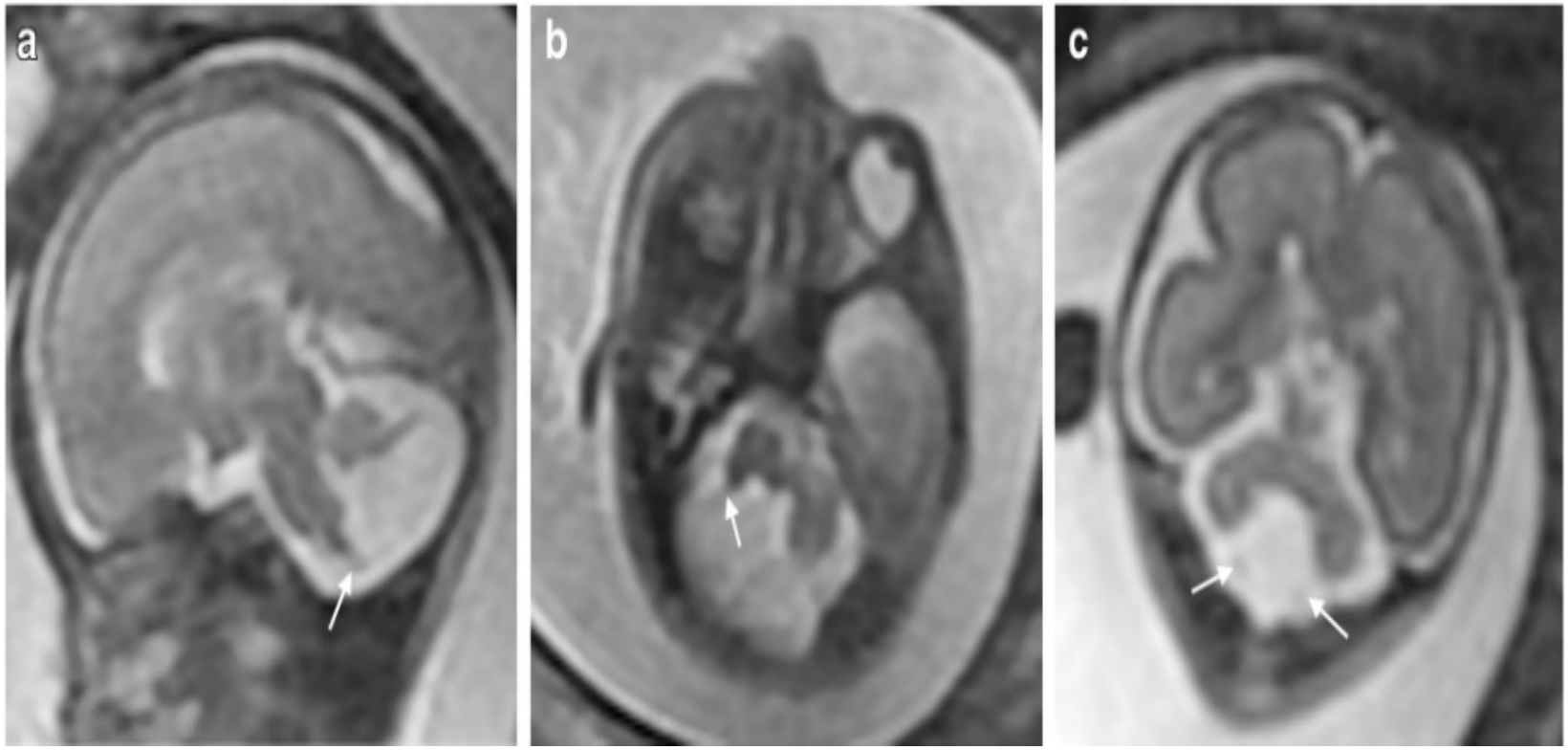
(36-36A) DWM shows large PF cyst elevating torcular ➔, superiorly rotated vermian remnant ⇨, small pons, dysgenetic corpus callosum ⇗.



(36-36B) Axial T2WI in DWM shows 4th ventricle open dorsally ⇨ to the large PF cyst. Cerebellar hemispheres are small, "winged" anteriorly ⇨.

- The taenia–tela choroidea complex has not been explored as an imaging biomarker. The taenia are bilateral band like white matter protuberances that form the inferolateral borders of the rhomboid fossa. Tela choroidea enclose the choroid plexus and connect to the taenia. In this manner, the taenia,tela choroidea and choroid plexus form a continuous structural chain.




a
b
c

Differential diagnoses

	Vermis Position	Vermis Size	Torcular Position	Cerebellar Hemispheres	Fourth Ventricle
Mega cisterna magna	N	N	N	N	N
Blake pouch cyst	Rotated	N	N	N	Enlarged; communicates with posterior fossa via valleculae
Arachnoid cyst	May be displaced	N or compressed	N	N or compressed	N or compressed
Vermian dysgenesis	May be rotated	Small or absent	N	N	Abnormal shape; lacks normal fastigial point
Dandy-Walker malformation	Rotated	Small or absent	Elevated	Often small	Dilated, enlarged; lacks normal fastigial point

Malformation	Vermis	Fourth Ventricle	Posterior Fossa	Hydrocephalus	Occipital Bone Scalloping*
DWM	Hypoplastic	Enlarged	Enlarged	Yes (in most patients)	No
IVH	Hypoplastic (inferior portion)	Enlarged	Normal	No	No
BPC	Normal	Enlarged	Normal	Yes	No
MCM	Normal	Normal	Inconsistently enlarged	No	Possible
PFAC	Normal	Normal or reduced	Normal	Possible	Yes

Follow up

- USG done outside on 12/09/2024, showed hypoplasia of the inferior cerebellar vermis with cystic dilatation of 4th ventricle communicating with the cisterna magna, enlarged posterior fossa, features suggestive of Dandy walker malformation.