

Chiari Malformation and Obstetric Anaesthesia

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Arnold-Chiari Malformation

- Definition: elongation / extension of cerebellar tonsils into the spinal canal
- Type 1 – cerebellar ectopia with normal shape and configuration of the IV ventricle. May be associated with spinal cord syrinx
- Type 2 – cerebellar ectopia with abnormal IV ventricle (typically associated with spina bifida)

Chiari malformation - symptoms

- Headache – typically provoked by cough and sneeze or neck extension
- Ocular – oscillopsia and transient visual obscurations
- Otological - dizziness often provoked by neck extension
- Lower brainstem symptoms – dysarthria or dysphagia
- Cerebellar – unsteady gait

Chiari malformation - signs

- Ocular – optic disc swelling
- Otological – nystagmus particularly downbeating nystagmus
- Lower brainstem symptoms – vocal cord or hypoglossal nerve palsy
- Cerebellar – ataxia and dysmetria

Case presentation

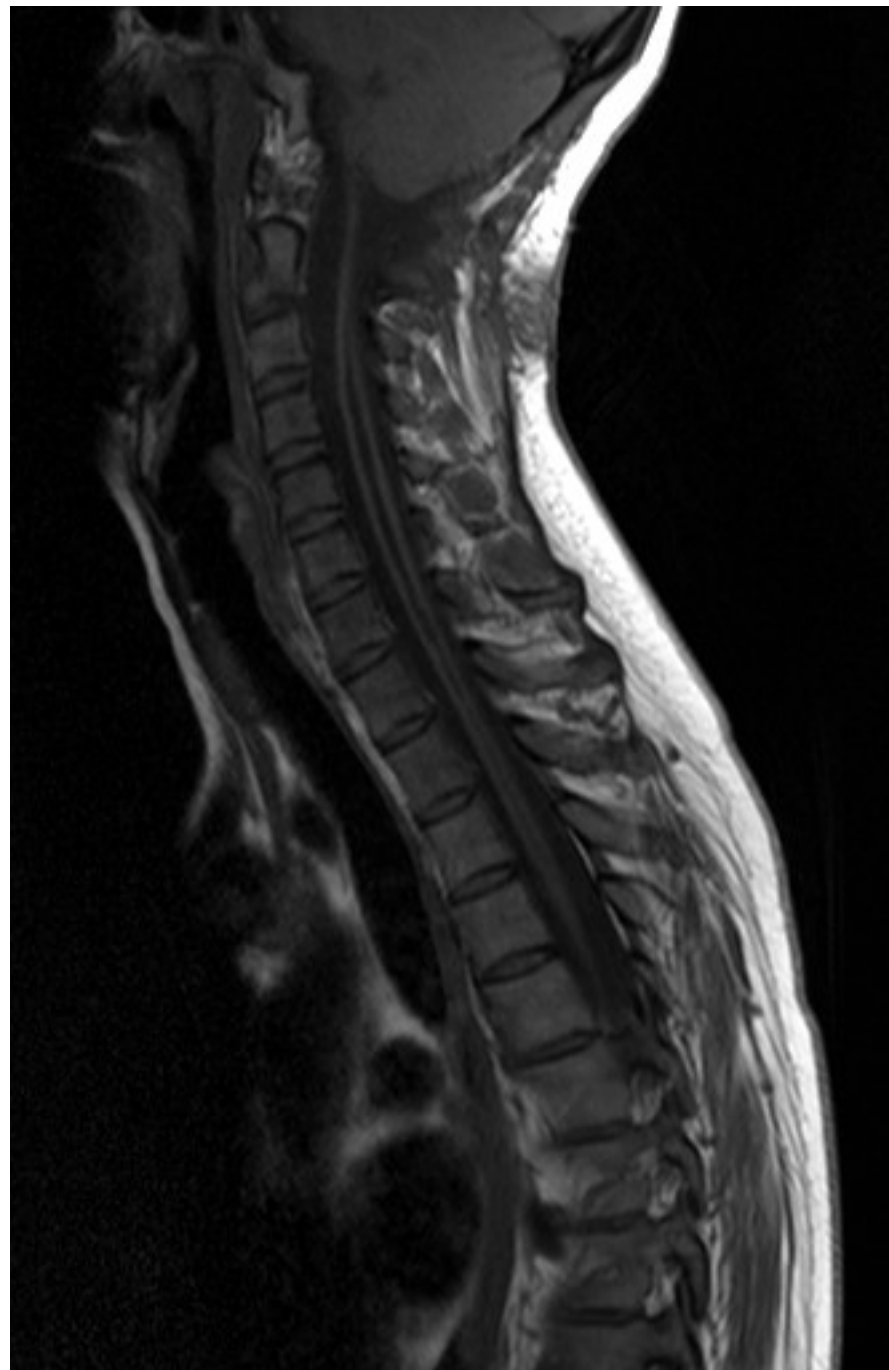
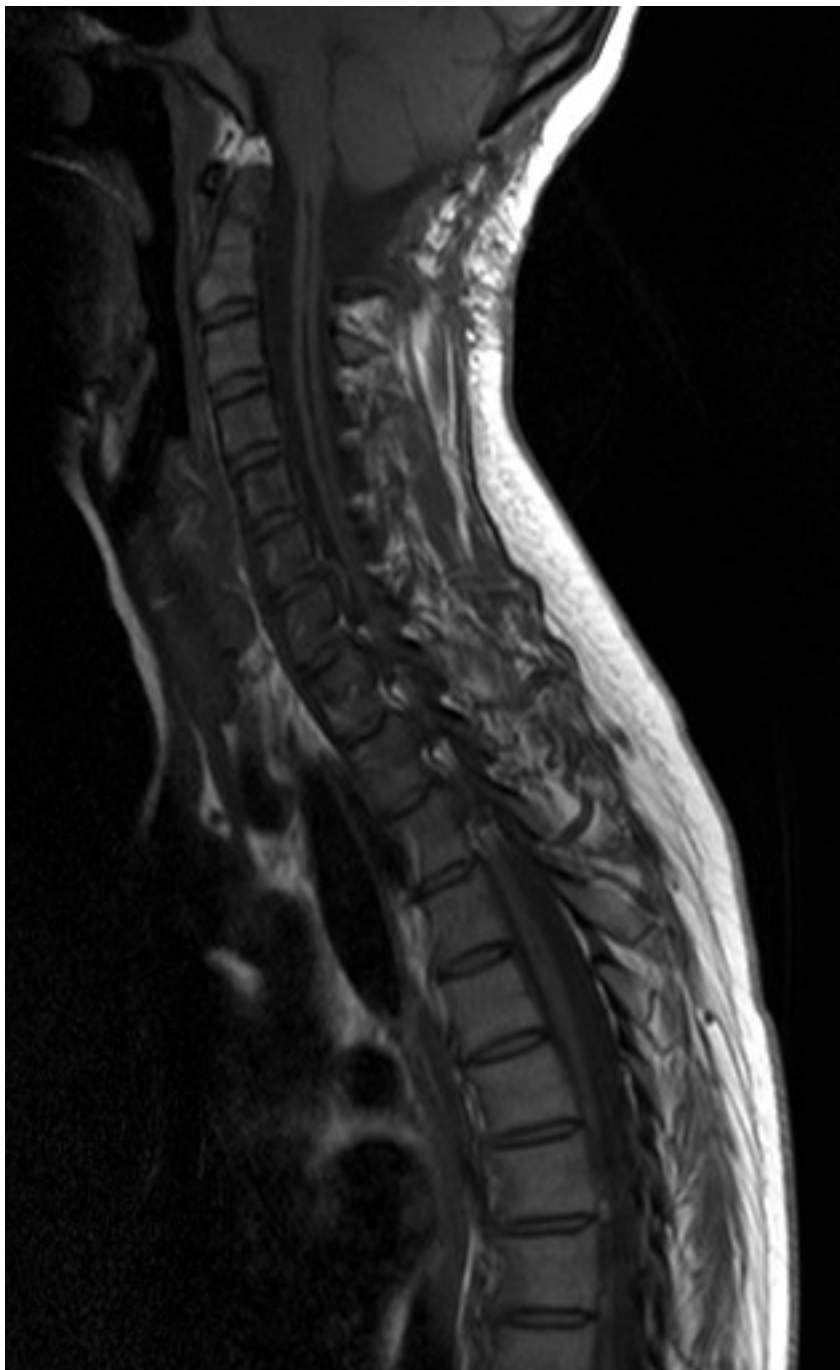
- 25 years old
 - progressive weakness and sensory disturbance
 - exacerbation of sensor disturbance with cough and sneeze
- Marked wasting and weakness in left forearm and hand
- Absent upper limb tendon reflexes
- Dissociated sensory loss – absent pain and temperature left arm with preserved vibration and joint position sense



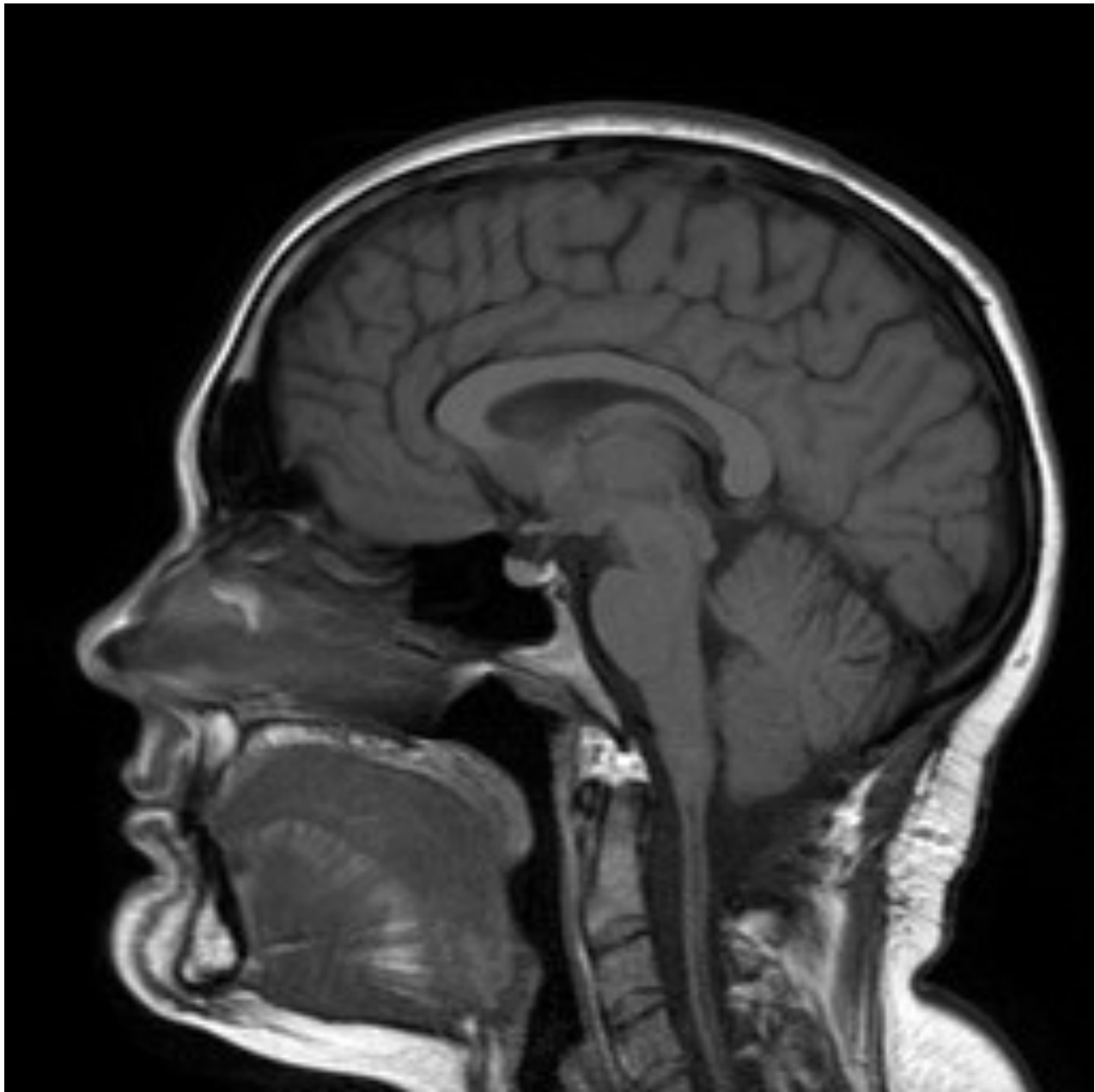
Neurosurgery

- September 2009
 - foramen magnum decompression
- Persistent syrinx on follow-up MR scans
- Further neurosurgery in October 2010
 - revision of foramen magnum decompression
 - insertion of syringo-subarachnoid shunt





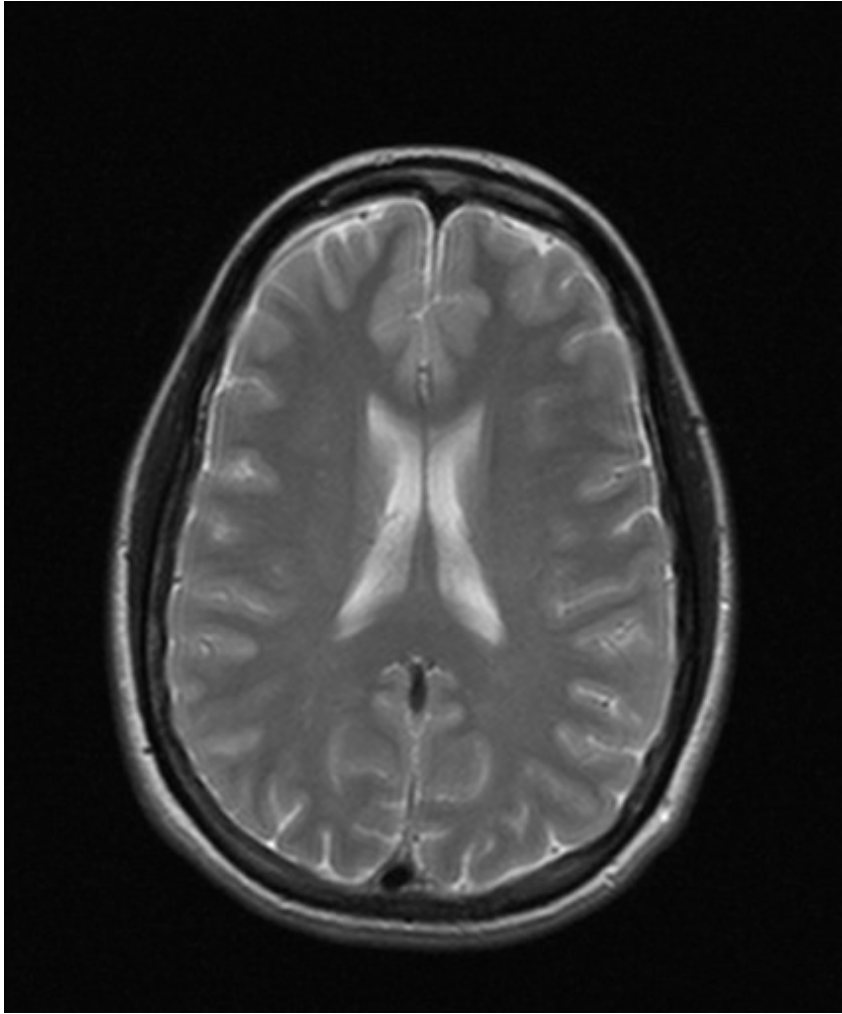
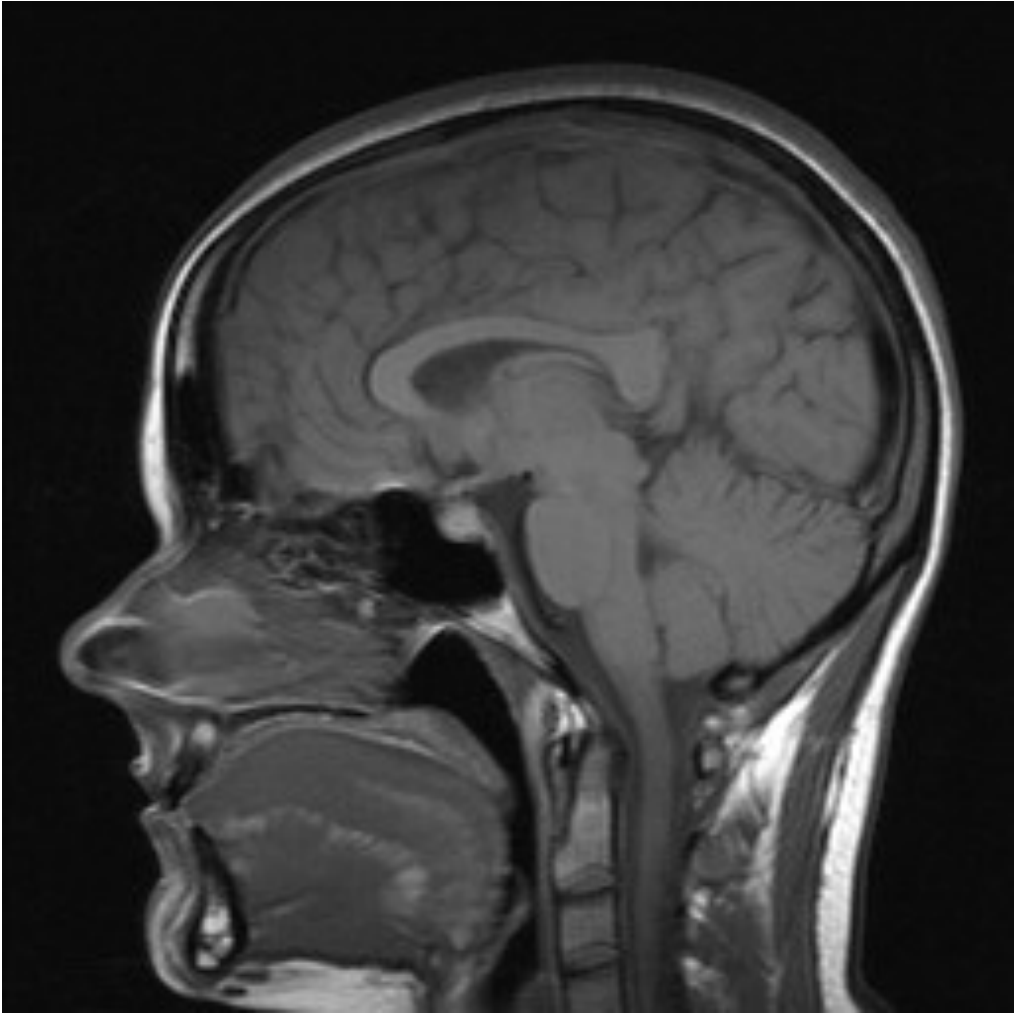
- Currently 30 weeks pregnant
- Neurosurgical advice
 - elective Caesarean section if repeat MRI shows crowding of posterior fossa structures
- ? choice of anaesthesia if safe for trial of labour and vaginal delivery





Obstetric Case presentation

- 30 year old – no previous neurological problems
- elective epidural anaesthesia during labour
- post-procedure – significant postural headache with nausea and vomiting secondary to CSF leak following epidural



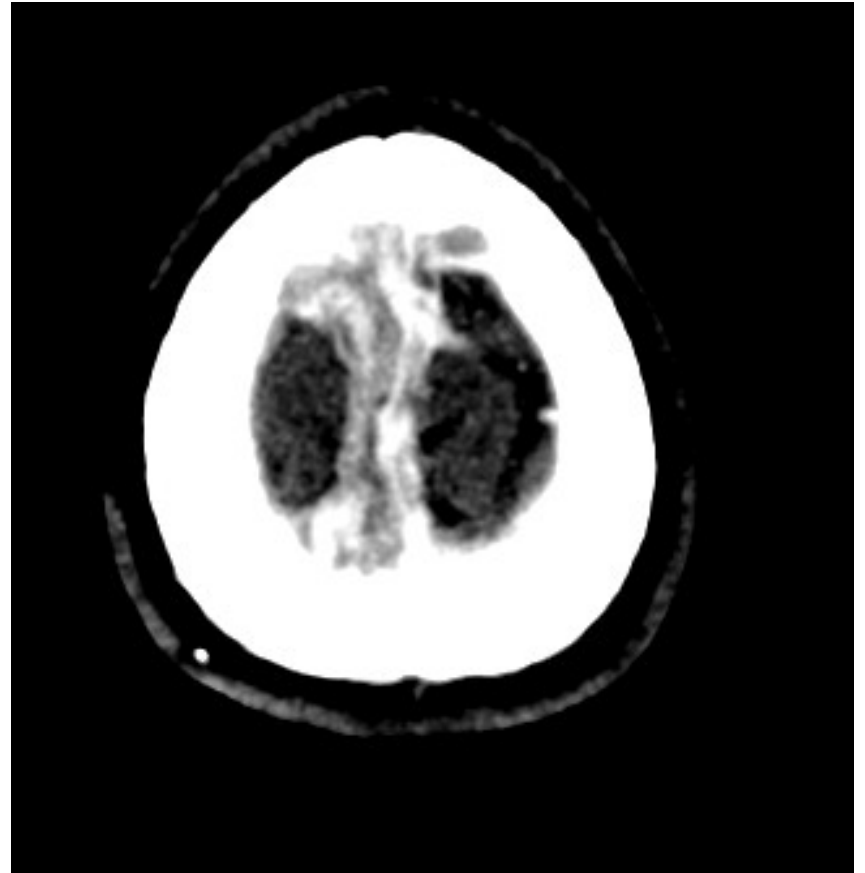
- admitted with increasing headache with nausea and vomiting
- two episodes of altered right-sided sensation and speech disturbance
- optic disc appearances – normal
- no abnormal focal neurological signs

Unenhanced CT brain

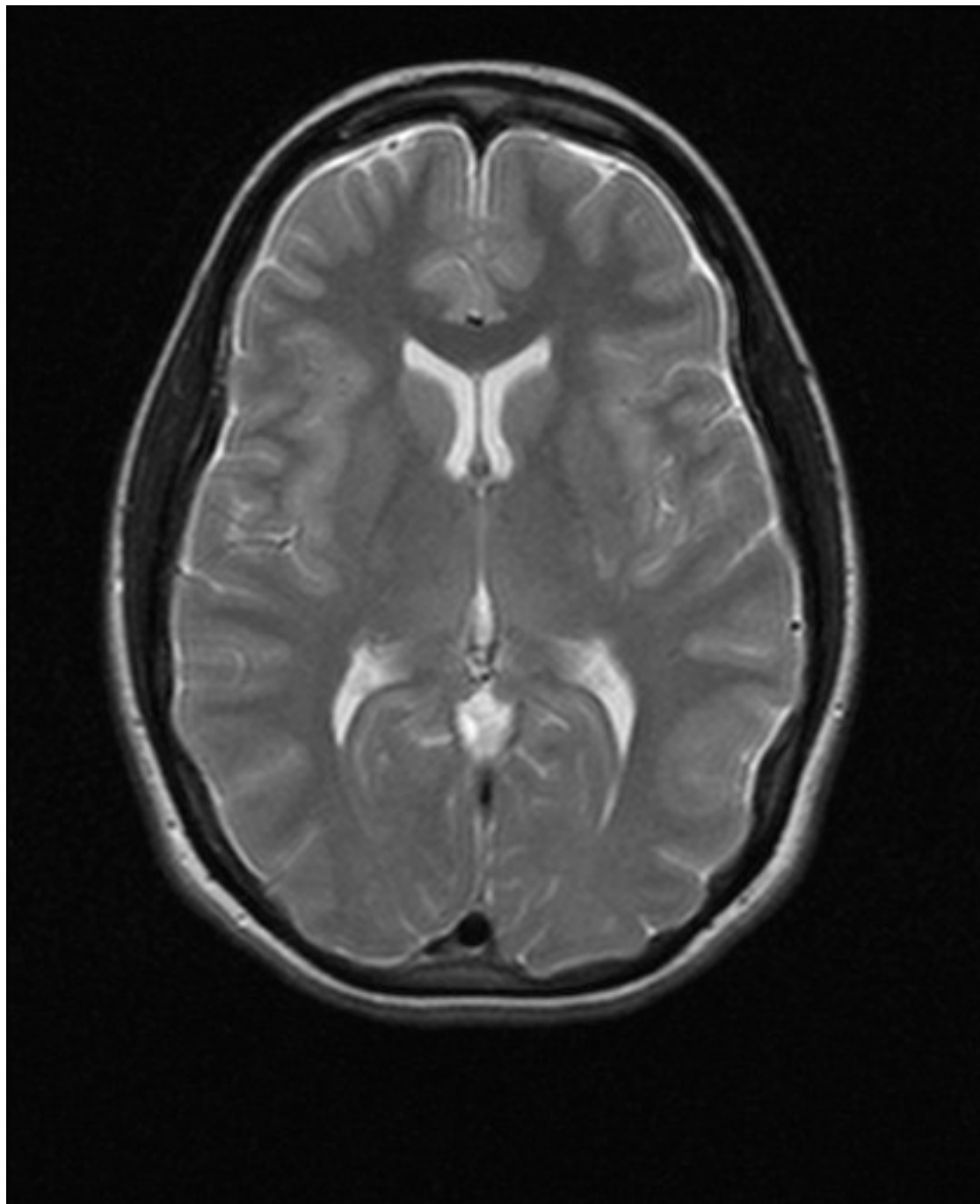


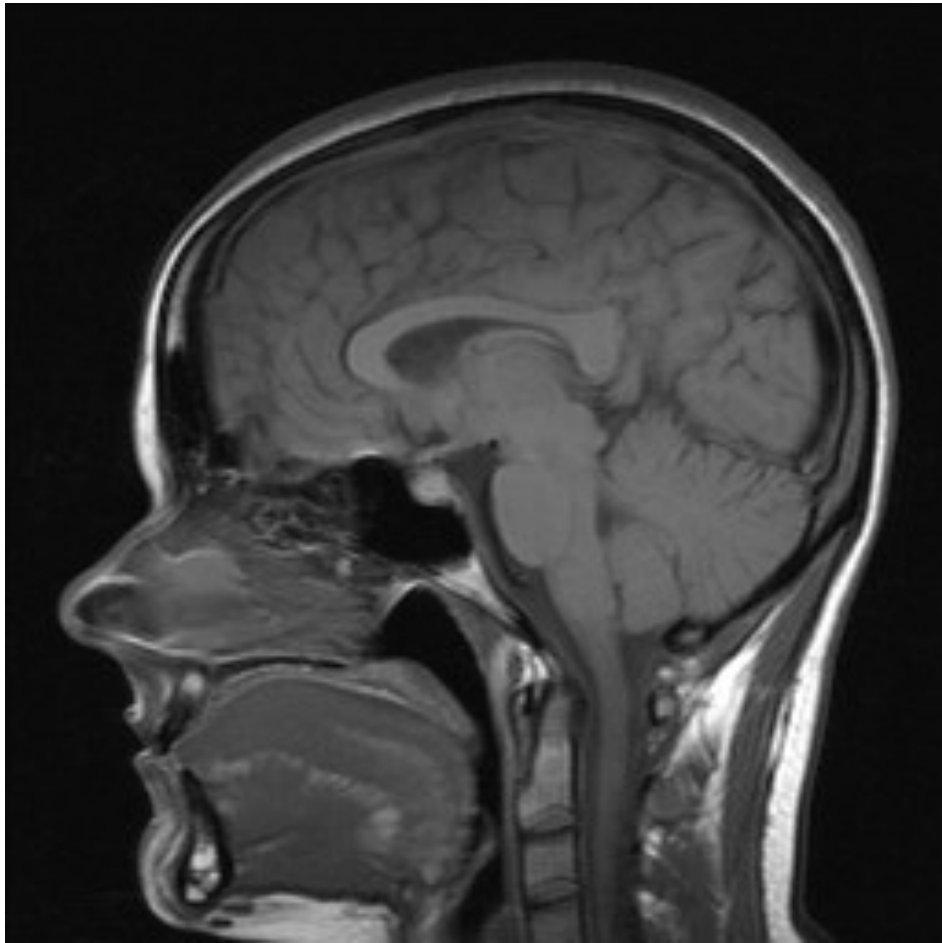
Cortical vein and sagittal sinus thrombosis

Post contrast CT brain scan



- superior sagittal sinus thrombosis
 - post-partum
 - mild dehydration with N+V and breast-feeding
- treatment
 - low molecular weight heparin for seven days
 - strict bed rest
 - oral anticoagulation with warfarin for six months
 - conservative management of headache from CSF leak as epidural blood patch not possible with anticoagulation



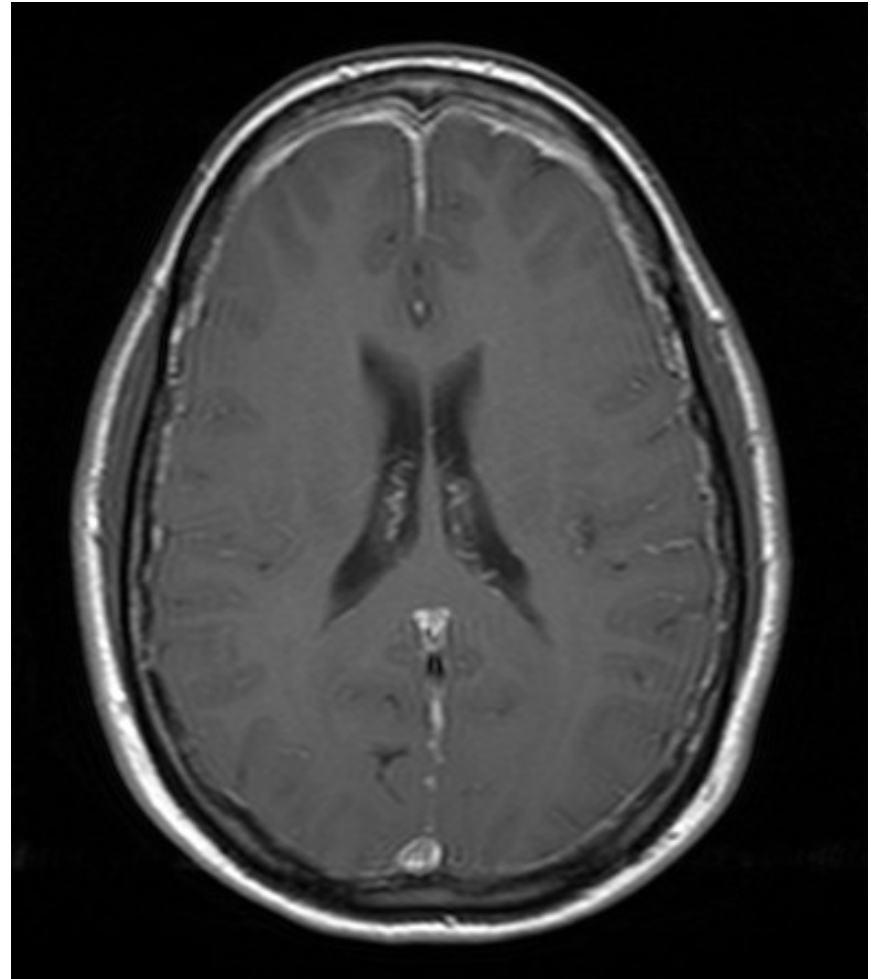
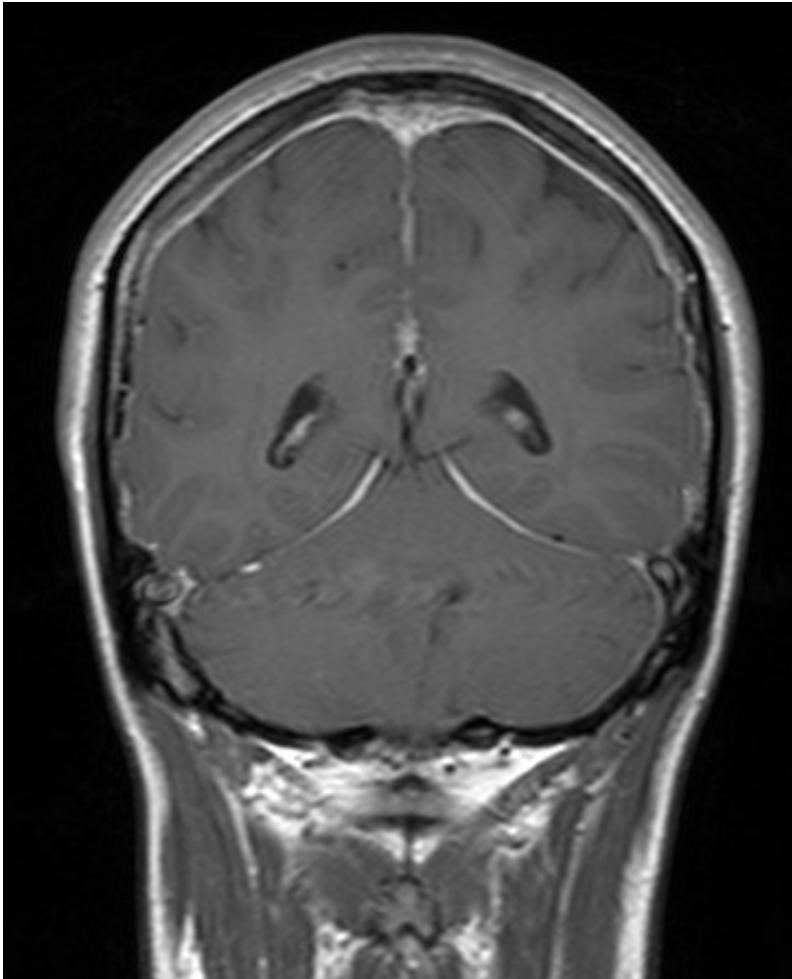


Feb 2010 – 2 weeks after delivery



Aug 2010 – 6 months after delivery

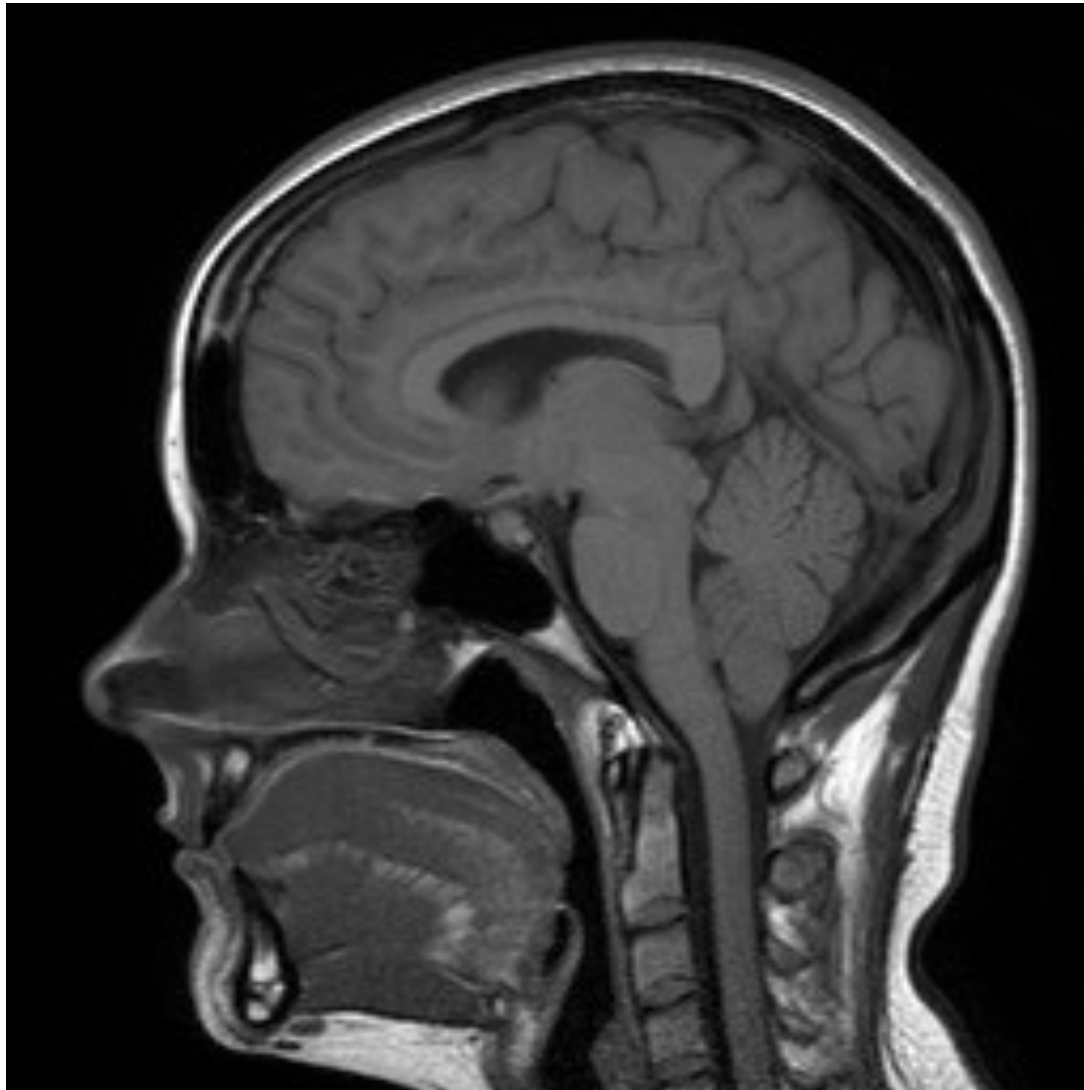
Radiological features of low CSF volume state



Post-epidural blood patch



MRI during second pregnancy



Obstetric anaesthesia in second pregnancy

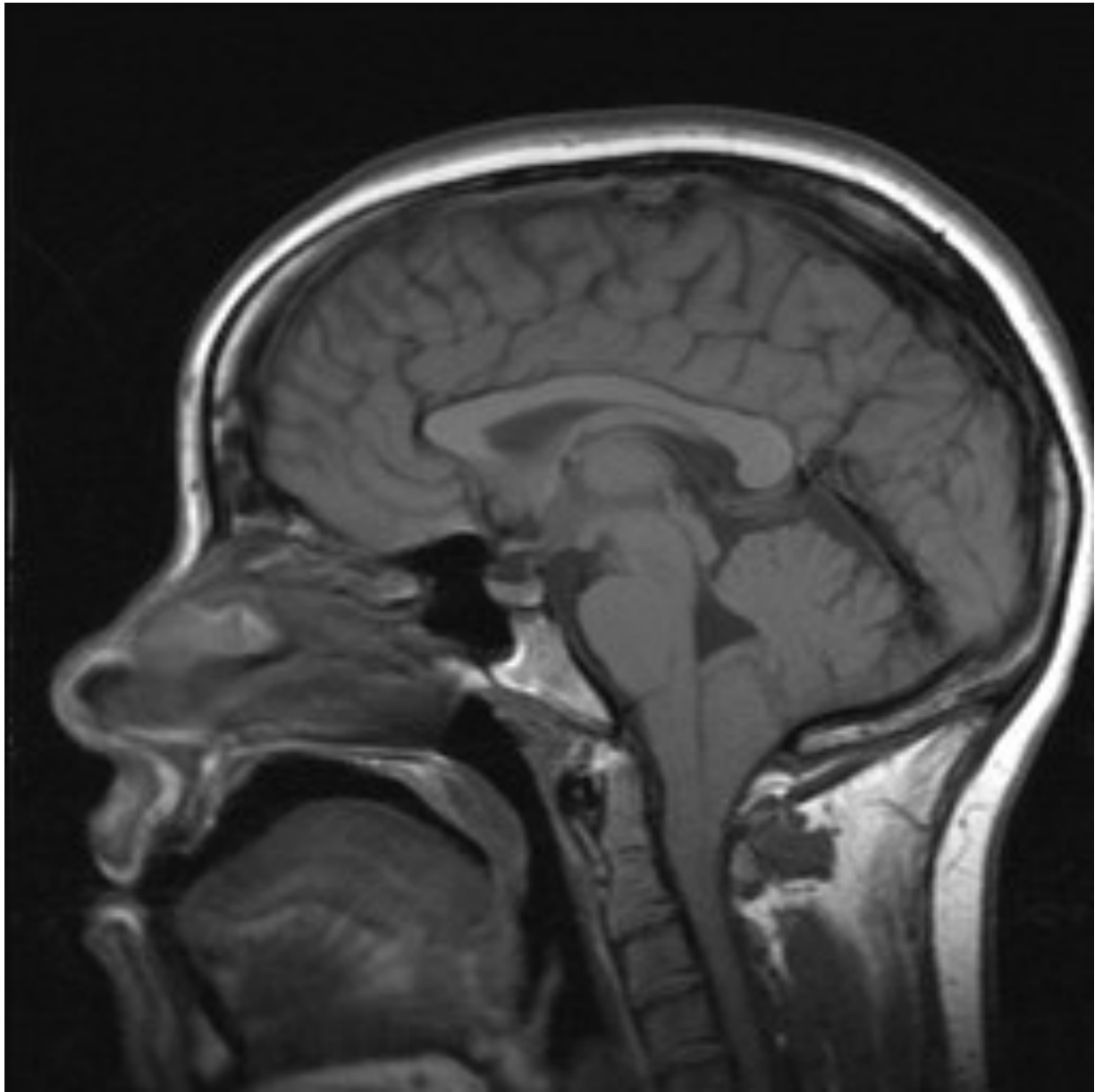
- General anaesthetic for elective Caesarean section
- No complications

Chiari type 1 malformation

- 26 year old – presented with severe “pressure” headaches in 2010
- MRI brain scan – significant Chiari type 1 malformation and possible venous sinus thrombosis
- Treated with anticoagulation and acetazolamide



- pregnancy in 2012
 - exacerbation of headaches
 - no clinical signs of raised intracranial pressure
- Treated with Clexane and Acetazolamide from the second trimester



- elective Caesarean section in December 2012
- intubation and general anaesthesia with no complications
- due for foramen magnum decompression in next few months

Unanswered Questions

- Is it safe for patients with a Chiari malformation to have a trial of labour?
- What is the best choice of anaesthesia for patients with a Chiari malformation?
- What are the neurological risks of inadvertent dural puncture during epidural anaesthesia?