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# Space-occupying Cerebellar Infarcts: A Review

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# EPIDEMIOLOGY

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- Cerebellar infarcts are not uncommon: they account for 2-4% of all strokes . Proportions 4-5 times higher than for cerebellar haemorrhages.

## CLINICAL FEATURES AND PATHOPHYSIOLOGICAL MECHANISMS

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- The cerebellum is supplied by three main arteries, each of which also has a corresponding territory in the brain stem.
- Cerebellar infarcts involving the posterior inferior artery (PICA) and the superior cerebellar artery (SCA) are most common, whereas infarcts involving the anterior inferior cerebellar artery (AICA) are rare.

## Posterior inferior cerebellar artery (PICA) infarcts

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- The PICA arise from vertebral artery, and divides into medial (mPICA) and lateral (lPICA) branch. The mPICA sometimes partly supplies the lateral medulla oblongata, but most often this region is supplied by branches originating directly from vertebral artery.
- Infarct in the mPICA are characterized by vertigo, dizziness, truncal ataxia, axial lateropulsion and nystagmus.

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- PICA infarcts are most often caused by large artery occlusive disease in the vertebral arteries, whereas cardiac embolism account for a 20% of infarcts.

# Anterior Inferior cerebellar artery (AICA) Infarcts

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- AICA infarcts are almost always accompanied by brainstem signs from lower pons. AICA infarcts have been considered very rare, but their frequency might have been underestimated because some have probably misdiagnosed as lateral medullary infarcts.
- AICA infarcts are usually due to large artery disease in the lower basilar artery.

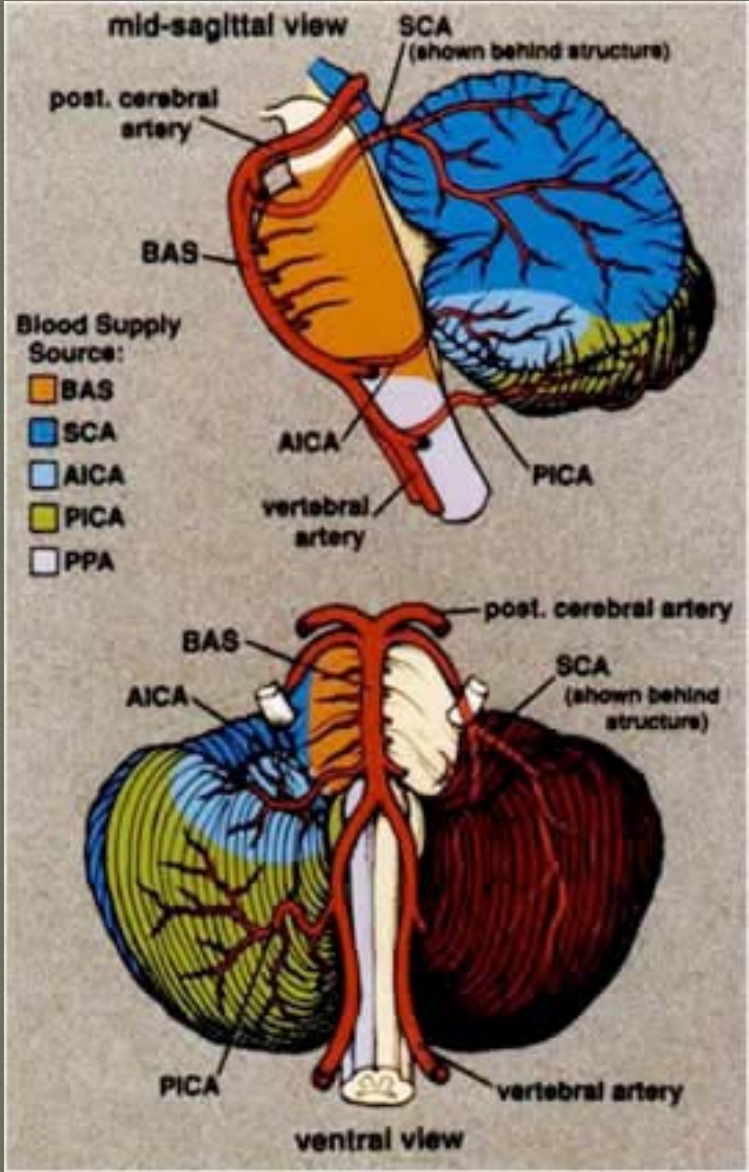
# Superior cerebellar artery (SCA)

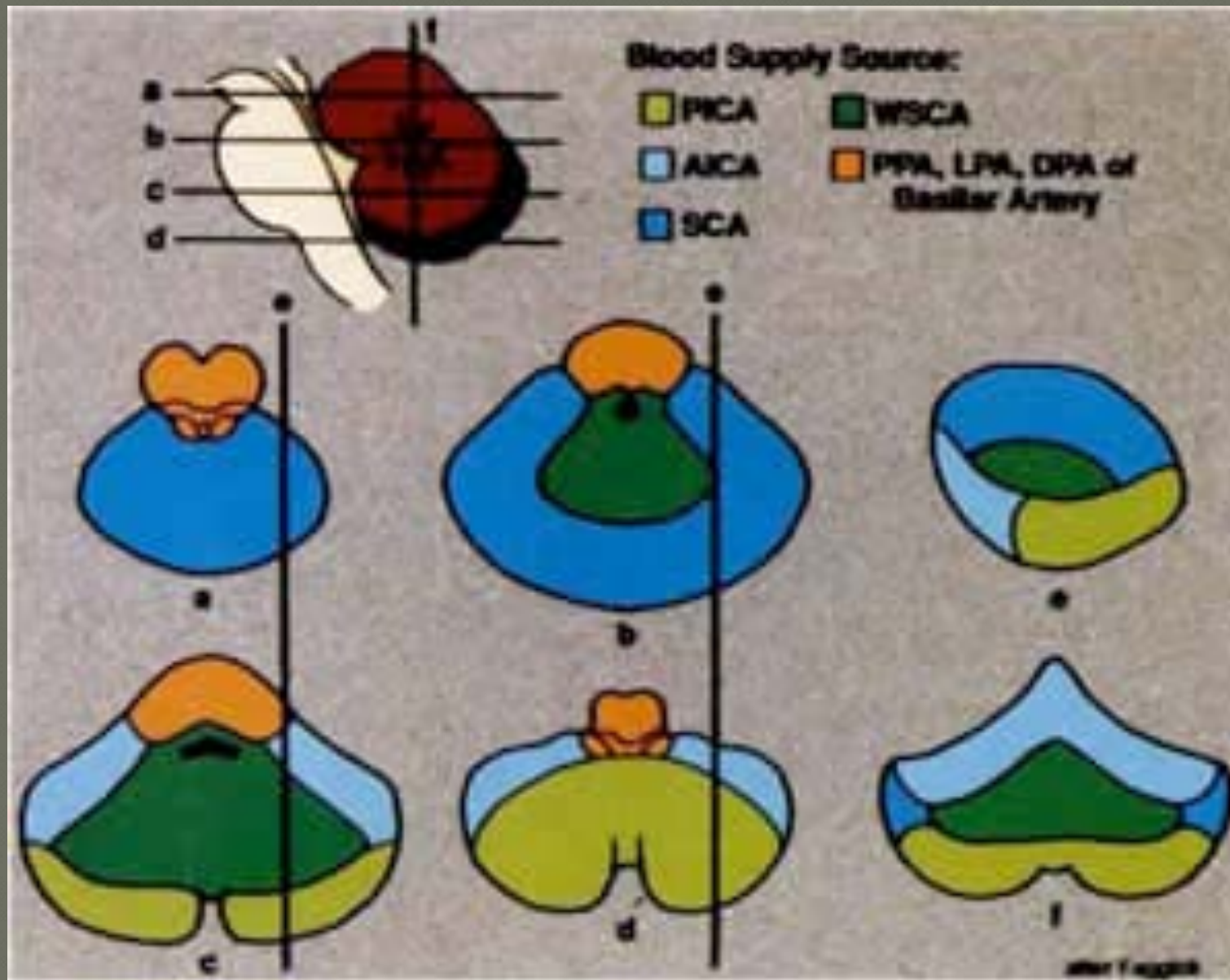
## Infarcts

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- The SCA supplies the laterotegmental portion of the rostral pons including the superior cerebellar peduncle, spinothalamic tract, lateral lemniscus, descending sympathetic tract and root of the contralateral IVth cranial nerve.
- The SCA has two branches: the medial branch (mSCA) and the lateral branch (lSCA) supplying the dorsomedial and anterolateral areas, respectively.







# Surgical Treatment

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- Rapidly progressive cerebellar swelling with acute hydrocephalus, brain stem compression, and death is a feared complication of cerebellar infarct. Careful monitoring of patients with cerebellar infarcts, in particular those with large PICA infarcts and in multiple posterior circulation infarcts, for 3-4 days is therefore essential.

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- The surgical management of space occupying cerebellar infarcts has been much debated, partly reflecting the lack of randomised clinical trials.

# Surgical Management

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- ◉ Suboccipital craniectomy and removal of necrotic tissue, involving hydrocephalus (for which external ventricular drainage may be attempted ) or concomitant irreversible brain stem infarction (for which no surgical procedure is likely to be helpful).

# OUTCOME OF SURGERY

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- ① The outcome of surgery depends much on whether there is an brainstem infarct.
- ① There is no evidence for the use of thrombolytic therapy in isolated cerebellar infarct.

## Patient W.M.

### ○ History of Present Illness:

- 34 year old male
- Long history of headaches
- Presented with 8 days of:
  - Bitemporal headache progressing to
  - Bifrontal headache
  - Somnolence
  - Altered mental status
  - Nausea/vomiting
  - dizziness
- No fevers, chills
- No history of trauma

# Patient W.M.

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- Past Medical History:
  - Otherwise unremarkable past medical history
- Medications:
  - None
- Allergies:
  - None Known
- Social History:
  - No tobacco, drug, or alcohol use



# Patient W.M.

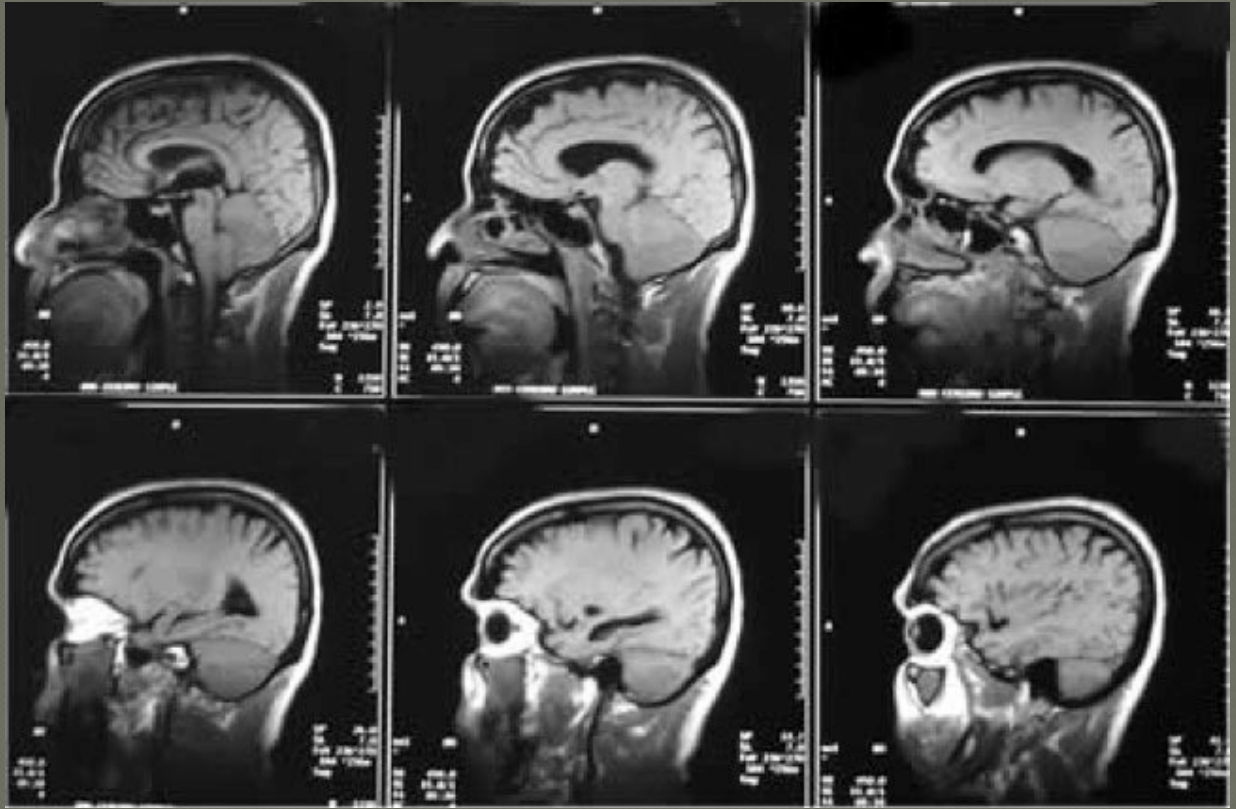
## ○ Physical Exam

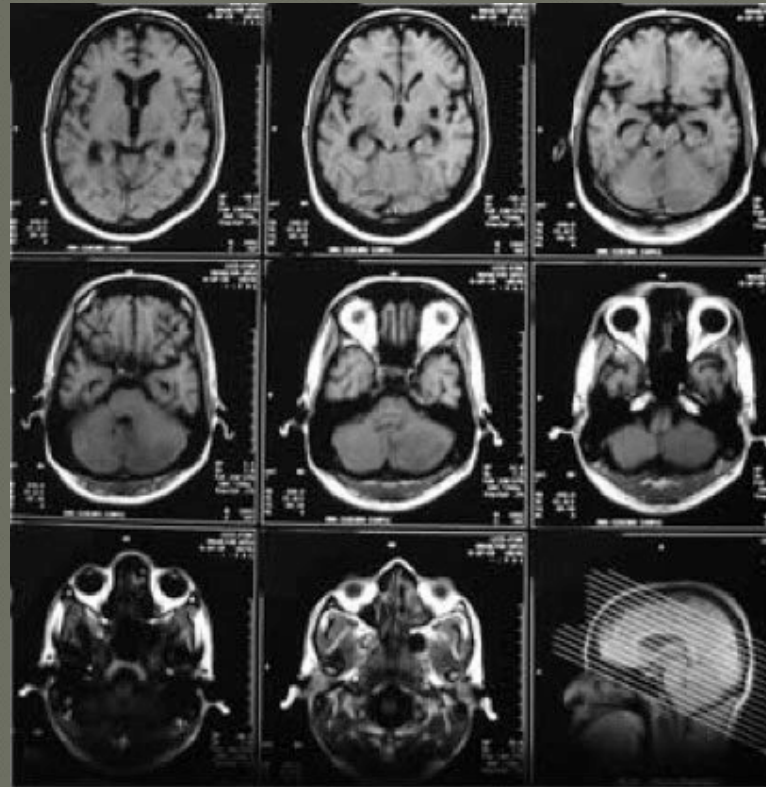
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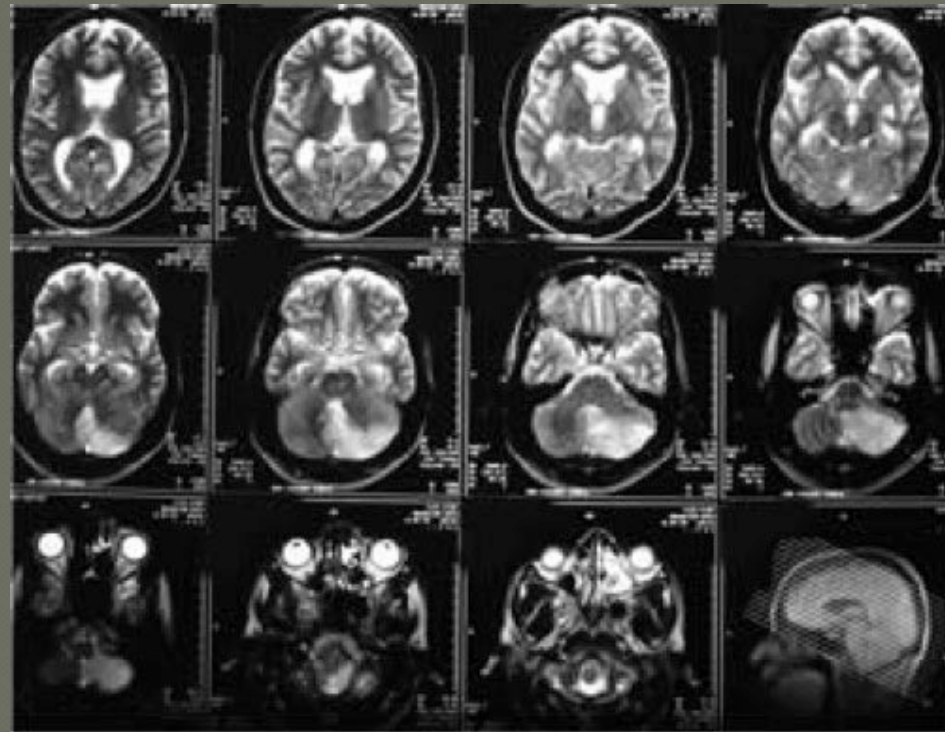
- *Mental Status*
  - Patient somnolent,
  - Oriented inconsistently to name only
  
- *Cranial Nerve Exam*
  - Extraocular movements intact
  - Cranial Nerves otherwise intact

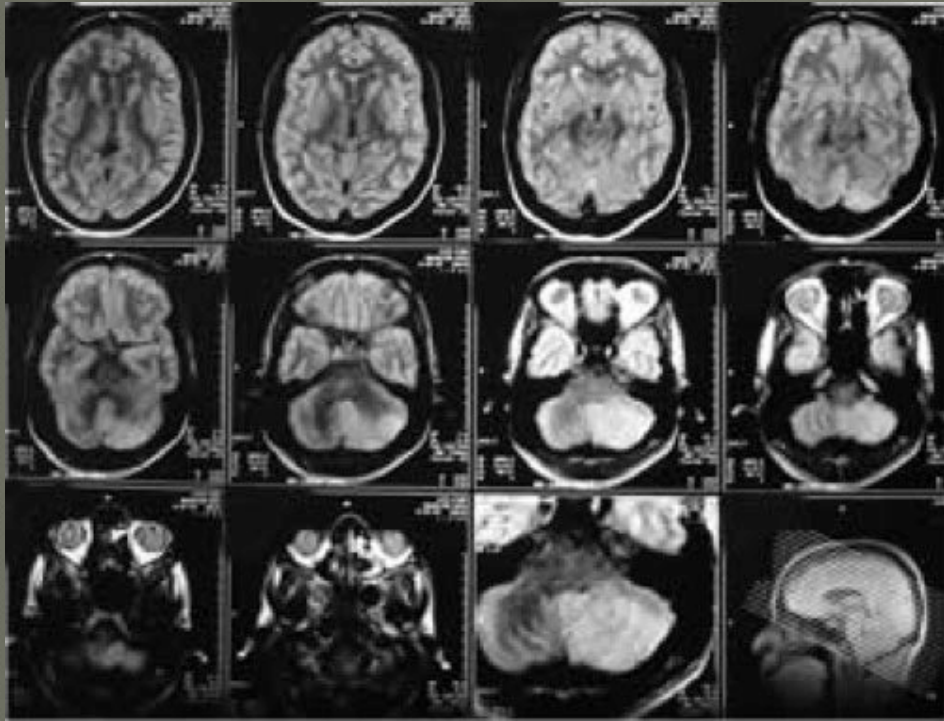
## Patient W.M.

- *Motor exam*
  - Anormal tone
  - Follows simple commands intermittently
  - Diffusely weak in all extremities
- *Sensory Exam*
  - Sensation intact to light touch in all extremities
- *Reflexes*
  - Reflexes 2+, symmetrical
  - No Hoffman's sign
  - Toes downgoing
- *Cerebellar/Gait exam*
  - Mild dysmetria bilaterally on finger-nose test
  - Gait Deferred









PATIENT WITH SATISFACTORY EVOLUTION: NOT SURGERY

## CONCLUSIONS

In patients with deteriorating cerebellar infarcts a repeat neuroimaging Study usually identifies the cause of worsening and is very helpful usually Identifies the cause of worsening and is very in guiding the use of Surgical interventions.

### ***Space-occupying Cerebellar Infarcts is a Neurosurgical Pathology***

Close monitoring for 3-4 days is warranted in cases of large cerebellar infarcts and multifocal posterior circulation ischaemia.

Neuroimaging with MRI/dw-MRI/MR-angio should be liberally used in suspected cerebellar infarcts, because findings usually influence therapy.



Thank you

