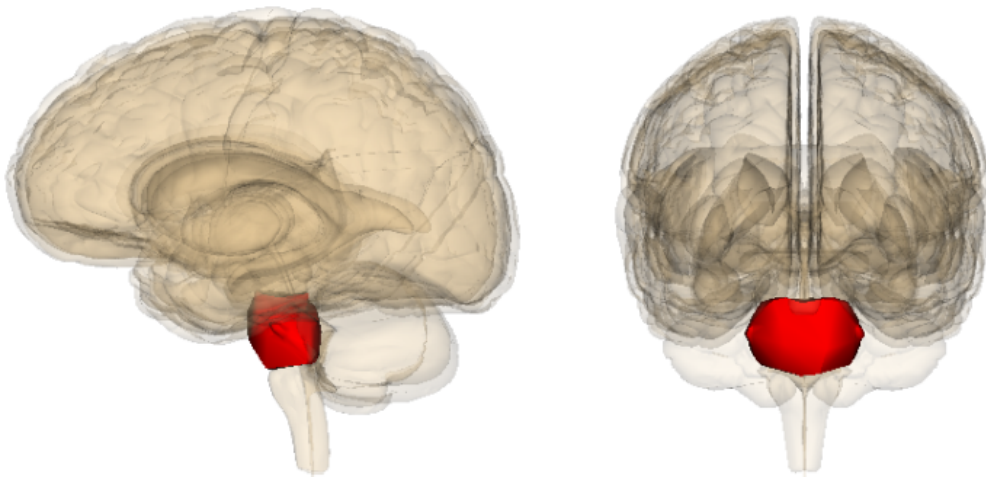


Medial and Lateral Pontine Syndrome, Superior Cerebellar Artery Syndrome, Parinaud's Syndrome, Weber's Syndrome

[See online here](#)

In the following article, you will learn how to differentiate between medial and lateral pontine syndrome, superior cerebellar artery syndrome, Parinaud's syndrome and Weber's syndrome, what their main characteristics are and where the site of lesion is to be expected.



Medial Pontine Syndrome

This condition is also known as **Foville's syndrome**, caused by the **blockage of the paramedian and the short circumferential branches of the basilar artery**. The part of the brain affected is the **pons**. The structures of the pons affected by the blockage are:

- The corticospinal tract which results in **contralateral hemiparesis**.
- The medial lemniscus which causes **disruption of the posterior column-medial lemniscus pathway**. This causes contralateral loss of the tactile and vibration sensations.
- Abducent nerve nucleus causing **paralysis of the ipsilateral lateral rectus muscle**. This causes **strabismus**.
- Facial nerve nucleus causing **weakness of the facial muscles on the ipsilateral side**. This is due to involvement of the corticobulbar tract.

Lateral Pontine Syndrome

It is also known as **Marie-Foix syndrome**, caused by the **blockage of the long circumferential branches of the basilar artery and the anterior inferior cerebellar artery**, causing a **lesion in the pons**. The structures within the pons which are affected by this lesion are:

- The lateral spinothalamic tract causing **contralateral loss of pain and temperature sensations** of the trunk and the limbs.
- The corticospinal tract causing **contralateral weakness of the extremities**.
- The spinal trigeminal tract and nucleus resulting in **ipsilateral loss of pain and temperature sensations of the face**.
- The vestibular nuclei causing **vertigo, nausea, and vomiting**.
- The cochlear nuclei resulting in the **loss of hearing sensation**.
- The cerebellar tracts causing **ipsilateral ataxic gait**.
- The descending sympathetic tract causing **ipsilateral ptosis, miosis and anhidrosis (ipsilateral Horner's syndrome)**.

Superior Cerebellar Artery Syndrome

This rare disorder is caused by the **blockage of the superior cerebellar artery**.

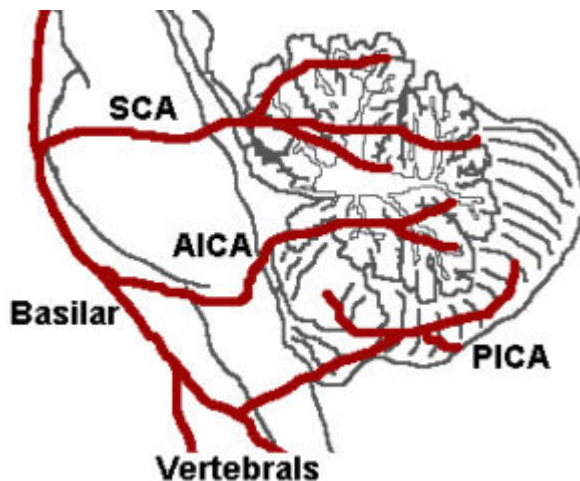


Image: "Branches of the basilar artery: SCA - superior cerebellar artery, AICA - anterior inferior cerebellar artery, PICA - posterior inferior cerebellar artery." by Semiconscious. License: Public Domain

Clinically, it is difficult to differentiate this syndrome from the posterior inferior cerebellar artery syndrome and the anterior inferior cerebellar artery syndrome. The diagnosis is confirmed with **MRI**. This disease results in:

- Contralateral loss of touch and pain sensation from the body
- Nausea and vomiting
- Slurred speech
- Cerebellar ataxias

Parinaud's Syndrome

It is also known as **dorsal midbrain syndrome**, mainly caused by the **tumor of the**

pineal gland which suppresses the rostral interstitial nucleus of medial longitudinal fasciculus. It is also associated with **multiple sclerosis** in the young females, **AV malformation, obstructive hydrocephalus** and **stroke** in older patients. This syndrome is characterized by:



Image: "The shaded area shows the site of lesion in Parinaud's syndrome." by Madhero88 - Own work.
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- Paralysis of the upward gaze while downward gaze is preserved
- Retraction of the eyelid, also known as **Collier's sign**
- '**Setting-sun sign**' which is the conjugate downward gaze
- **Pseudo-Argyll Robertson pupils**, i.e., pupils do not react to light but may accommodate
- '**See-saw nystagmus**'
- The condition is often associated with **bilateral papilledema**.

A thorough workup of the causes of this syndrome through **neuro-imaging** such as MRI brain is essential before proceeding to any management plan.

It needs to be differentiated from other clinical conditions such as **pineal cyst**, **Niemann-Pick disease**, **Wilson's disease**, and **hydrocephalus**.

Weber's Syndrome

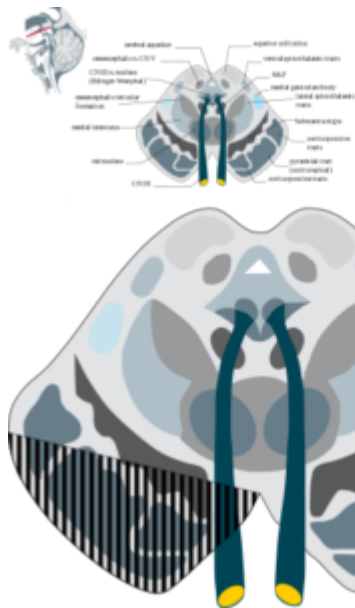


Image: "The shaded area shows the site of lesion in Weber's syndrome." by Madhero88 - Own work.
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It is usually caused by a **unilateral lesion in the midbrain** due to **occlusion of the paramedian branches of the basilar artery**. The structures of the midbrain affected by their presenting symptoms are as follows:

- **Substantia nigra** causing contralateral movement disorders (**Parkinsonism**) as the dopaminergic fibers innervate the contralateral hemisphere motor area.
- **Corticospinal fibers** causing contralateral hemiparesis and upper motor neuron signs.
- **Corticobulbar tract** resulting in contralateral facial muscles weakness and hypoglossal nerve dysfunction.
- **Oculomotor nerve fibers** causing ipsilateral oculomotor nerve palsy. There's **diplopia** due to fixed wide pupil pointing down and out along with **drooping of the eyelid**.

The infants born with Weber's syndrome may develop **convulsive disorders** during the first year of their lives. They have **lower intellect** and become **resistant to the treatment**.

They have a **large port-wine stain on the forehead and on one upper eyelid** due to the abundance of capillaries over the ophthalmic branch of the trigeminal nerve.

Other symptoms include **developmental delays** and **increased intra-ocular pressure** causing **glaucoma**.

Treatment options for Weber's syndrome

- **Laser treatment** to remove the port-wine birthmark
- **Anticonvulsant drugs** to treat seizure disorders
- **Monitoring of glaucoma** and **surgical intervention** if required
- **Physical therapy for muscle weakness** and **educational therapy** for patients with mental delays
- **Brain surgery** for the removal of affected parts

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