Claude’s Syndrome

Claude’s syndrome is a well-known midbrain syndrome characterized by ipsilateral oculomotor nerve palsy and contralateral cerebellar ataxia. This syndrome is very rare; only a few cases have been reported since Claude’s original description in 1912.

Claude’s Syndrome Localization

Claude’s syndrome is the simultaneous involvement of the cerebellar efferent fibers to the thalamus and the oculomotor nerve fascicles.

Claude’s case had a midbrain infarction that involved the medial half of the red nucleus and the region of the decussation of the superior cerebellar peduncle.
MRI in six patients had lesions in the midbrain below the red nucleus.

The lesion responsible for Claude’s syndrome localized to the superior cerebellar peduncle, below and medial to the red nucleus.

Figure 1. MRI: Claude’s Syndrome right paramedian midbrain infarct.
Figure 2. MRI: Claude’s Syndrome right paramedian midbrain infarct
Third Nerve Nucleus
(B) Edinger–Westphal nucleus (parasympathetics)

- Dorsal nuclei (inferior rectus)
- Medial nuclei (superior rectus)
- Central caudal nucleus (levator palpebrae superior)

- Trochlear nuclei (superior oblique)
### TABLE 13.2 Subnuclei of the Oculomotor Nucleus (CN III) and Their Functions

<table>
<thead>
<tr>
<th>SUBNUCLEUS</th>
<th>MUSCLES INNERVATED</th>
<th>SIDE INNERVATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal</td>
<td>Inferior rectus</td>
<td>Ipsilateral</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Inferior oblique</td>
<td>Ipsilateral</td>
</tr>
<tr>
<td>Ventral</td>
<td>Medial rectus</td>
<td>Ipsilateral</td>
</tr>
<tr>
<td>Edinger–Westphal (parasympathetic)</td>
<td>Pupillary constrictors and lens ciliary muscles</td>
<td>Bilateral</td>
</tr>
<tr>
<td>Central caudal</td>
<td>Levator palpebrae superior</td>
<td>Bilateral</td>
</tr>
<tr>
<td>Medial</td>
<td>Superior rectus</td>
<td>Contralateral</td>
</tr>
</tbody>
</table>

*Subnuclei are color coded with Figure 13.3.*
Diagram of the Midbrain
Third Nerve

Midbrain Syndromes

Weber’s syndrome: ipsilateral third nerve palsy, plus contralateral hemiparesis including the lower face and tongue due to involvement of the cerebral peduncle.

Benedikt’s syndrome: Ipsilateral third nerve palsy, plus contralateral tremor due to involvement of the red nucleus.
Third Nerve

**Nothnagel’s syndrome:** Ipsilateral third nerve palsy, plus ipsilateral cerebellar ataxia due to involvement of the superior cerebellar peduncle.

**Claude’s syndrome:** Ipsilateral third nerve palsy (often partial) plus contralateral ataxia, asynergy, and dysdiadochokinesis due to involvement of the red nucleus and superior cerebellar peduncle.
References


References


MRI Images courtesy of Sarah Sheikh, BM, BCh, MRCP