

Multiple Cranial Nerve Lesions

Updated: September 25, 2009

Syndrome	Cranial nerves												Associated lesions
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
EXTRAPARENCHYMAL													
Foix (superior orbital fissure)			+	+	V ₁	+							
Tolosa-Hunt (lateral wall of cavernous sinus)			+	+	V ₁	+							
Jacod (retro-sphenoid space)		+	+	+	+	+							
Marcus Gunn			+		+								
Gradenigo (apex of petrous bone)					+	+	±	±					
internal auditory meatus							+	+					
pontocerebellar angle					+		+	+	±	±			ataxia
Vernet (jugular foramen)									+	+	+		
Collet-Sicard (retropharyngeal, posterior laterocondylar space)									+	+	+	+	
Villaret (posterior retroparotid space)									+	+	+	+	Horner's syndrome
Tapia										+		+	

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INTRAPARENCHYMAL													
Jackson										+	+	+	
Schmidt										+	+		
Weber (ventral midbrain syndrome)			+				+ ³						<i>cerebral peduncle (CHP)</i>
Claude			+										<i>red nucleus or dentato-rubro-thalamic tract</i>
Benedikt			+										<i>red nucleus, cerebral peduncle (CHP)</i>
Nothnagel			+										ipsilateral cerebellar ataxia, dizziness, staggering and rolling gait, often nystagmus
central midbrain syndrome			+										<i>red nucleus, subst. nigra, medial lemniscus</i>
Foville						+							CHP
Millard-Gubler							+						CHP
medial medullary syndrome												+	CHP, <i>medial lemniscus</i>
medial pontine syndrome							+						CHP, <i>medial lemniscus, MLF (internuclear ophthalmoplegia), cerebellar connections</i>
Wallenberg (lateral medullary syndrome)								+ ¹	+	+			lateral medullopontine structures: <i>tr. spinothalamicus, tr. reticulospinalis (sympathetic fibers), vestibular connections, inf. cerebellar peduncle</i>
lateral inferior pontine syndrome					+ ²			+	+				
lateral superior pontine syndrome													
pseudobulbar paralysis									+	+	+		+
bulbar paralysis										+	+		+

CHP - contralateral hemiplegia ¹only nucl. tractus solitarii (taste) ²nucl. sensorii of CN5 ³supranuclear CN7 palsy

INTRAPARENCHYMAL lesions - ***crossed*** sensory or motor paralysis (cranial nerve signs on one side of body and tract signs on opposite side).

Lesions on BRAINSTEM SURFACE:

- involvement of ***adjacent*** cranial nerves (often occurring in succession);
- late and rather slight involvement of ***long pathways*** (sensory and motor) and segmental structures lying within brainstem.

EXTRA-AXIAL lesions - likely to cause ***bone erosion*** (e.g. enlargement of foramina of exit of cranial nerves); causes of multiple extra-axial cranial nerves involvement:

- 1) diabetes
- 2) trauma
- 3) tumors
- 4) localized infections (e.g. herpes zoster)
- 5) granulomatous disease (e.g. Wegener's granulomatosis), Behçet's disease, sarcoidosis, chronic glandular tuberculosis (scrofula)
- 6) enlarging saccular aneurysms
- 7) platybasia, basilar skull invagination, Chiari malformation.

IDIOPATHIC MULTIPLE CRANIAL NERVE INVOLVEMENT

- on one or both sides of face.
- subacute onset of boring facial ***pain*** → ***paralysis*** of motor cranial nerves.
- clinical features overlap those of *Tolosa-Hunt syndrome*.
- frequently responsive to **steroids**.

Bibliography for ch. "Cranial Neuropathies" → follow this [LINK >>](#)

Viktor's NotesSM for the Neurosurgery Resident
Please visit website at www.NeurosurgeryResident.net