

# Knowing Your Nerves is Worth – Pictorial Review on Cranial Nerves Dysfunction

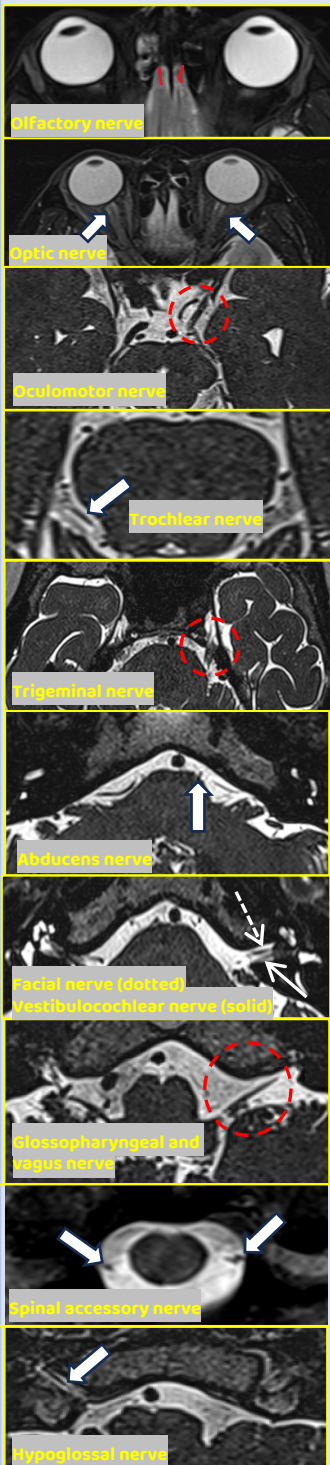
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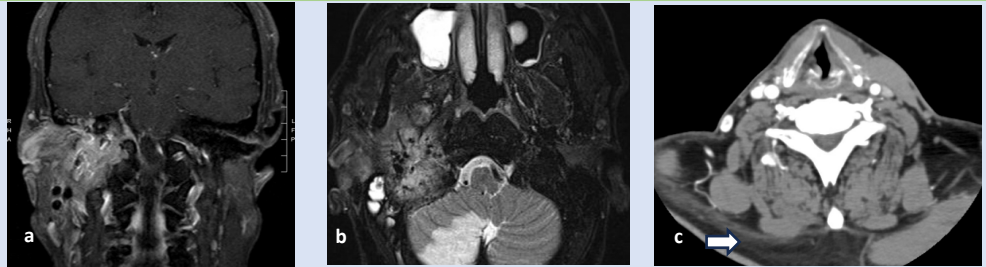
**Objectives:** To illustrate location of the 12 pairs of cranial nerves (CNs), discuss the common pathologies resulting in cranial nerve dysfunction. Therefore helps establish a targeted approach based on patient's presentation.

**Method:** Retrospective review of imaging of patient presenting with cranial nerve palsy/dysfunction on clinical information. Studies with positive findings from 2018-2024 are reviewed and selected for discussion.

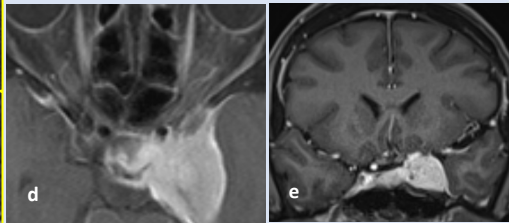
## Cranial Nerves on 3T MRI



## Neoplasm



(a,b) T1+C and T2 MRI showing a highly vascularised **glomus jugulare**. Carotid space and hypoglossal canal are involved. (c) Atrophy of tongue (not shown), right sternocleidomastoid and trapezius muscles are noted, suggestive of spinal accessory and hypoglossal nerve involvement.



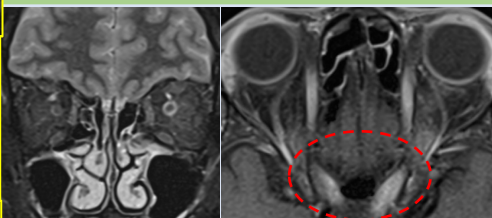
(d,e) **Skull base meningioma** encasing cavernous sinus and orbital fissure, causing multiple CNs palsy with clinically noted ptosis and ophthalmoplegia.

## Perineural metastases



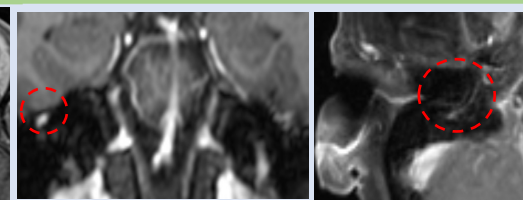
T4 **Nasopharyngeal carcinoma** with perineural metastases along trigeminal nerves after invasion into pterygopalatine fossa.

## Inflammation



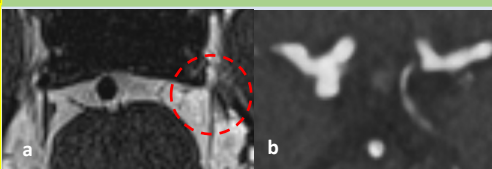
**Optic Neuritis**. MRI shows bilateral swollen optic nerve (L>R) with STIR hyperintense signal and contrast enhancement extending to optic chiasm.

## Infection



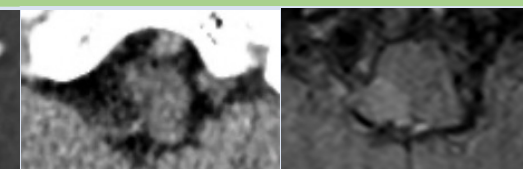
Clinically known **Ramsay Hunt syndrome** from varicella infection. MRI shows abnormal enhancement of R facial nerve from geniculate ganglion to below.

## Vascular



(a) Clinical trigeminal neuralgia with MRI proven CN5 compression from **superior cerebellar artery vascular loop**.  
(b) Clinical R oculomotor nerve palsy from **PComA aneurysm** compression.

## Ischemia



Case of **right VA dissection** with acute ischemic change over right side of medulla. Clinically with ipsilateral vestibulocerebellar symptoms and vagus nerve palsy.

## Conclusion

Cranial nerve dysfunction is a common presentation of various benign and malignant pathologies. Single or multiple CNs palsy can both be encountered clinically. Active search of abnormalities along course of CNs plays an important role in guiding clinical management.