

AMSER Case of the Month

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A 58-year-old female presents with 9 months of
worsening left facial paresthesia

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Patient Presentation

HPI:

- Patient presented to otolaryngology 9 month after gradual onset of tingling and numbness of the left perioral region, buccal mucosa, and inferior gingival mucosa
- Endorsed increased frequency of biting left cheek while eating
- Denies inciting illness, trauma, dysphagia, trismus, hearing loss, otalgia, or facial weakness/asymmetry

PMH/PSH:

- Colon polyp, uterine fibroids
- No surgical history

Physical Exam:

- Diminished sensation to light touch in distribution of cranial nerve V2 and V3
- Otherwise, normal neurologic exam

Patient Presentation (continued)

Medications:

- Tirzepatide

Social History:

- 6 pack year smoking history; stopped 15 years ago

Family History:

- No family history of neurologic disorders or malignancies

Pertinent labs:

- None

What Imaging Should We Order?

Relevant ACR Appropriateness Criteria

Variants

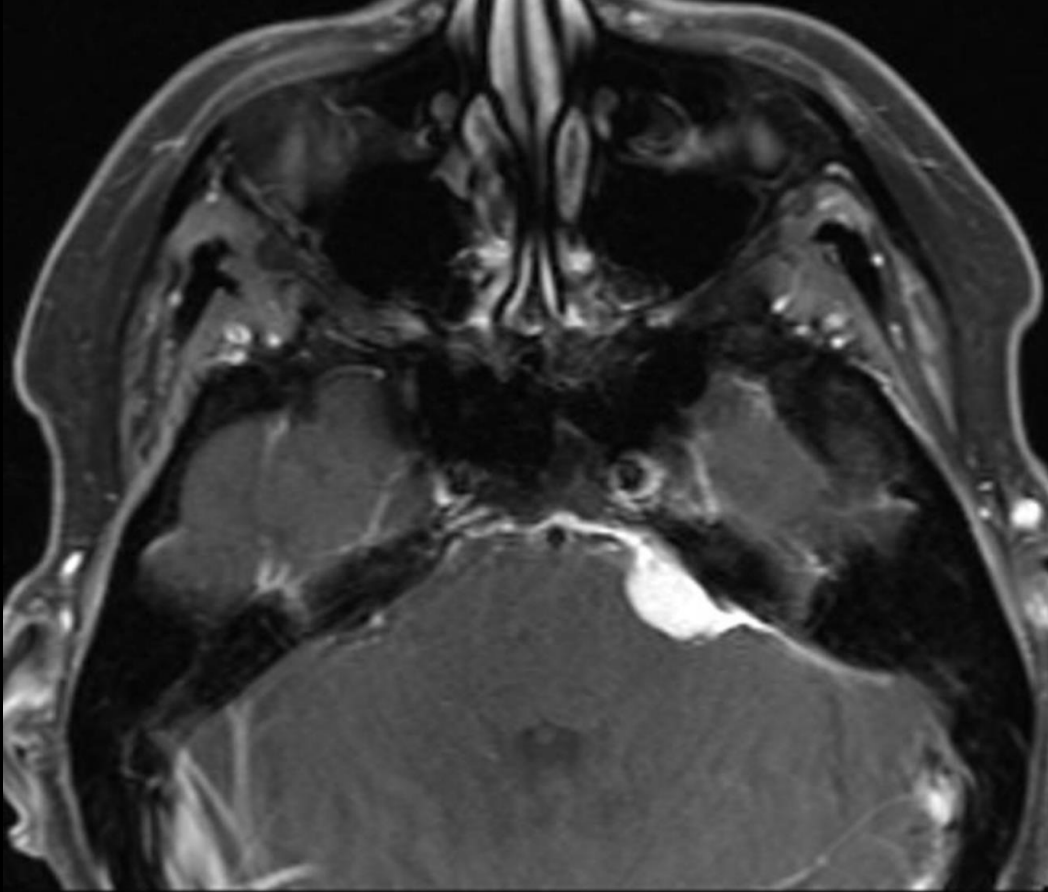
1. **Unilateral isolated weakness of the mastication muscles, paralysis of the mastication muscles, sensory abnormalities of the face and head, facial numbness, or trigeminal neuralgia (trigeminal nerve, CN V). Initial imaging.**

Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Head and face sensory abnormalities, unilateral, isolated, initial imaging	3195212	● MRI head without and with IV contrast	0 mSv O	0 mSv [ped] O	Usually appropriate
		● MRI orbits face neck without and with IV contrast	0 mSv O	0 mSv [ped] O	Usually appropriate
		● MRA head with IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		● MRA head without and with IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		● MRA head without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		● MRI head without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate (Disagreement)
		● MRI orbits face neck without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		● CT maxillofacial with IV contrast	0.1-1mSv ☼☼☼	0.3-3 mSv [ped] ☼☼☼	May be appropriate
		● CT maxillofacial without IV contrast	0.1-1mSv ☼☼☼	0.3-3 mSv [ped] ☼☼☼	May be appropriate
		● US neck	0 mSv O	0 mSv [ped] O	Usually not appropriate
		● MRI head with IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
		● MRI orbits face neck with IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
		● CT head with IV contrast	1-10 mSv ☼☼☼	0.3-3 mSv [ped] ☼☼☼	Usually not appropriate

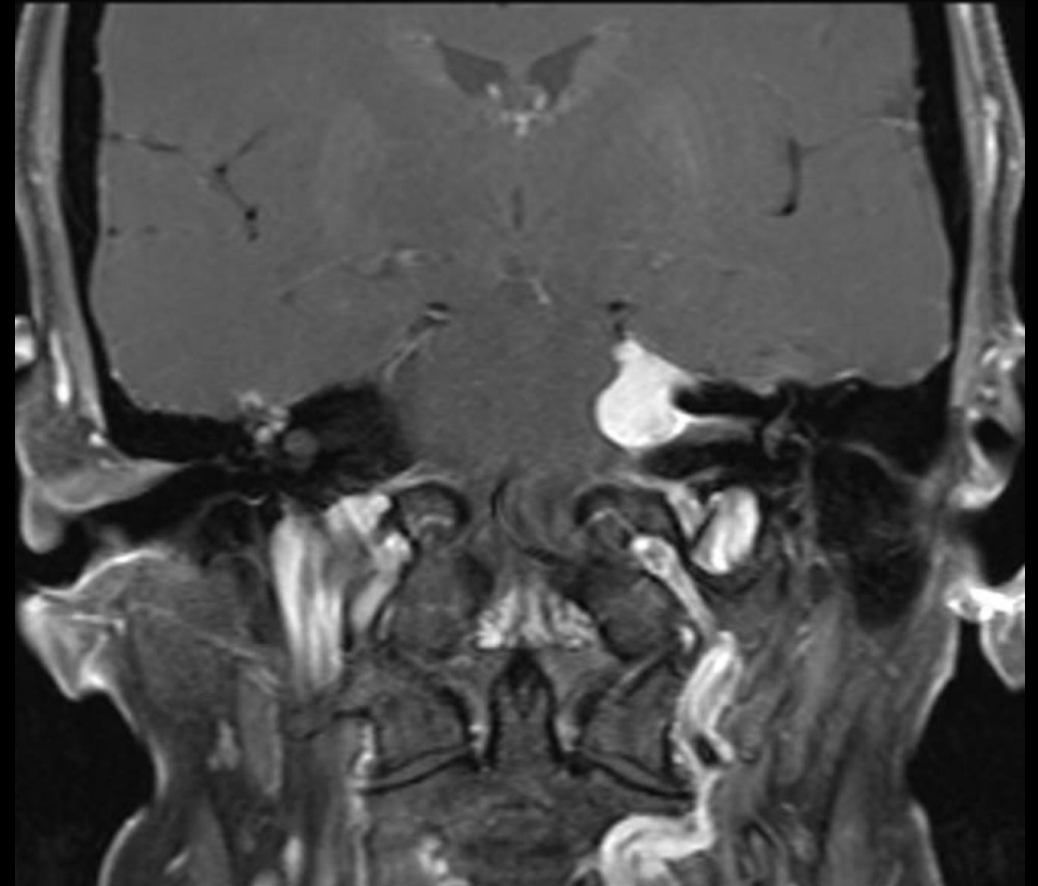
This imaging modality was ordered by the otolaryngologist

Findings (unlabeled)

Axial T1 FS + C



Coronal T1 FS + C

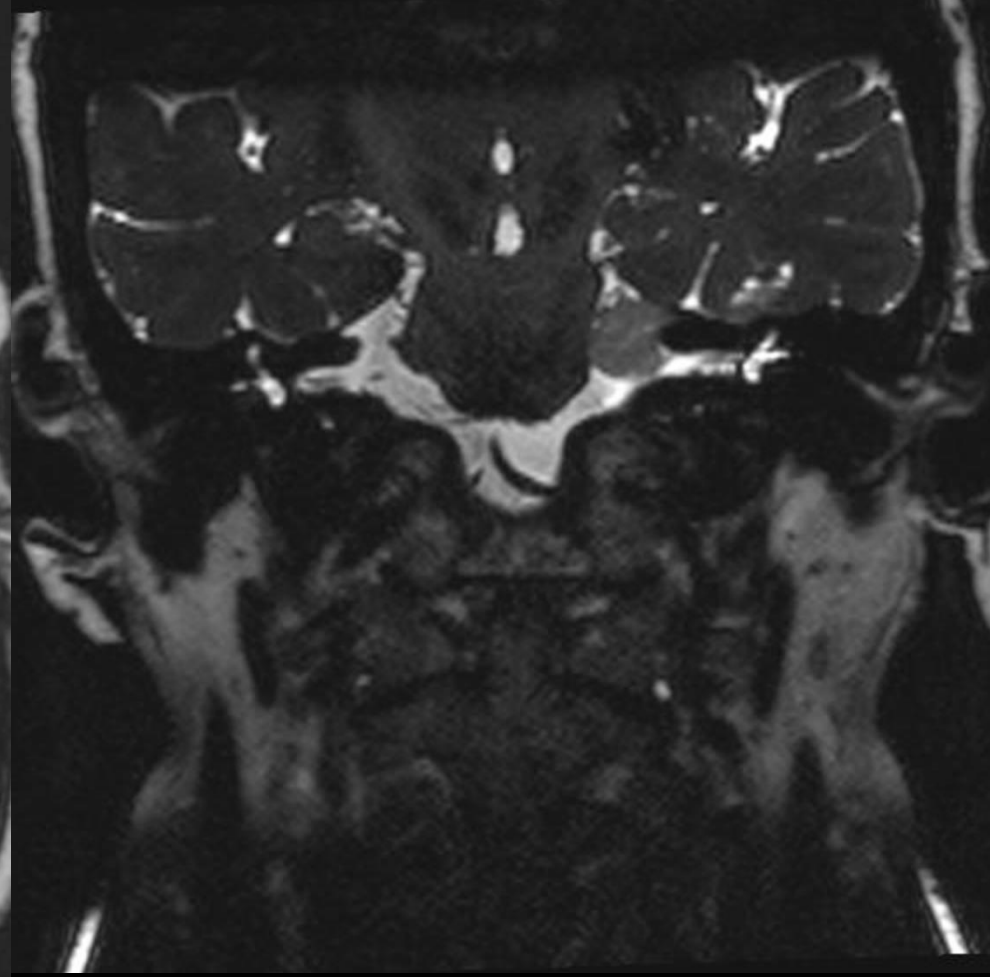


Findings (unlabeled)

Axial T2 3D SPACE

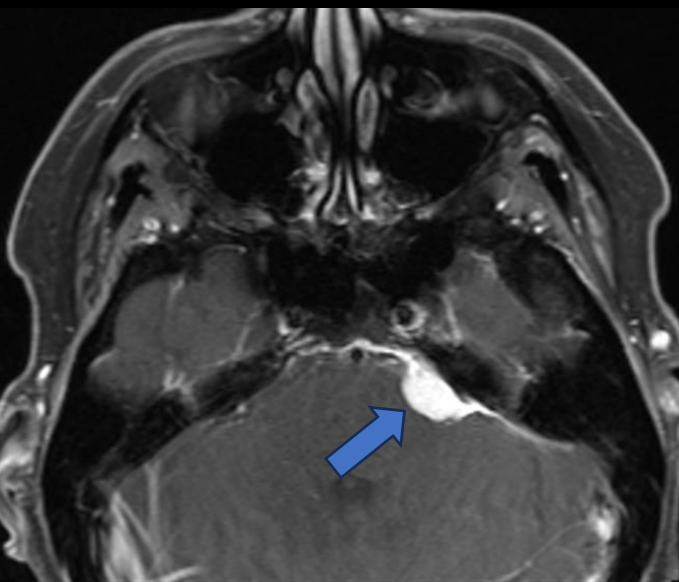


Coronal T2 3D SPACE

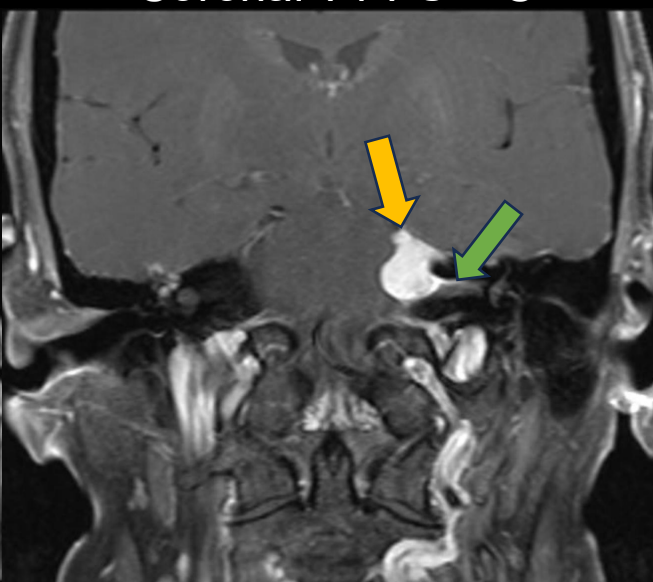


Findings: (labeled)

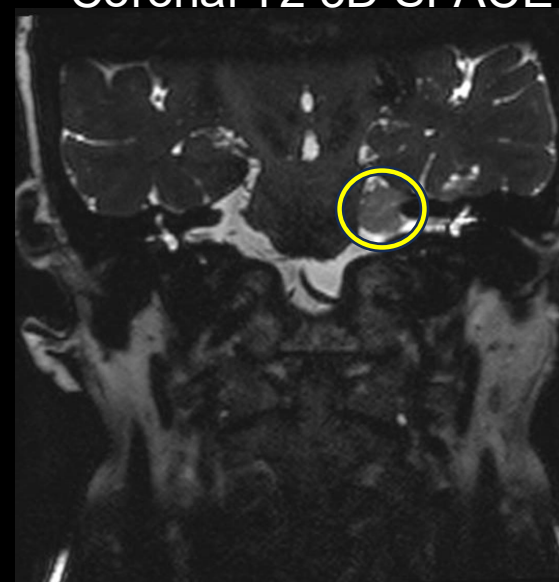
Axial T1 FS + C



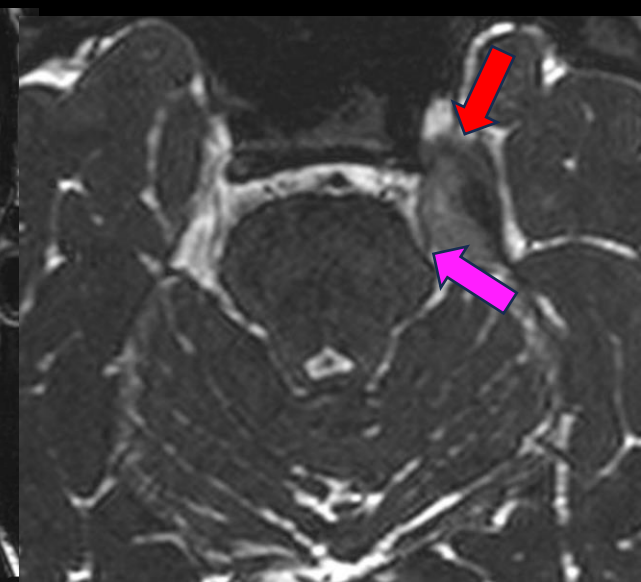
Coronal T1 FS + C



Coronal T2 3D SPACE



Axial T2 3D SPACE



- 2.3x0.9x1.6 cm, avidly gadolinium-enhancing left cerebellopontine angle dural-based mass
- Superior extension to tentorium with dural tail
- Mass is hypointense on T2 sequencing
- Mass extends anteriorly into left Meckel's cave with mass effect on CN V

Final Dx:

Left Cerebellopontine Angle Meningioma w/ Extension
into Meckel's Cave

Case Discussion: Meningioma

Background

- Meningiomas are the most common primary intracranial tumor, with female predominance¹
- Majority are benign (WHO Grade I), with minority of cases being classified as atypical (WHO II) or anaplastic (WHO III)
- Treatment options include observation, radiotherapy, and surgery depending on position and symptoms^{1, 2}
- Symptomatic meningiomas are predominantly related to mass effect
- Can occur anywhere within the CNS, and may occur ectopically outside the CNS as well³

Pathology and Epidemiology

- Arise from meningotheial cells within the arachnoid mater, pia mater, and/or subarachnoid space trabeculae and septae
- Prominent risk factors include ionizing radiation, obesity, neurofibromatosis type 2

Case Discussion: Cerebellopontine Angle Tumors

Anatomy

- The cerebellopontine angle (CPA) contains the CPA cistern, which cranial nerves V, VI, VII, and VIII traverse
- Cranial nerves IX, X, and XI traverse the inferior portion of the CPA⁴

Epidemiology

- CPA tumors are responsible for 5-10% of all intracranial tumors
- The most common CPA tumors are vestibular schwannomas, meningiomas, and epidermoid cysts^{3, 4}
 - 5-15% of all CPA tumors are meningiomas⁴

Symptoms

- Hearing loss, ataxia, headache, vertigo are the most common presenting symptoms
- 23% of patients report facial numbness, and 14% report facial pain¹

Case Discussion: Imaging and Case Conclusion

Imaging

- MRI is the modality of choice for visualizing all cerebellopontine angle lesions
- Meningioma specific characteristics include:
 - Usually Isointense compared to brain tissue on T1 weighted MRI
 - Variability in density on T2 weighted MRI (range from hypointense to slightly hyperintense)
 - Strong, homogenous gadolinium enhancement
 - Possible calcifications
 - Visualization of a dural tail
- These factors can help differentiate a CPA meningioma from schwannomas and epidermoid tumors⁵

Conclusion

- CPA tumors have variable presentations, and may be nonspecific as represented by this patient's facial paresthesia
- Recognition of MRI as the preferred initial imaging modality in evaluation of facial paresthesia can help properly identify CPA tumors of various etiologies

References:

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2. Mehta NH, Patel RV, Gupta S, et al. Cerebellopontine Angle Meningiomas: A multi-institutional cohort study. *Neurosurgery*. 2024;97(1):105-111. doi:10.1227/neu.00000000000003258
3. Ogasawara C, Philbrick BD, Adamson DC. Meningioma: A review of epidemiology, pathology, diagnosis, treatment, and future directions. *Biomedicines*. 2021;9(3):319. doi:10.3390/biomedicines9030319
4. Samii M, Gerganov V. Tumors of the Cerebellopontine Angle. *Handbook of Clinical Neurology*. 2012;105:633-639. doi:10.1016/b978-0-444-53502-3.00013-6
5. Zamani AA. Cerebellopontine angle tumors: Role of magnetic resonance imaging. *Topics in Magnetic Resonance Imaging*. 2000;11(2):98-107. doi:10.1097/00002142-200004000-00005