



**GRAND ROUNDS DECEMBER 3, 2009**

**STATE UNIVERSITY OF NEW YORK  
DOWNSTATE MEDICAL CENTER**

**Ramanath Bhandari, MD**

## CASE PRESENTATION

- 62 yo female presents with foreign body sensation and irritation of the right eye for the last 6 weeks presents as referral from primary care medicine. Pt. also reports subjective changes in hearing.
- Pt. reports her symptoms have been ongoing for the past 6 years, and has recently arrived from Jamaica.
- Pmhx: Hypertension, Hypercholesterolemia
- Pohx: denies
- Meds: recently started hydrochlorothiazide, zocor, aspirin.
- Allergies: NKDA

## CASE PRESENTATION

- Dvasc: 20/20 ou
- Tapp: 16,16
- EOM: Full OU, No diplopia
- CVF: grossly full OU
- Pupils: 3-2mm OD, 5-3mm OS in room light  
4-2mm OD, 7-5mm OS in dark room
- SLE
  - LLA: See picture
  - CS: w/q ou
  - K: clear ou
  - AC: quiet ou
  - IP: intact OU
  - L: 1-2+NS OU

## CASE PRESENTATION

- DFE:
  - V: Clear OU
  - D: 0.35 c/d ratio OU
  - M: Flat OU
  - V: mild arteriole attenuation OU
  - P: wnl ou.

# COLOR PHOTOGRAPH



**Practice Based Learning Improvement**

# COLOR PHOTOGRAPH



**Practice Based Learning Improvement**



## DIFFERENTIAL DIAGNOSIS:

- Facial Nerve Paralysis
- Cerebello-Pontine Angle Mass
- Epstein Barr-Virus Infection
- Lyme Disease
- Herpes Virus
- Syphilis
- Sarcoidosis
- Collagen Vascular Disease
- HIV
- Parotid Tumor
- Trauma

## FURTHER WORK UP OF OUR PATIENT?

- HIV testing.
- Lyme Titers.
- HSV titers
- ESR and CRP
- RPR, VDRL
- ACE level, Lysozyme, Chest X-ray
- MRI of Brain with and without contrast focus on cerebello-pontine Angle



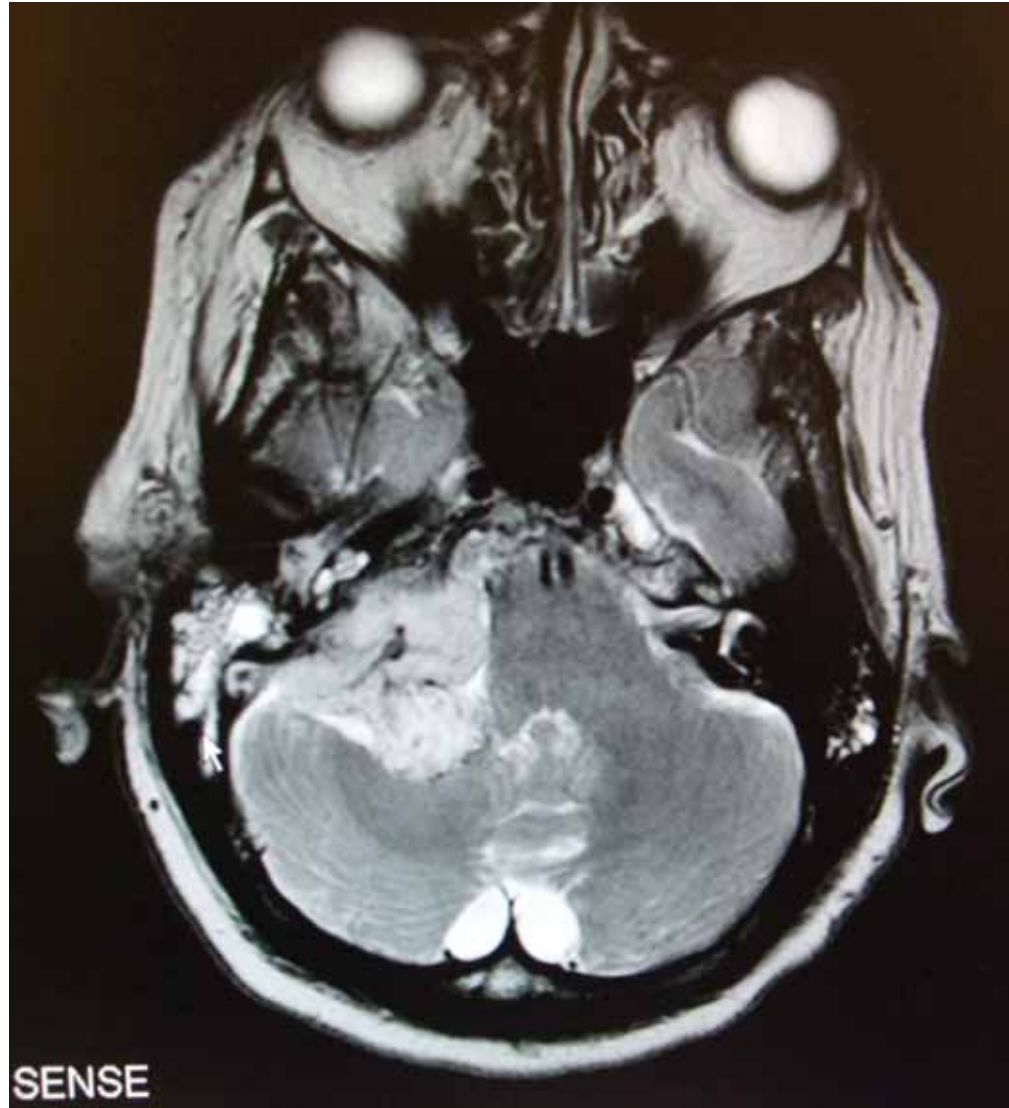
## WORK UP COMPLETED

- HIV – negative
- Lyme Titers: WNL
- HSV titers, IgG positive, IgM negative
- RPR, VDRL – non-reactive
- ESR: 26 (wnl), CRP: 1.5 (wnl)
- ACE, Lysozyme and CXR: wnl
- MRI see Images:

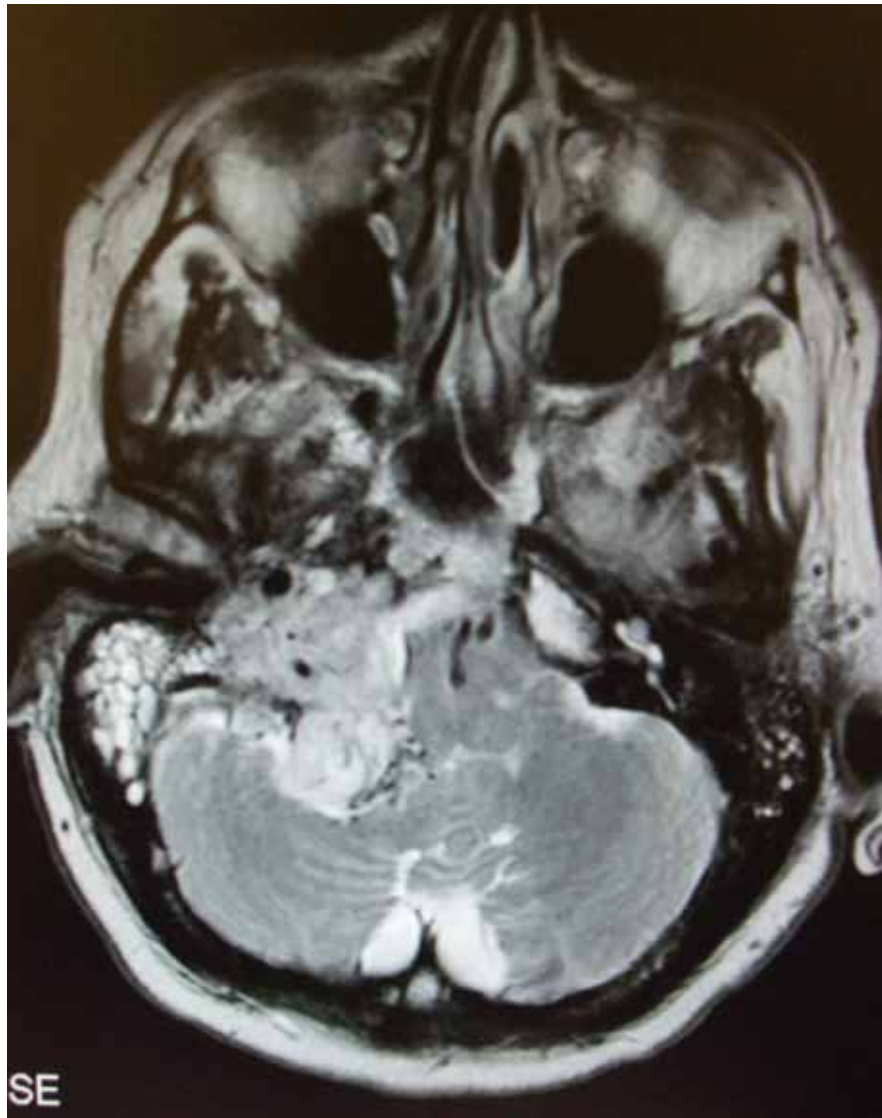
# MRI IMAGES:



# MRI IMAGES:



# MRI IMAGES:



# MRI IMAGES:



## MRI REPORT:

- Extra-axial mass demonstrating heterogeneous high signal on T2 weighted images and intermediate signal on T1 weighted images extends from the right cerebellopontine angle, internal auditory canal, middle ear, and jugular foramen.
- The right internal carotid artery is encased by this mass in its high cervical segment.
- There is mild mass effect on the pons and medulla.
- Findings as above suggest glomus jugulotympanicum tumor.

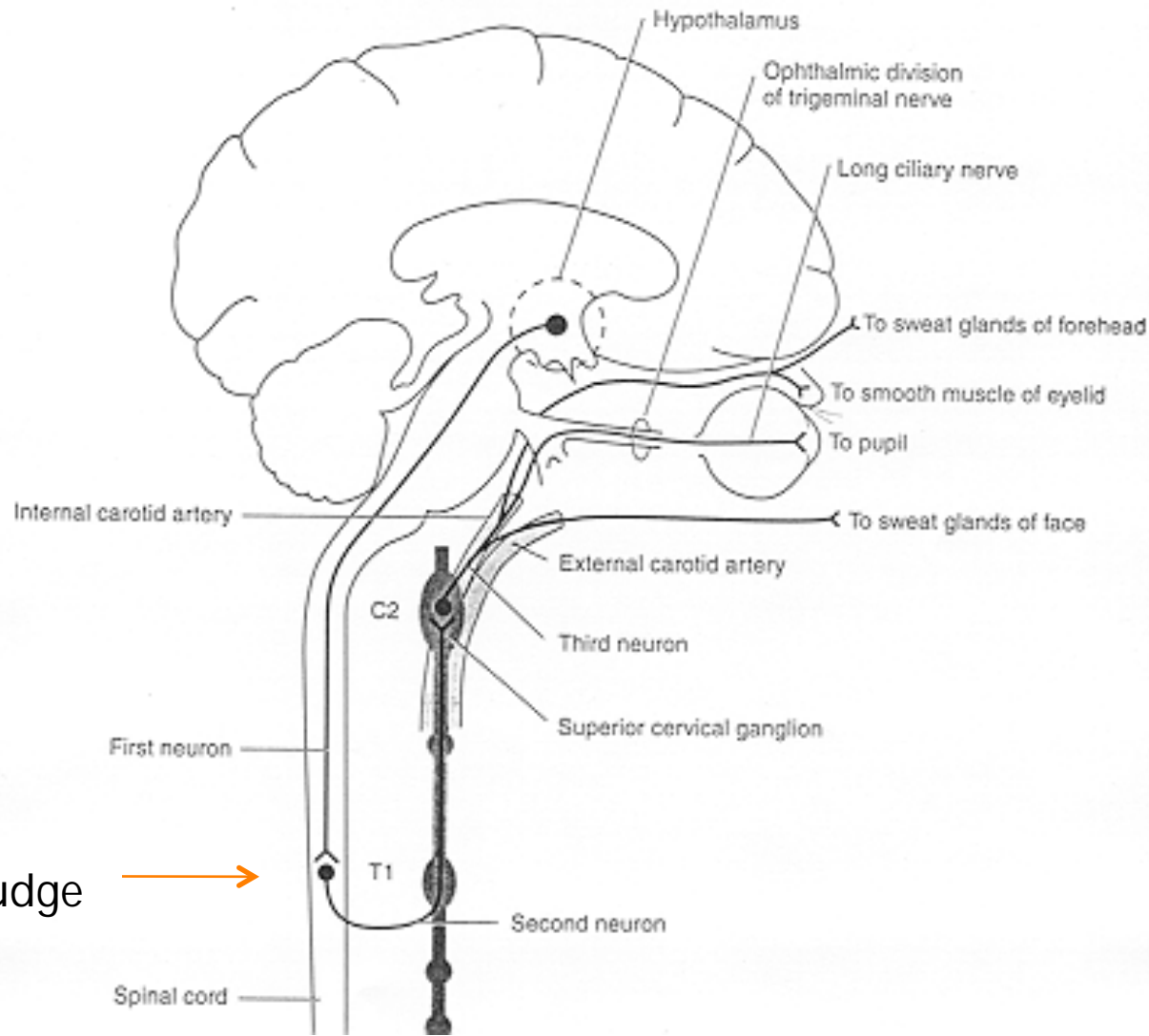
Differential diagnosis also includes meningioma and other vascular extra-axial tumors.



## PUPIL FINDINGS:

- What is the reason for the Pupil findings in this patient?
- 3-2mm OD and 5-3mm OS in room light  
4-2mm OD and 7-5mm OS in dark room

# SYMPATHETIC PATHWAY:

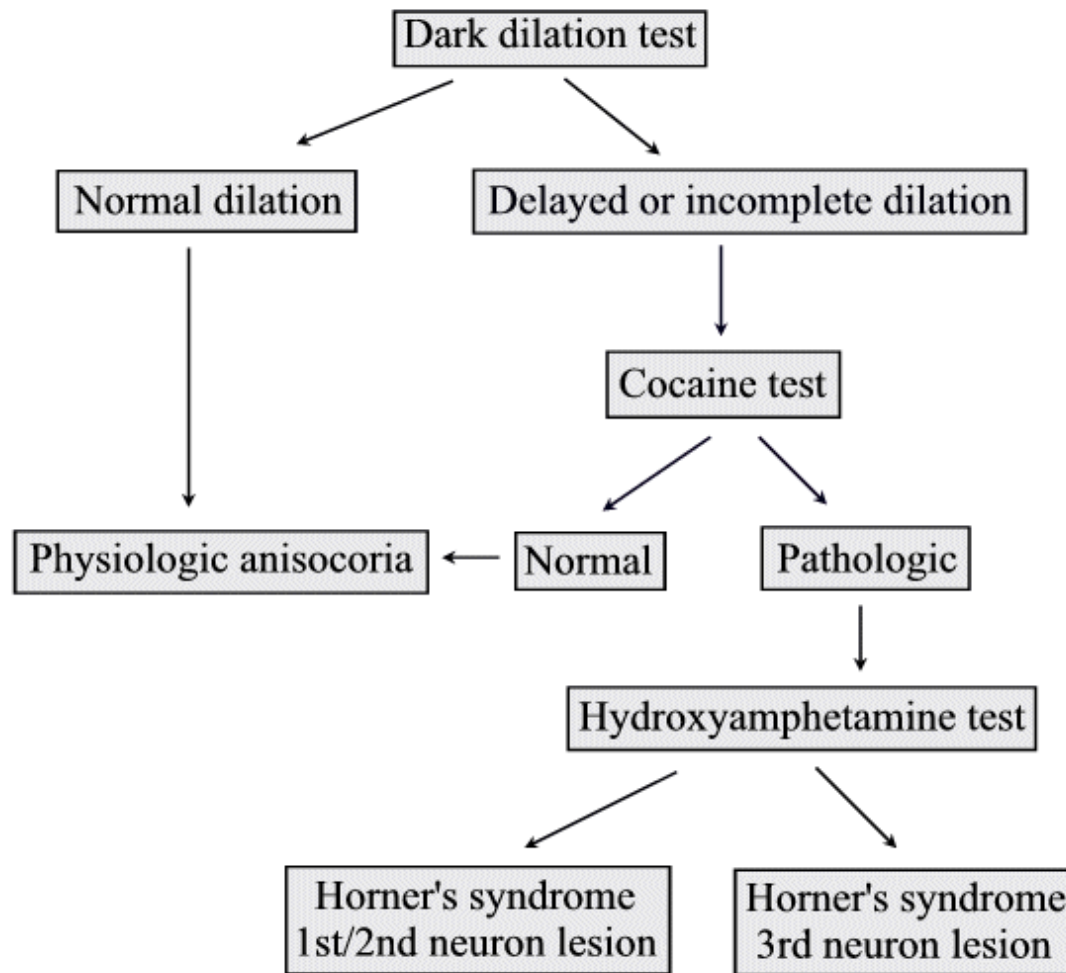


Nucleus of Budge





# ANISOCORIA AND PHARMACOLOGIC TEST IN HORNER'S SYNDROME:



## GLOMUS TUMOR:

- Estimated Incidence of 1/30,000.
- Benign Tumor of the paraganglionic system also known as chemodectomas or paragangliomas
- 80% are sporadic, 20% may be inherited as an autosomal dominant trait.
- Familial forms tend to be bilateral.
- Malignant glomus tumors are rare.
- Early tumors may present with symptoms related to the middle ear cleft (i.e. pulsatile tinnitus or conductive hearing loss).
- Head and Neck glomus tumors tend to be derived from the parasympathetic system as opposed to the sympathetic paragangliomas seen in NF I, MEN 2A and VHL.



## GLOMUS TUMOR

- 2% of Glomus Tumor secrete clinically significant levels of catecholamines.
- These patients may have facial flushing, tachycardia, labile hypertension.
- These tumors are highly vascular as demonstrated on MRI and CT angiography.
- Tumors have a propensity to grow and must be proactively treated even though the majority are benign.
- Endovascular Embolization is commonly used prior to resection or radiation therapy.



## OUR PATIENT'S COURSE:

- Our patient was referred to ENT and Neurosurgery
- ENT surgeons were able to visualize a pulsatile mass behind the tympanic membrane.
- The patient was diagnosed with a glomus tumor.
- It was decided that our patient would first undergo a neuro-interventional procedure prior to resection of the tumor.



## DR. SUNDEEP MANGLA

- Director of Interventional Neuroradiology
- Associate Professor of Radiology, Neurosurgery and Neurology
- Diplomate, American Board of Radiology and National Board of Medical Examiners
- He has served on the faculty of Columbia University, Cornell University and Yale University School of Medicine
- He completed fellowships in Interventional Neuroradiology at Yale-New Haven Medical Center and University of Iowa Hospital and Clinics.



Professionalism



PATIENT S.N.

Right Neck/Skull Base  
Neoplasm  
Paraganglioma/Glomus

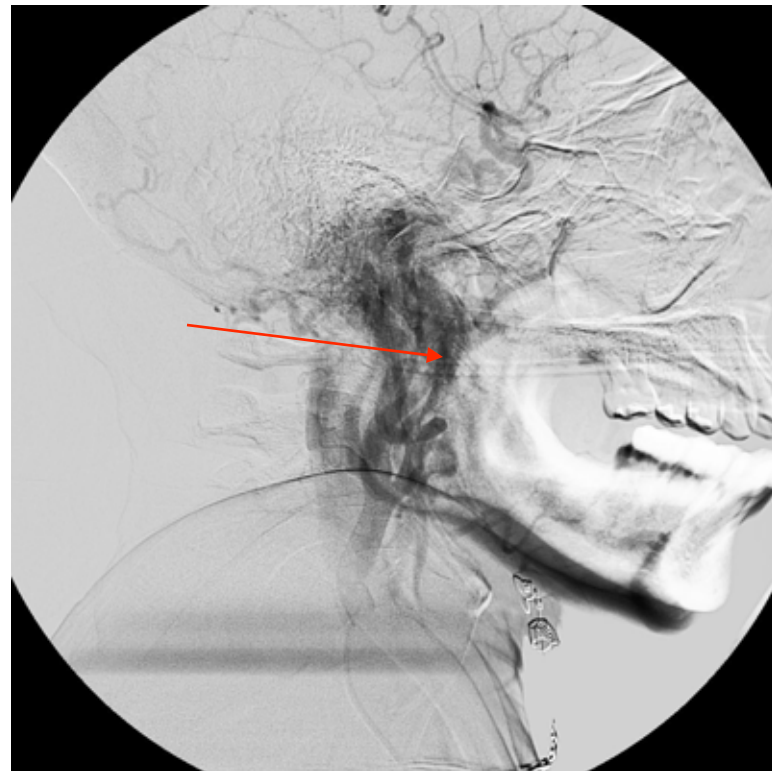
Professionalism

# ARTERIAL FEEDERS

- Multiple arterial feeders
  - Right ECA
    - Middle Meningeal Branches/IMAX branches
    - Superficial Temporal
    - Occipital
    - Posterior Auricular
    - Ascending Pharyngeal
  - Right Vertebral



# VERY HYPERVASCULAR RAPID A-V SHUNTING



Filling defect suggests tumor within or compressing right IJ

Tumor found within vein at surgery

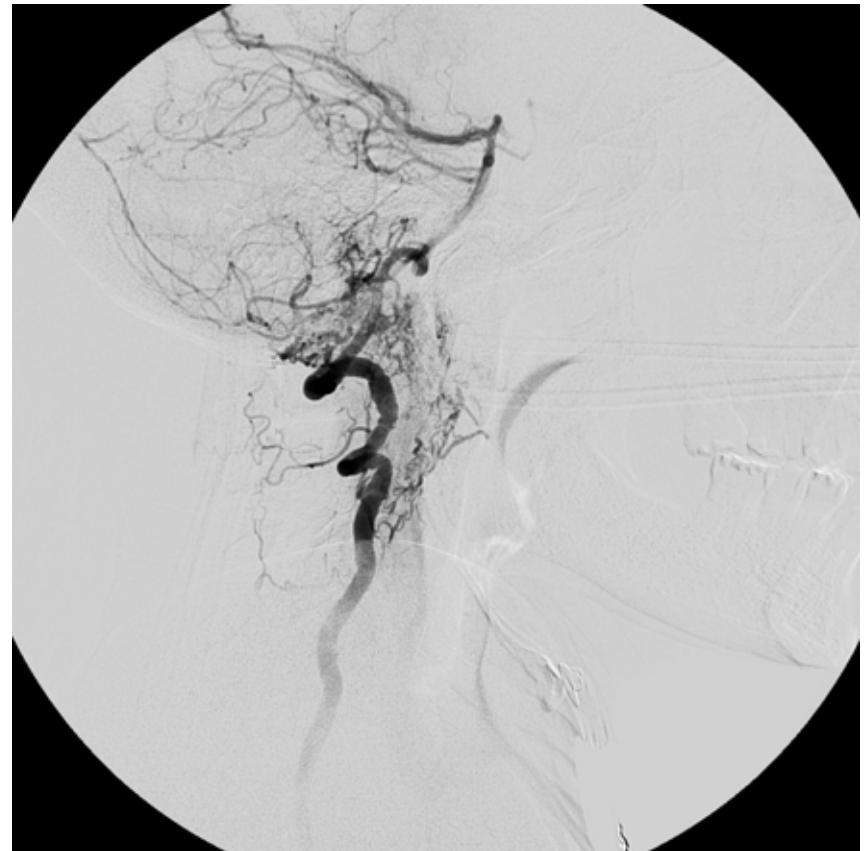
**Medical Knowledge**





## RIGHT VERTEBRAL

- Right vertebral
  - Muscular branches
  - PICA/vert branches
- DO NOT TOUCH
  - Brainstem Strokes
  - Spinal Cord Strokes



# RIGHT ASCENDING PHARYNGEAL (PRE, AP)



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# RIGHT ASCENDING PHARYNGEAL (PRE, LAT)

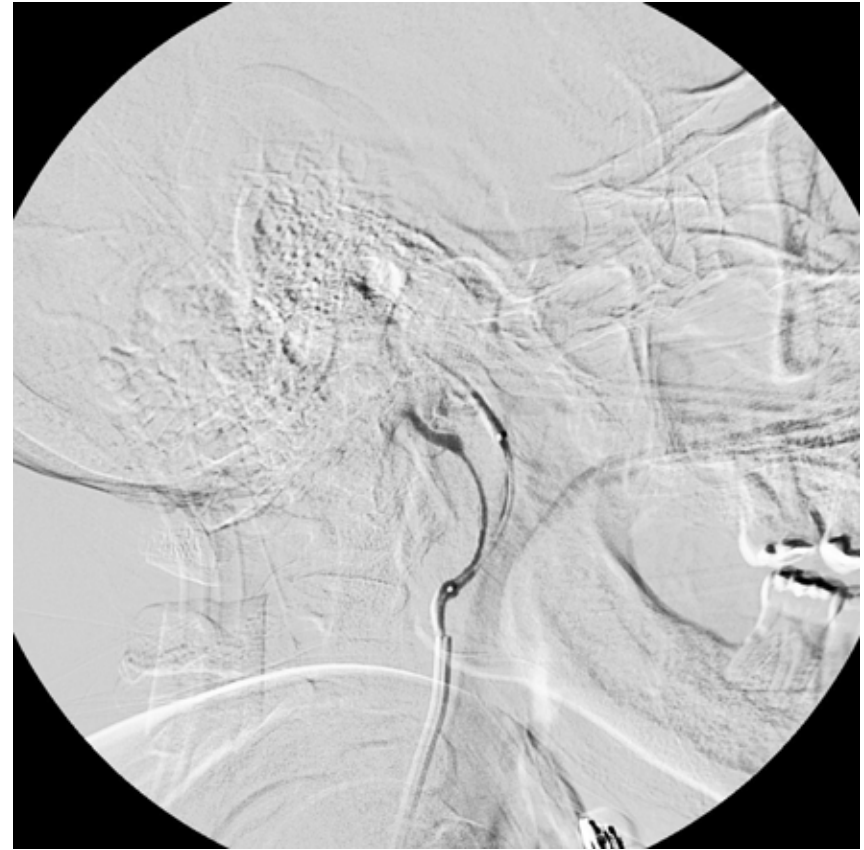


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# RIGHT ASCENDING PHARYNGEAL (EMBOLIZATION)



pre



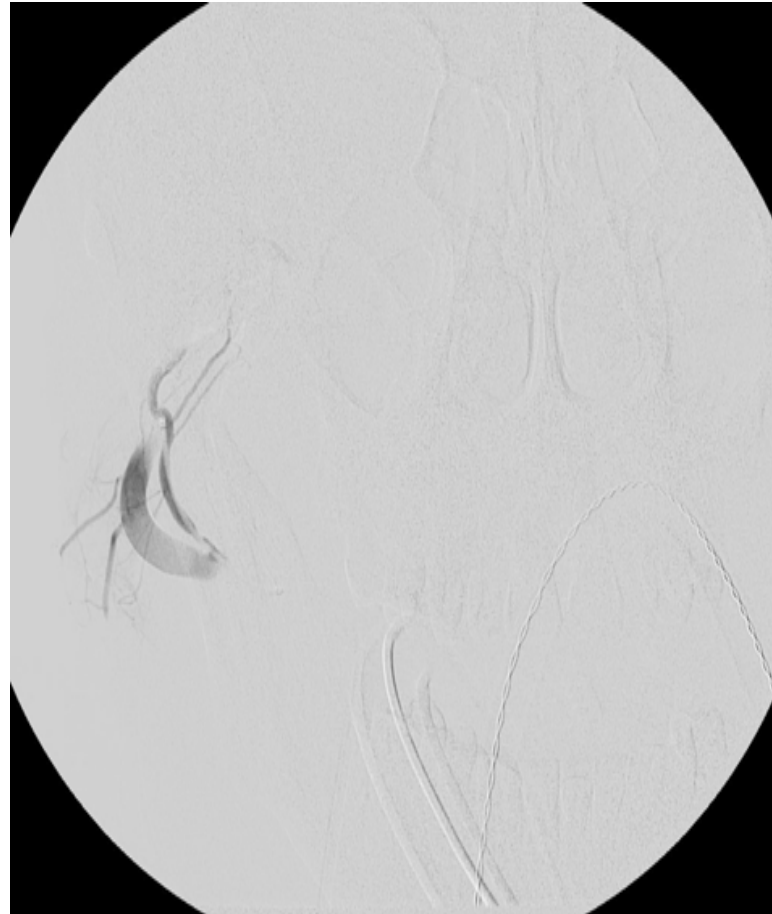
post



# RIGHT POSTERIOR AURICULAR



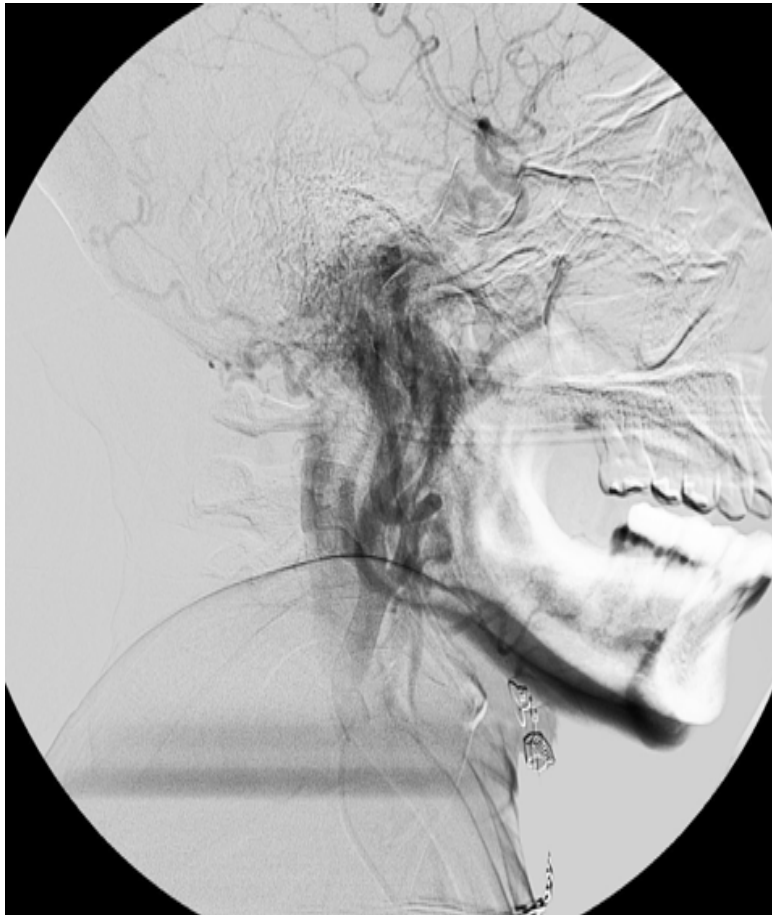
pre



post



FINAL



Pre



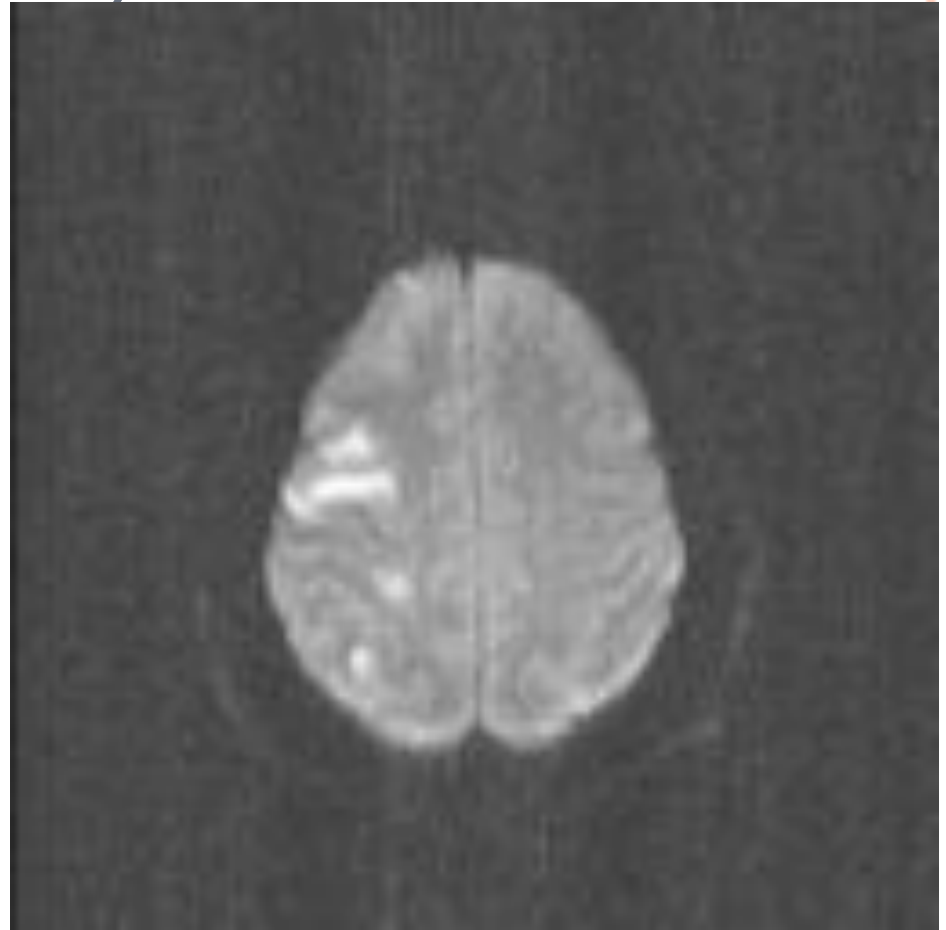
Post



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# CLINICAL COURSE (POST EMBOLIZATION)

- Initially mild left arm/leg hemiparesis
- Multiple small embolic strokes right hemisphere during embolization
- Complete recovery in < 1 week.
- Surgical Resection planned 1 week later

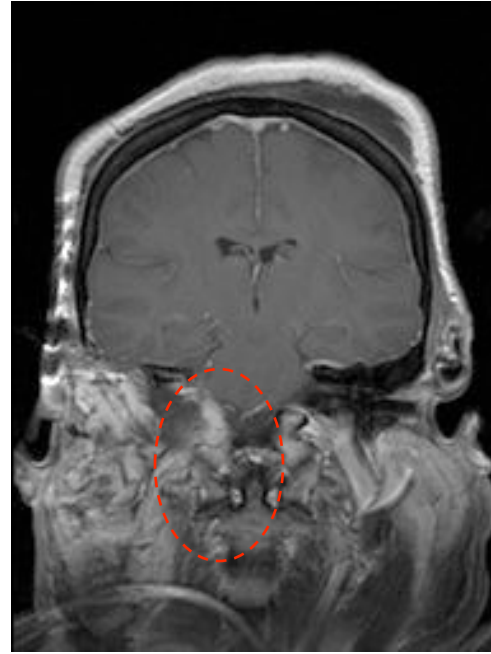


# POST NEURO-INTERVENTIONAL PROCEDURE

- Our Patient underwent surgical resection of the mass lesion in a combined procedure with ENT and Neurosurgery.
  - Dr. Matthew Hanson – ENT
  - Dr. Ethan Benardete - Neurosurgery
- The operation was successful, a large amount of the tumor burden was resected.
- The patient continues to have a peripheral facial nerve paralysis and conductive hearing loss.
- Our Patient is scheduled to follow up in oculoplastics clinic later this month at KCH.



# Patient Care



Pre surgical

Post surgical



## SELF REFLECTION SLIDE

- The care of this patient was appropriate. She obtained the correct referrals in a timely organized fashion and was taken care of with a multi-disciplinary approach among several surgical subspecialties.
- Ophthalmologists must routinely collaborate with other specialists to deliver the highest quality patient care and must advocate for their patients.



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# THANK YOU

- Dr. Purewal
- Dr. Sundeep Mangla
- Dr. E.C. Lazzaro
- Dr. Gabriel Schaab
- KCH residents



**Professionalism**