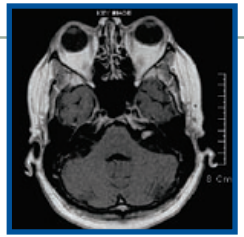
MRI/FYI

A case report from the radiologists at Diagnostic Imaging of Salem



MR Detection of Acoustic Neuromas

Acoustic neuromas are benign nerve sheath tumors originating from the vestibulocochlear nerve. They are the most common masses found in the cerebellopontine angle cistern and represent approximately 10 percent of all primary intracranial neoplasms. By causing local mass effect upon delicate cranial nerves within the bony confines of the internal auditory canal, they can cause hearing loss, tinnitus, vertigo, disequilibrium, and even facial paralysis. If detected and treated while still small, it is sometimes possible to preserve hearing on the affected side.

Advances in medicine have allowed for the detection of subcentimeter acoustic neuromas, often still confined to the internal auditory canal. Auditory testing will typically reveal high frequency hearing loss and deficits in speech discrimination on the affected side. Of note, symmetrical hearing impairment or even normal hearing does not exclude the presence of a neuroma. Gadolinium-enhanced MR imaging is currently the imaging study of choice for the detection of these lesions.

The classic MR appearance of an acoustic neuroma is a unilateral avidly enhancing mass arising within and expanding the internal auditory canal. As the tumor grows it will eventually spill out of the porous acousticus into the adjacent cerebellopontine angle cistern, resulting in a classic "ice-cream cone" appearance. When smaller, they may simply appear as an enhancing focus along an otherwise unremarkable VII-VIII cranial nerve complex. (This is one reason why intravenous contrast is preferred with MR screening studies.) Other enhancing lesions that can arise in the cerebellopontine angle cistern include meningiomas, dural metastases, vestibulobasilar aneurysms, and glomus jugulare tumors.

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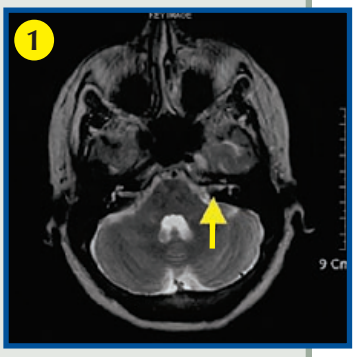
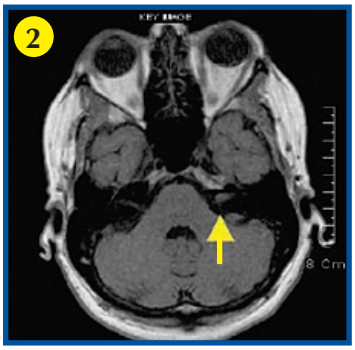
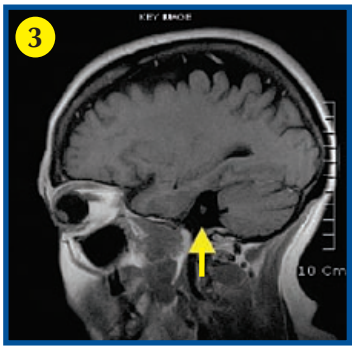
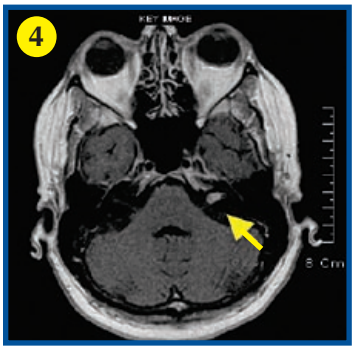
MR Detection of Acoustic Neuromas: A Case Report

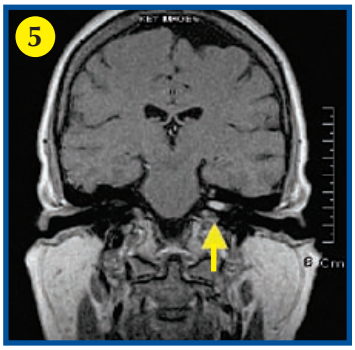
Patient History:
A 57 year-old female presented with sudden onset of unilateral left hearing loss and vertigo.











Clinical Findings:
Auditory testing revealed asymmetric high-frequency hearing loss, more profound on the left. Speech discrimination was also asymmetric, measured at 100% on the right and 73% on the left.
The patient was then scanned on an Airis Elite open magnet due to claustrophobia.

Imaging:
Selected images from the patient's MR study are provided above. On T2-weighted images, where fluid is bright, an 11 millimeter nodular mass (arrow) can be seen within the left internal auditory canal, subtly widening the porous acousticus [1]. Note the appearance of the normal internal auditory canal and VII-VIII nerve complex on the right. On T1-weighted images, where fluid is dark, the lesion remains isointense to normal adjacent brain tissue [2,3]. After intravenous gadolinium is given, it enhances avidly in contradistinction to the adjacent brainstem [4,5].

Discussion:
Acoustic neuromas are typically managed in one of three ways:

- Conservative management (i.e, "wait and see")
- Surgical resection
- Irradiation, with either gamma knife or stereotactic radiotherapy

Patients of advanced age with small neuromas limited to the internal auditory canal may opt for a conservative approach. As these tumors typically grow very slowly (on average 1.5 mm/year) it may take many years for a lesion to threaten life or bodily function. In these cases, periodic monitoring with audiometry and MR imaging is usually performed.

Approximately half of all acoustic neuromas are treated by surgical resection. Follow-up MRIs are often obtained at one and five years post-surgery to detect residual or recurrent tumor.

Irradiation by gamma knife therapy or stereotactic radiotherapy is an emerging therapy for the treatment of acoustic neuromas. Today, low-dose gamma knife procedures are being used to control tumor growth, significant reducing delayed complication rates. With irradiation, the neoplasm is not generally eradicated but tumor growth can be controlled. Periodic MR imaging is

About Our Center:
Diagnostic Imaging of Salem is a multi-modality imaging center conveniently located near the Capitol in Salem. Our experienced professionals, technologists and radiologists deliver the highest levels of patient care and quality evaluations.

Radiologist Spotlight

W. Bryan Winn, M.D.

Dr. Winn is a staff radiologist at Diagnostic Imaging of Salem, as well as a member of Diagnostic Imaging Associates. His specialties include both general radiology and neuroradiology.

He earned his Bachelor's Degree from Brigham Young University and his Medical Degree from the University of Washington School of Medicine.

Dr. Winn was an Intern at St. Joseph Mercy Hospital in Ann Arbor, Michigan. He did his Residency at the University of Michigan Medical Center, and then his Fellowship in Neuroradiology at Stanford University Hospital before joining DIA. He is certified by the American Board of Radiology.

He lives in Salem with his wife Andrea and three children.

We offer both short-bore and open MRI. Our GE Signa Horizon LX 1.5 T MRI delivers superior image quality and enables a broad assortment of studies, while our Hitachi Elite open MRI delivers exceptional comfort to large, claustrophobic and special needs patients. We have also added a new GE Logiq 9 Ultrasound for faster and more precise ultrasound studies.

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