

# CAVERNOUS HEMANGIOMA OF THE INTERNAL AUDITORY CANAL

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## SUMMARY

Cavernous hemangioma is a rare benign tumor of the internal auditory canal (IAC) of which fourteen cases have been reported so far.

Tinnitus and progressive sensorineural hearing loss (SNHL) are the chief complaints of the patients. Audiological and radiological planes, CT Scan, and magnetic resonance image (MRI) studies are helpful in diagnosis. The only choice of treatment is surgery with elective transmastoid translabyrinthine approach. And if tumor is very large, the method of choice will be retrosigmoid approach.

**KEY WORDS:** *Acoustic neuroma; Cavernous hemangioma of the internal auditory canal; Internal auditory canal tumors; Sensorineural hearing loss; Translabyrinthine approach; Vertigo.*

## INTRODUCTION

Cavernous hemangioma in the internal auditory canal is a rare vascular malformation which can mimic all the retrocochlear symptoms of acoustic neuroma. This paper consists of a review of symptoms, signs, diagnosis, and surgical management of such a rare entity, as managed in the Department of Otolaryngology and Head and Neck Surgery at Amir Alam Hospital, affiliated to Tehran University of Medical Sciences.

Cavernous hemangioma is rarely seen in CNS

and particularly in the internal auditory canal (IAC). So far, including ours, fourteen cases have been reported in neurosurgery and otolaryngology magazines throughout the world (1,2). Based upon Russell and Robinstein's classification (1), cavernous hemangioma is not a true neoplasm (2) rather it is a vascular malformation with a defect limited to sinusoidal spaces having no elastic, muscular, or intervascular neural elements (1,3,4).

Lack of neural tissue is the first characteristic of the pathological difference between cavernous hemangioma and other vascular malformations.

CASE REPORT

Mr. H. M., a 42-year-old man, married, having four children, complained of progressive loss of hearing of two-year-duration along with high pitch fluctuating tinnitus and occasional attacks of vertigo and imbalance.

Systemic examination and cranial nerve examination except for the right 8th nerve were normal. Audiometric evaluation showed SNHL (Fig. 1); acoustic reflex of the involved ear was not ipsilateral. Caloric test of the right vestibular system showed no response with 10cc ice-water stimulation

(Fig. 2).

The auditory brain response (ABR) was taken showed I-V waves latency difference of about 0.89 ms which extremely confirmed retrocochlear lesion (Fig. 3). Plane X-ray and tomographic evaluation of the patient showed suspicious IAC of the right side (Figs. 3,4), and CT Scan of the right IAC revealed dilated fundus of IAC (Fig. 5) more than porous acousticus, and in contrary with the acoustic neuroma, we could not find any classification in CT study, but we suspect intralabyrinthine schwannoma (Figs. 4,5,6).

Audiogram

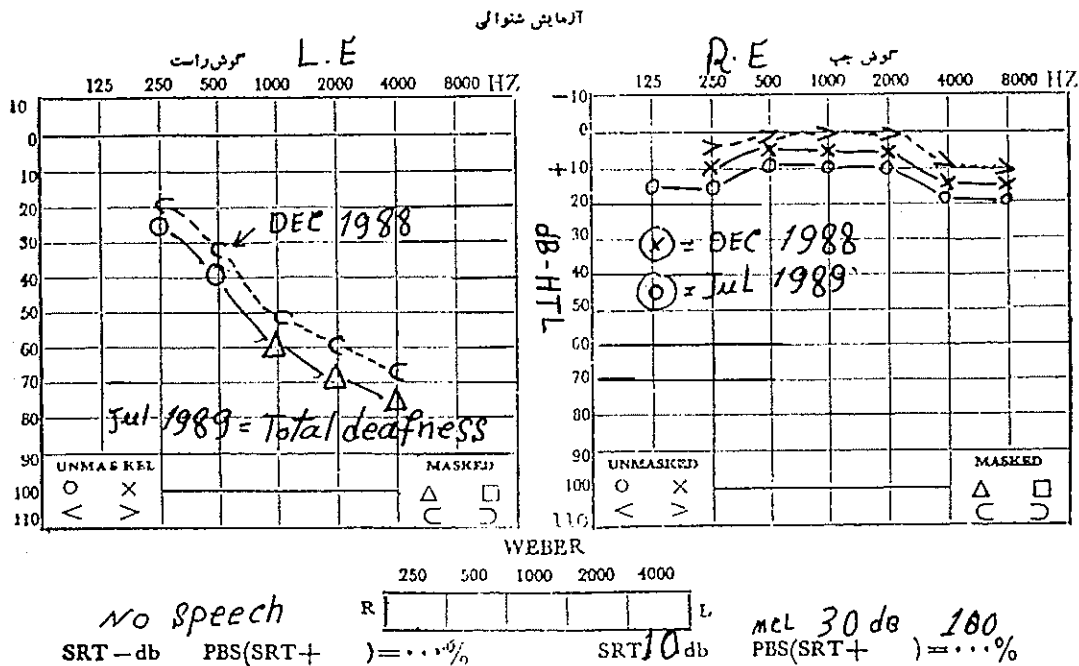


Fig. 1. PTA of the patient shows slop down SNHL at December, 1988. The last audiogram of this patient presents a total hearing loss at July, 1989.

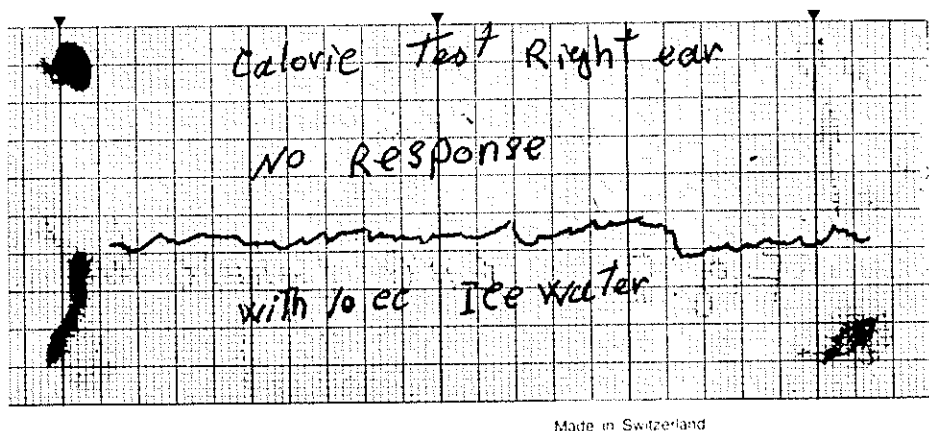


Fig. 2. ENG (electronystagmography) caloric test shows no response with 10cc ice-water stimulation.

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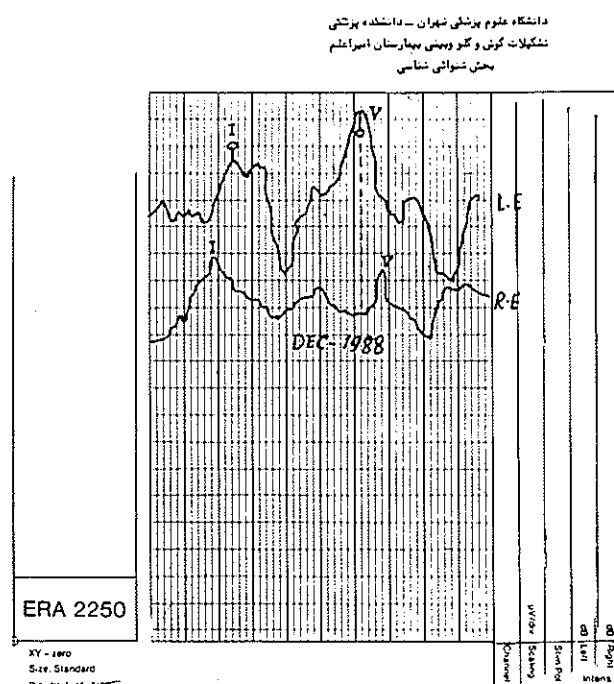


Fig. 3. ABR test presents an I-V interwave latency prolongation (0.84 ms) at the right ear.

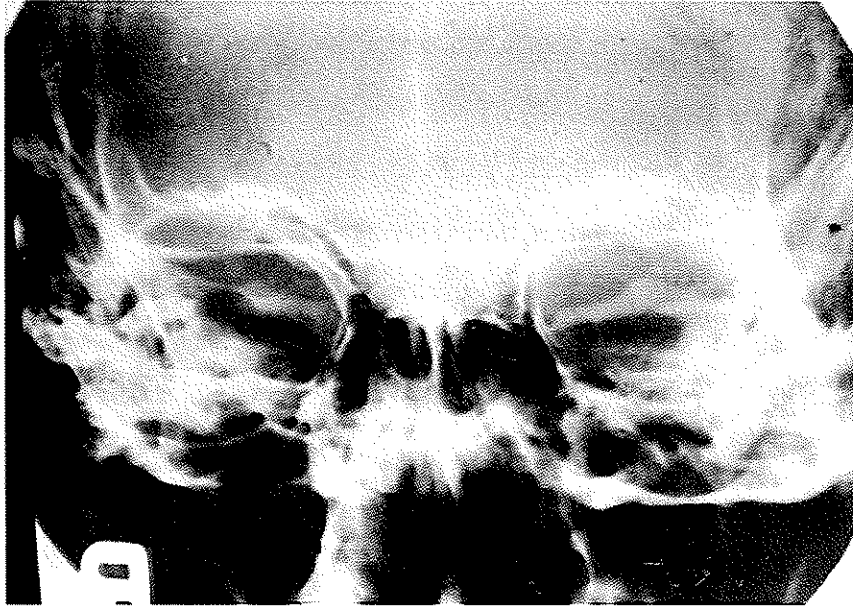


Fig. 4. Transorbital view shows the right IAC fundus dilatation. The porous of the both IAC are normal.

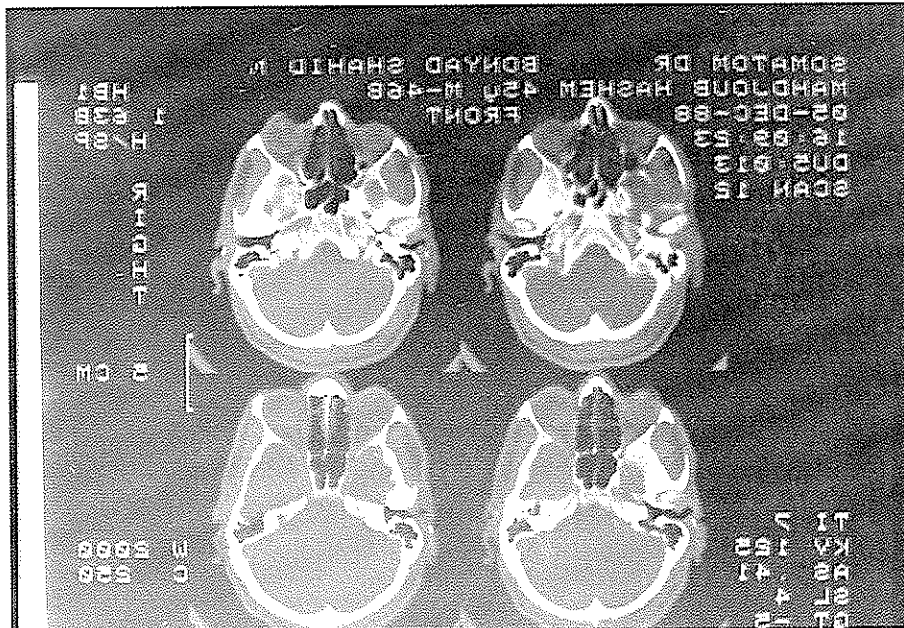


Fig. 5. CT Scan of petrous bone with the contrast shows the widening of the right IAC.

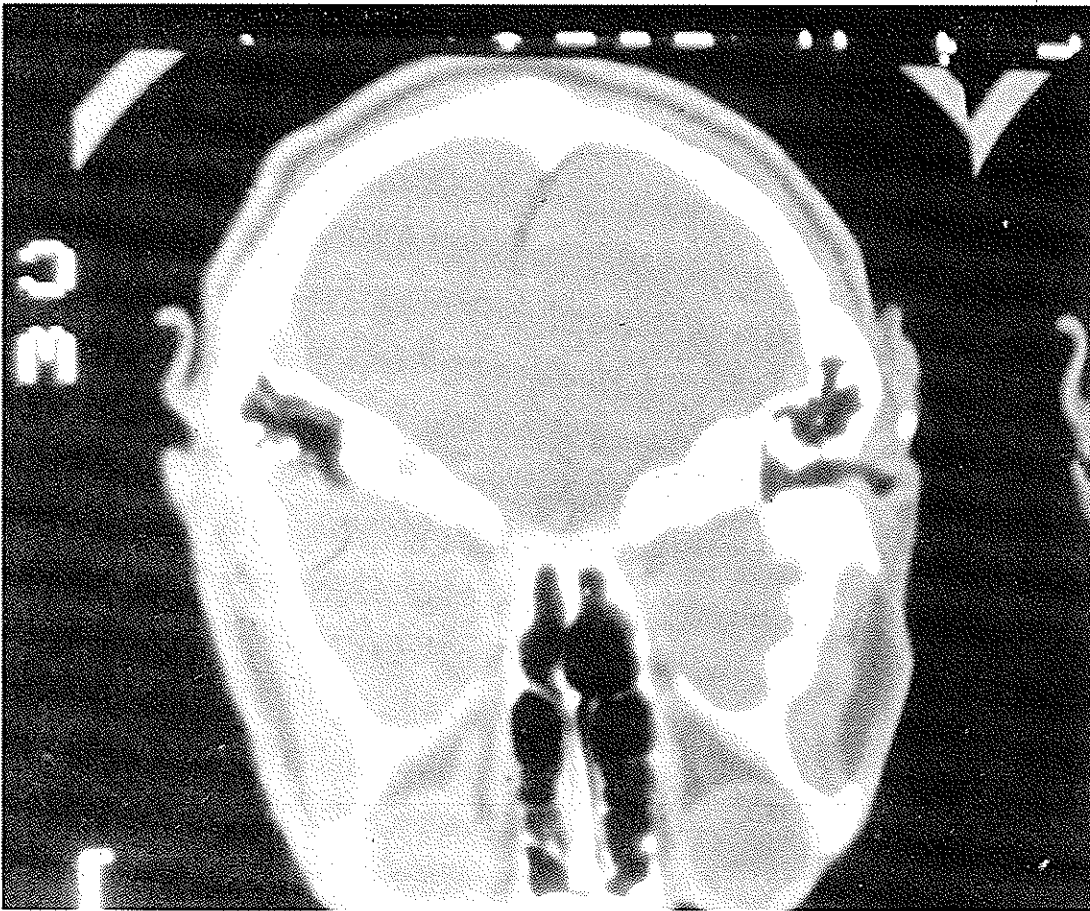


Fig. 6. Soft tissue. CT Scan of this patient shows no extension or protrusion at the right CPA.

## MANAGEMENT

The patient undergone surgery with transmastoid translabyrinthine approach. Surgical specimen sent for histopathological examination confirmed the diagnosis of cavernous hemangioma in the IAC.

We believe that the technical advantage of such a surgical approach could be: 1) direct and close approach to IAC and cerebropontile angle (CPA), and 2) cerebellum and brain stem are not in the way in this approach, and as a result, morbidity is much less (3).

## SURGICAL PROCEDURE

**Incision:** Postaural incision was chosen by applying the operating microscope and high speed drill; total mastoidectomy was performed.

Fallopian canal was identified, complete labyrinthectomy was done after exposing to the posterior fossa dura; dura of IAC and posterior fossa was incised. Here, we faced a brown congested tumor with irregular surface of 2.5 cm in diameter cochlear, vestibular and facial nerve was identified at the posterior aspect of the tumor (Fig. 7).

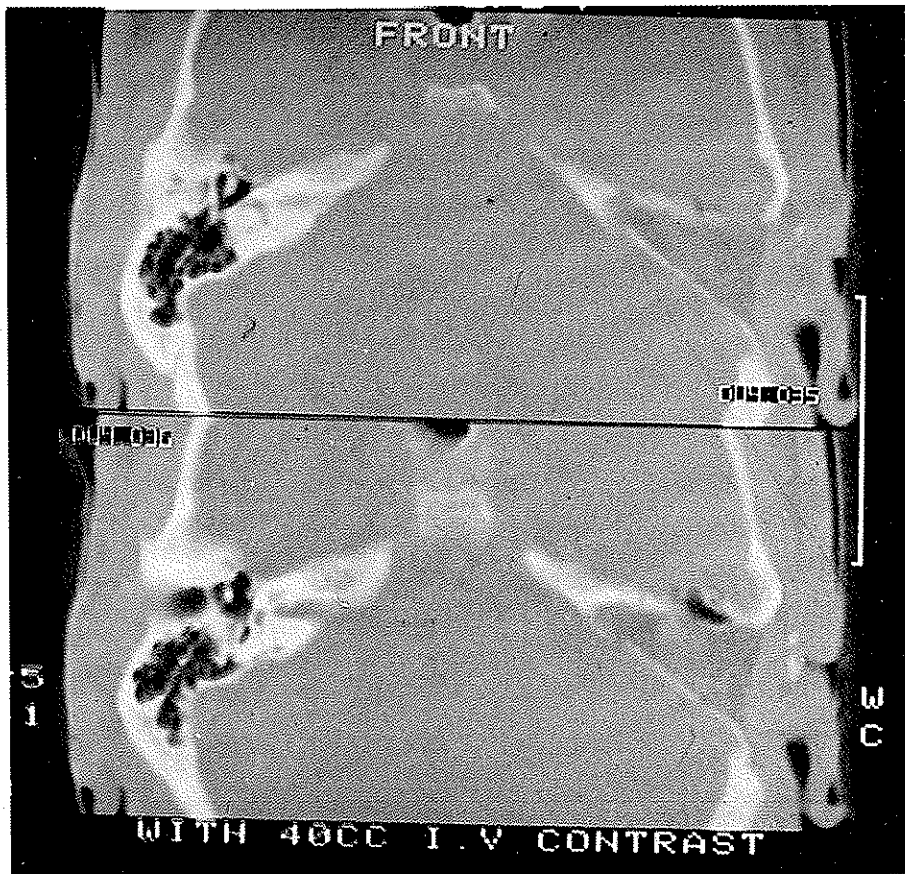


Fig.7. Post-op CT Scan of the petrous bone shows petrous bone removal with tumor eradication with translabyrinthine approach.

The tumor was totally removed, the origin of which was anteriomedial aspect of the IAC at the same direction of internal carotid mastoid cavity was obliterated by fat. There was an uneventful post-operative period (Fig. 8 shows a diagram of the tumor after translabyrinthine exposure).

### DISCUSSION

Cavernous hemangioma of the IAC is a rare vascular malformation with defect in sinusoidal spaces in which there are no elastic, muscular, or intravascular neural elements. Lack of neural tissue is the first pathologic specification of cavernous

hemangioma.

Patients usually complain of progressive SNHL with speech discrimination problem, high pitch tinnitus fluctuating in nature, progressive vertigo with no specific features and quite often symptom and sign of the 7th cranial nerve paresis and paralysis.

Other conditions could be thought of the differential diagnosis of hemangiomas of the IAC are acoustic neuroma accounting for 8.7% intracranial and 78% CP > angle tumors, meningioma, glioma, intralabyrinthine schwannoma, metastatic tumor and tumors that extended mainly from jugular foramen, and also a rare condition like petrous bone apical syndrome (Table 1).

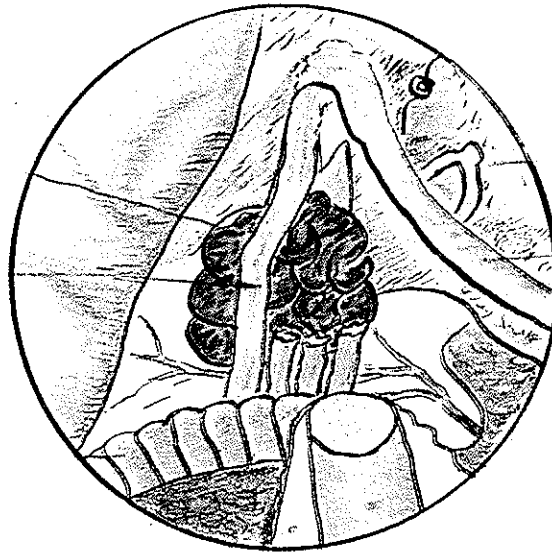


Fig. 8. Tumor's appearance after translabyrinthine exposure

Table 1. Tumors involve in the IAC:

- Schwanoma (VII, VIII)
- Glomus tumors
- Meningioma
- Arachnoid cyst
- Cavernous hemangioma
- Lipoma
- Glioma
- Medulloblastoma
- Petrous apical lesions
- Metastatic tumors

Useful audiological investigation is PTA which usually shows SNHL with poor speech discrimination score (SDS); acoustic reflex is contralateral but not ipsilateral and in ABR studies, interwave I-V latency was 0.8 ms which confirms retrocochlear lesions. And relevant radiological study could be CT Scan study which showed dilated IAC and MRI.

It is worthy to mention that if, in MRI and

CT Scan of patients, tumor is small and intracanalicular and accompanied by facial nerve paralysis or paresis, we must think of hemangioma (4), and if we found classification in CT Scan and in MRI in T<sub>1</sub> and T<sub>2</sub> weighted image signal, we can suspect hemangioma.

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