

이명치료 중 발견된 두개내 및 내이질환

전경명 · 고의경 · 이일우 · 문영일 · 이병주 · 노환중 · 왕수건

Intracranial and Inner Ear Diseases Discovered
during the Management of TinnitusKyong-Myong Chon, MD, Eui-Kyung Goh, MD, Il-Woo Lee, MD, Young-Il Moon, MD,
Byung-Joo Lee, MD, Hwan-Jung Roh, MD and Soo-Geun Wang, MD

Department of Otolaryngology, College of Medicine, Pusan National University, Busan, Korea

-ABSTRACT-

Objectives : Tinnitus is one of the most common complaints in clinical field of otolaryngology but we often manage the tinnitus patient without definite diagnosis. We investigated the other causes except psychoacoustic factor in intractable tinnitus cases to medical treatment. **Materials and Methods** : We experienced 9 cases of intracranial and inner ear diseases in patients with intractable tinnitus to treatment, which were diagnosed using computed tomography (CT), magnetic resonance imaging (MRI), serum analysis, and vestibular function tests (VFTs) and report it with review of literature. **Results** : Of 9 cases, there are 2 cases of high jugular bulb, 2 cases of vascular anomalies, 2 cases of tumors (acoustic neuroma and meningioma), a case of labyrinthine lues, neurovascular compression, and multiple sclerosis, respectively. **Conclusions** : In case of intractable tinnitus, whether it is pulsatile or nonpulsatile, we should suspect intracranial pathology and consider every kind of diagnostic tools as possible including routine laboratory evaluation, CT, MRI, and VFTs. Even in meningioma and labyrinthine lues, they complained pulsatile tinnitus. So it is very difficult to differentiate pulsatile tinnitus from nonpulsatile one clearly. Pitch and loudness of tinnitus have little relationship with the character of tinnitus, pulsatile or nonpulsatile. Because tinnitus patient without vestibular symptoms may have vestibular lesion, we should do VFTs in all cases of tinnitus patient. (J Clinical Otolaryngol 2002;13:56-64)

KEY WORDS : Tinnitus · Intracranial disease · Inner ear disease.

서 론

가 .
: 2002 4 1
: 2002 5 1
: , 602 - 735 1 - 10 가 ,
: (051) 240 - 733, 7335 . : (051) 248 - 1248
E - mail : chonkm@pusan.ac.kr

, SISI
 match - loudness · balance
 50 dB “ - ”
 15 “ - ”
 3 “ - ”
 (MRI)
 1.5
 cm (Fig. 2)
 pitch · match - loudness · balance
 8 KHz 65 dB “ - ”
 55 dB, 8 KHz 65 dB
 8 KHz

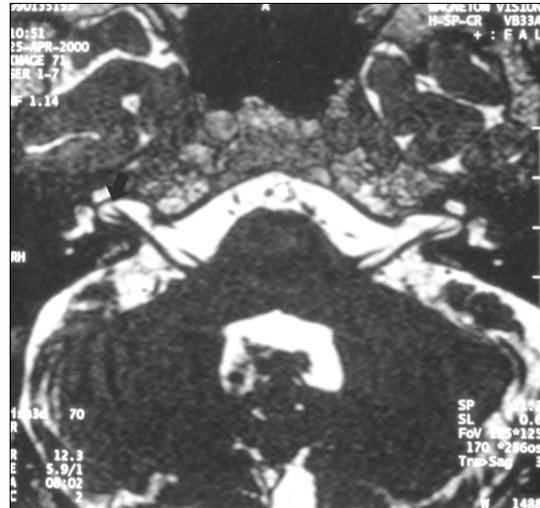


Fig. 3. Axial view of MRI in patient with neurovascular compression syndrome. Note right anterior inferior cerebral artery (AICA) is compressed between right cochlear and vestibular nerve (arrow).

증례 3 :

38
 ()
 . 1 가
 . SISI
 A
 1 KHz, 50 dB “ - ”
 14
 가
 . 1
 1 KHz 45
 dB “ - ” 6
 (Fig. 3)
 (microvascular decompression)

증례 4 :

40
 10
 0.2 cc
 가
 , SISI
 B . pitch · match -
 loudness · balance 1 KHz, 58 dB “ - ”
 (high jugular bulb)
 (3D CT)
 ballooning echo doppler
 (transverse ve-
 nous sinus)
 ballooning
 (Fig. 4).
 22 2001 11



Fig. 4. CT findings of patient with right high jugular bulb. A : Axial view of computed tomography. B : 3-Dimensional CT.

5

증례 5 :

27

10

15

가

SISI

A . pitch · match - loudness · balance
4 KHz, 45 dB “ - ”

4 KHz, 60 dB “ - ”

4 KHz 60 dB, 4

KHz 56 dB “ - ”

5



Fig. 5. Angiographic findings of patient with vascular anomaly. Note the luminal narrowing at proximal portion of pyramidal portion of left ICA (arrow).

7 mm 가

(計數形 減算血管撮影術,

digital subtraction angiography, DSA)

(內徑狹窄, luminal narrowing)

(Fig. 5)

가

증례 6 :

49

3

가 6

balance

A . pitch · match - loudness · balance
1 KHz, 45 dB “ - () ”

1 KHz, 38 dB
)” 16
 . 7
 가
 4 KHz, 58 dB “ - ; “
 ()” 7
 (齒肉)

VDRL
 TPHA
 (latent syphilis)
 benzathin penicillin 240 4
 4
 15~25 dB

증례 7 :
 51

, SISI
 . pitch · match - loudness · balance
 1 KHz 60 dB “ - ”
 6
 , VDRL(-),
 (high jugular bulb)
 2

증례 8 :
 64 1

“ (, . , “ (peak
 type)” , SISI
 A . pitch ·
 match - loudness · balance 4 KHz,
 60 dB “ - ”

MRI MRA

(Fig. 6).

증례 9 :
 65

SISI
 1 KHz,
 70 dB, “ - ”
 MRI



Fig. 6. Angiographic findings of patient with vascular anomaly. Note the luminal narrowing at proximal portion of left ICA (arrow) and middle cerebral artery, MCA (arrowhead).

(Fig. 7).
Table 1

고찰

가 가

가

가

가 , 가 5

가 6.67%
가 29.0%

가

1)2)

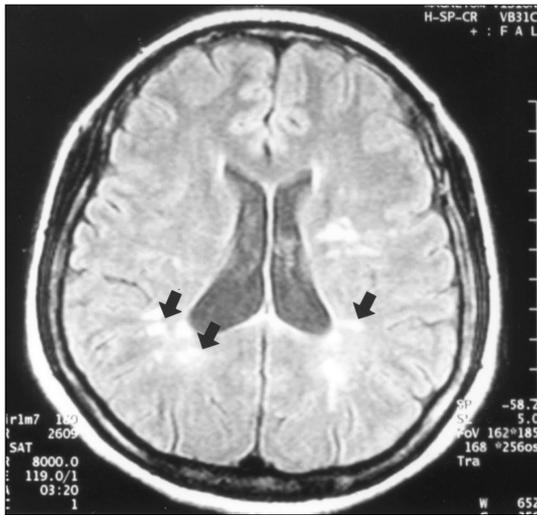


Fig. 7. CT findings of patient with multiple sclerosis. Note the sclerotic lesion in parenchyme of brain (arrows).

Table 1. Summary of the patients

Case No.	Sex/ Age	Diagnosis	Tinnitus				Hearing acuity	SISI
			Hz	dB	Character	Pulsatile		
1	M/54	Acoustic neuroma	4K	75	"wing-"	-	Abrupt drop	-
2	F/50	Meningioma	2K	50	"shaw-"	+	Mild (dip)	-
3	M/38	Neurovascular compression	1K	50	"wing-"	+	Moderate (desc.)	-
4	F/40	High jugular bulb	1K	58	"wing-"	+	Mod. severe, mixed (asc.)	-
5	F/27	Vascular anomaly	Rt. 4K	45	"wing-"	+	Mild (desc.)	+
			Lt. 4K	60	"wing-"	+	Mod. (desc.)	+
6	F/49	Labyrinthine lues	1K	45	"wing-"	+	Moderate, mixed (flat)	-
7	M/51	High jugular bulb	1K	60	"wing-"	+	Normal	-
8	F/64	Vascular anomaly	4K	60	"wing-"	+	Peak type	-
9	F/65	Multiple sclerosis	1K	70	"wing-"	-	Moderate (flat)	-

가
4 7, 5 8 가 5
가 4
가 1
Table 2³⁾⁴⁾ 가 3 dB 5)
가
loop가
6)7)
가
8) Anderson Meyerhoff⁹⁾
박동성이명 가 Table 2 Davis¹⁰⁾
8
11)
가 가
2 , 1 , 1 ,
1 , (neurovascular 2
compression, NVC) 1 , 2 , 1

Table 2. Intracranial diseases associated with tinnitus³⁾⁴⁾

I. Vibratory (vascular)	II. Nonvibratory
· Arteriovenous malformation	· Cerebellum and brain stem hemorrhage, infarction
· Arteriovenous fistula	· Acoustic neuroma
· Aneurysm	· Cerebellopontine angle tumor
· Meningioma	· Multiple sclerosis
· Neurovascular compression	· Trauma-head, acoustic nerve
· Local inflammation or infection	· Labyrinthitis-allergic, viral, bacterial
· Intracranial hypertension	· Miscellaneous
· Dehiscent jugular bulb (high jugular bulb)	
· Persistent stapedial artery	
· Glomus tumor	
· Venous hum	
· Eagle's syndrome	

:

(collateral circulation)

KHz가 1 , 4 KHz가 3 ,
4 7 1 KHz, 5 8 4 KHz
3) 4 KHz

Sismanis Smoker¹²⁾ 100 . 9
가 1 KHz 가 가
, Shah¹³⁾ . Schleuning Martin¹⁹⁾
2

1 KHz

비박동성이명

가

Table 2

,¹⁴⁾ ,⁶⁾ ,¹⁵⁾ loudness 45~75 dB
,¹⁶⁾ 가 , 가
Yabe³⁾ .
Yabe³⁾ .

가 10%

,¹⁵⁾

Antonelli¹⁷⁾ , 8 ,

9 1 “ - ”

122 85.7%, , 8 “ - ”
96%, 12%, 0% , Nishida¹⁵⁾

가

, Yabe³⁾

(擬聲語)가

, Fukaya¹⁸⁾

, Seabra²⁰⁾

가

가

5, 6, 7

이명검사의 결과

pitch · match 가 가
, 9 5 가 1 KHz , 2 .

개 인

1) 가
2) 가
3) 가
4) 가
가

중심 단어 :

REFERENCES

1) Chon KM. *Diagnosis and treatment of tinnitus. Clin Otol* 1996;7:326-39.
2) Murai K. *Pathogenesis of tinnitus. Otolaryng, Head & Neck Surg Japan* 1989;61:977-82.
3) Yabe T, Yoshimoto Y, Yamane H, Hirakawa H. *Clinical investigations of five patients with intracranial lesions presenting tinnitus. J Otolaryngol Jpn* 1996;99:681-8.
4) Meyerhoff WL, Cooper JC. *Tinnitus. In Paparella MM, Sc-*

humrick DA editors. Otolaryngology 3rd ed. Philadelphia: WB Saunders;1991. p.1169-79.
5) Soderquist DR. *Physiological noise as a maker of flow frequencies; the cardiac cycle. J Acoust Soc Am* 1972;52:1216-20.
6) Moller HB, Moller AR, Jannetta PJ. *Vascular decompression surgery for severe tinnitus; selection criteria and result. Laryngoscope* 1993;103:421-7.
7) Meyerhoff WL, Mickey BE. *Vascular decompression of the cochlear nerve in tinnitus sufferers. Laryngoscope* 1988;98:602-4.
8) Austin JR, Haceri DR. *Anterior communicating artery aneurysm presenting as pulsatile tinnitus. ORL* 1993;55:54-7.
9) Anderson RG, Meyerhoff WL. *Otologic pathology and tinnitus. In Clark JG, Yanick P Jr, editors, Tinnitus and its management. Springfield, IL, Charles C Thomas, Publisher; 1984.*
10) Davis LE. *Infections of the labyrinth. In Cummings CW, Fredrickson JM, Harker LA, Krause CJ, Richardson MA, Schuller DE editors. Otolaryngology Head & Neck Surgery 3rd ed. St. Louis: Mosby;1998. p.3139-51.*
11) Nadol JB. *Hearing loss of acquired syphilis: diagnosis confirmed by incudectomy. Laryngoscope* 1975;85:1888-97.
12) Sismanis A, Smoker WRK. *Pulsatile tinnitus: recent advances in diagnosis. Laryngoscope* 1994;104:681-8.
13) Shah SB, Lalwani AK, Dowd CF. *Transverse/sigmoid sinus dural arteriovenous fistulas presenting as pulsatile tinnitus. Laryngoscope* 1999;109:54-8.
14) Kanzaki J. *Surgical treatment of acoustic neurinoma. ORL Tokyo* 1990;33 (suppl 3):201-28.
15) Nishida H, Inoue T, Tanaka Y, Okada M. *Evoked otoacoustic emission and electrocochleogram in a patient with multiple sclerosis. Pract Otol (Kyoto)* 1993;86:1375-85.
16) Matsuda Y, Inagawa T, Amano T. *A case of tinnitus and hearing loss after cerebellar hemorrhage. Stroke* 1993;24:906-8.
17) Antonelli AR, Belloto R, Grandori F. *Audiologic diagnosis of central versus eighth nerve and cochlear auditory impairment. Audiology* 1987;26:209-26.
18) Fukaya T, Nomura Y. *Roaring tinnitus in brainstem disorders. Audiology Japan* 1992;35:83-6.
19) Schleuning AJ, Martin WH. *Tinnitus. In Bailey BJ Calhoun KH, Deskin RW, Johnson JT, Kohut RI, Pillsbury IV JC, et al, editors. Head & Neck Surgery-Otolaryngology, 2nd ed. Philadelphia: Lippincott Williams & Wilkins;1998. p.1925-31.*
20) Seabra JCR, Diamantino H, Almeida JF. *Neurootological evaluation of tinnitus. Internat. Tinnitus J* 1995;1:93-7.