

최근 5년간 경험한 청신경종양 25례의 임상분석

박기현¹ · 전영명¹ · 정연훈¹ · 김영주¹ · 조경기²

Clinical Analysis of 25 Cases of Acoustic Neuroma for the Last Five Years

Keehyun Park, MD¹, Young-Myoung Chun, MD¹, Yun Hoon Choung, MD, DDS¹,
Youngju Kim, MD¹ and Kyung Gi Cho, MD²¹Department of Otolaryngology and ²Neurosurgery, Ajou University School of Medicine, Suwon, Korea

- ABSTRACT -

Background and Objectives : For the past 10 years with the development of imaging techniques, acoustic tumors (AT) have been detected before significant symptoms could develop. The development of MRI scan and improved awareness by otolaryngologists of the changing clinical presentation of AT have increased the relative incidence of small AT. The objective of this study is to review symptomatology, diagnostic approach and surgical treatment of AT which were experienced for the last 5 years, and to make an effective diagnostic work-up with management. **Patients and Methods :** From March 1995 through March 2000, 25 patients with AT (including 4 patients with neurofibromatosis type) were diagnosed and treated at Ajou University Hospital. We analysed tumor size, chief complaints, pure tone audiogram (PTA), speech discrimination score (SDS), auditory evoked response (ABR), caloric test, surgical approach, hearing preservation, and facial nerve preservation. Patients were grouped by tumor size, which was recommended from AANR (American Acoustic Neuroma Registry) in 1996. **Results :** The most common symptom of AT was progressive unilateral hearing loss. But sudden hearing loss and dizziness were chief complaints in the cases with small tumors (group IC, 0). Hearing was relatively well preserved with small tumors, but was impaired in large tumors. ABR showed normal response in 3 cases with small tumors. In caloric test, 3 cases didn't show unilateral vestibular weakness, and 2 of these cases were confirmed as AT from inferior vestibular nerve during operation. Hearing preservation was done in 4 of 10 cases with hearing conservation surgeries. Facial nerve was well preserved with small tumors, especially less than 2 cm, but its postoperative function was not good with large tumors. **Conclusion :** These data provide patients with small tumor showed good hearing and facial nerve functions. So it is very important to detect small AT earlier with systematized diagnostic approach. (**J Clinical Otolaryngol 2000;11:241-248**)

KEY WORDS : Acoustic tumor · Hearing preservation · Facial nerve function.

서 론

(acoustic neuroma)

90%

.1)

10

1

2.5%

: 2000 8 25

: 2000 11 7

: , 442 - 749

.2)3)

5

: (031) 219 - 5266 · : (031) 219 - 5264

E - mail : parkkh@madang.ajou.ac.kr

결 과

AANR
 group IC 5 ,
 0.1 0.9 cm group 0 7
 , 1.0 1.9 cm (group 1) 6 , 2.0 2.9 cm
 (group 2) 4 , 3.0 3.9 cm (group
 3) 4 , 4.0 4.9 cm (group 4) 2 ,
 5.0 cm (group 5) 1 (Table 1). 가
 0.5 cm 3 가 , 가
 5.1 cm 1 .
 가 1.5 cm
 12-14)
 10 .
 Table 2 .
 8 가 , 5 , 3 ,
 2 , 가
 1 . group IC 0
 , 1 . 2
 4 3
 , 1 MRI
 30 dB

Table 1. Tumor size distribution in 25 patients with acoustic neuromas

Tumor extension*	Patient group	No. of AN
None(intracanalicular tumor)	Group IC	5
0.1 - 0.9 cm	Group 0	7
1.0 - 1.9 cm	Group 1	6
2.0 - 2.9 cm	Group 2	4
3.0 - 3.9 cm	Group 3	4
4.0 - 4.9 cm	Group 4	2
5.0 - 5.9 cm	Group 5	1
Total		29

Four patients with neurofibromatosis type have both acoustic neuromas.

* : Measurements represent extension of tumor into the C-P angle as determined by preoperative MRI.

가 11 , 31 50 dB 가 3 , 51 90 dB
 가 7 8 . Group 1 18
 11 (61%)
 가 2 cm gorup 2 11 6
 (55%)가 (Table 3).
 81% 8 , 61 80%가 6 , 41 60%가 2
 , 21 40%가 3 , 20% 가 10 (Ta-
 ble 4).
 21

Table 2. Preoperative chief complaints of 21 patients with acoustic neuroma except neurofibromatosis type

Symptoms \ Pt Group	IC	0	1	2	3	4	5	Total
Progressive hearing loss		1	3	1	1	1	1	8
Sudden hearing loss		2	1					3
Tinnitus		1	2	1	1			5
Dizziness		1	1					2
Facial palsy			1					1
Facial paresthesia			1					1
Detected by chance		1						1
Total		4	6	5	2	2	1	21

Three of 4 patients with neurofibromatosis type had chief complaints of progressive hearing loss. One case was detected by chance.

Table 3. Preoperative hearing thresholds and tumor size

PTA(dB) \ Pt. Group	IC	0	1	2	3	4	5	Total
0 - 30		4	2	4	1			11
31 - 50			1	1	1			3
51 - 90			3	1		1	1	7
91 -			1	1	2	3	1	8
Total		5	7	6	4	4	2	29

PTA : pure tone audigram

Pt. : patient

IC : intracanalicular

Table 4. Speech discrimination score (SDS) and tumor size

SDS(%) \ Pt. Group	IC	0	1	2	3	4	5	Total
81 - 100		4	3	1				8
61 - 80		1	4	1				6
41 - 60			1	1				3
21 - 40			1		1	1		2
0 - 20			1	2	2	3	1	10
Total		5	7	6	4	4	2	29

Pt. : patient IC : intracanalicular

3, wave V interaural latency difference (IT 5)가 0.2 msec 이하인 경우 4명 (60%)을 포함하여 14명 (80%)이 정상 범위 내에 있었다. 3명 (17.6%)은 group IC (Table 5)에 포함되었다. 4명 (23.5%)은 H-B grade가 3 이상 (Table 6)이었다. 17명 (82.4%)은 20cm 이하 (Table 7)이었다. 2명 (11.8%)은 7cm 이상 (Table 7)이었다.

Table 5. Auditory brain response (ABR) and tumor size (21 patients with acoustic neuroma except neurofibromatosis type 1)

IT5 \ Pt Group	IC	0	1	2	3	4	5	Total
Normal	2	1						3
Delayed*	1	1	1	1				4
No response	1	3	4	2	2	1	1	14
Total	4	5	5	3	2	1	1	21

IT5 : interaural latency difference of wave V
Pt : patient
IC : intracanalicular
* : IT5 is more than 0.2 msec

Table 6. Caloric tests and tumor size (17 patients, except neurofibromatosis type 1)

Caloric test \ Pt Group	IC	0	1	2	3	4	5	Total
Normal	1	1	1					3
Abnormal*	3	3	3	2	2		1	14
Total	4	4	4	2	2		1	17

Pt. : patient
IC : intracanalicular
* : Unilateral weakness is more than 25%

Table 7. Surgical approach for 20 patients and tumor size

Surgery \ Pt Group	IC	0	1	2	3	4	5	Total
MCFA	1	4		1				6
TL only		1	1					3
SO only		1			1	1		2
P+TL		1	2	2	3	1	1	10
Total	5	7	6	4	4	2	1	29

MCFA : middle cranial fossa approach
TL : translabyrinthine approach
SO : suboccipital approach
P : petrosal approach

가 4 (40%) 이상 (Table 8)이었다. 3명 (15%)은 H-B grade가 5 이상 (Table 9)이었다. 5명 (25%)은 3cm 이상 (Table 9)이었다. 3명 (15%)은 6cm 이상 (Table 9)이었다. 6명 (30%)은 group 0 (Table 9)이었다. 1명 (5%)은 group 1 (Table 9)이었다. 6명 (30%)은 group 2 (Table 9)이었다. 3명 (15%)은 group 3 (Table 9)이었다.

Table 8. Hearing preservation and surgical approach (10 patients)

Surgery \ Preservation	Yes	No	Total
MCFA	3	0	3
SO	1	6	7
Total	4	6	10

MCFA : middle cranial fossa approach
SO : suboccipital approach

Table 9. Postoperative facial nerve status and tumor size

FN status* \ Pt group	IC	0	1	2	3	4	5	Total
Normal	3	1	1					5
Delayed*								0
No response		1	2		1	1	1	6
Total		2	1					3
Normal		1	1	1				3
Delayed*								0
No response		1	1			1		3
Total	3	3	5	3	3	2	1	20

FN : facial nerve
Pt : patient
* : House-Brackmann grade

Table 10. Surgical approach and postoperative facial nerve status

Surgery \ FN status*	Normal	Delayed*	No response	Total
MCFA	3			3
TL only	1			1
SO only	1	3	1	2
P+TL		3	2	2
Total	5	0	6	3

FN : facial nerve
MCFA : middle cranial fossa approach
TL : translabyrinthine approach
SO : suboccipital approach
P : petrosal approach
* : House-Brackmann grade

Table 10
 H - B grade
 2 1 grade
 7 5 가 H - B grade
 8 5 가 grade

고 찰
 50dB
 가 15 (51%)
 11
 가 8
 group 1 18 11 (61%)
 gorup 2 11 6 (55%)가
 가
 Table 3, 4
 (compression)
 가 20 mm
 가 15 20 mm
 가 20 mm (group IC, 0, I) 13
 62% Wiegand¹¹⁾
 가 5 1579
 52% 817 가 group
 T2 - weighted FSE MRI scan
 29 13 가
 10 가 20 mm
 4 21
 8 72.7%, 33.3%

:
 가 , 5
 3 14%
¹⁾¹⁵⁾ 10 26%
 group IC, 0
 가
 ,
 ,
 가
 가
 serviceable hearing level
 가 48% 14
 50%
 Table 3 30dB
 , 80%
 ,
¹⁾
 , 가 2 cm
 가
 Table 3, 4
 (compression)
 ,
¹⁾¹⁵⁾
 가
¹⁶⁾ 96%
 가 ¹⁷⁾ MRI
 64%
 21 18 (86%)
 13
 77%
 ,
⁴⁾

3 가 group IC
 가 20
 가 10
 19%가 3 가
¹⁸⁾ 2 , 7 1
 21 (Table 8). ,
 5 (23%) 가
 . Sele - 가 4
 snick ¹⁸⁾ 10 20 dB 가가
 serviceable hearing level
 50 dB(), 50%()
 , 40%
 2 가 group IC, 0 30
 dB, 70%
 가
 . Wiegand 50%
 , 2% , 4%
 , 17 14 (82%) 가 , 44% ¹¹⁾
 , 3 group 1 1 H - B grade
 (H - B grade) 3
 , 가 H -
 B grade , 6 (30%) grade ,
 가 5 (25%), grade , 9 (45%) ,
 , 가 Wi -
 egand 가 , ,
 가 가 ¹⁹⁾
 3 2 가
 ,
 20 group IC - 1 11 8 가 H - B grade - ,
 Table 7 . Wiegand가 group 2 - 5 9 6 가 grade - (Table
 9). 가
 50%, 45%, 가 , 가 2 cm
 3%, 2% 가
¹¹⁾ 40% 가
 , 2 (10%) (Table 9). 가
 , 가
 , Wiegand 3 cm

가
 11) Table 10
 H - B gr -
 3
 2 1
 7
 1 grade , 4 가 grade , , 2 가 grade
 11)

중심 단어 :

REFERENCES

- 1) Brackmann DE, Arriaga MA. *Differential diagnosis of neoplasm of the posterior fossa. Otolaryngology head and neck surgery. 2nd ed. St. Louis; Mosby Year Book Inc;1992. p.3271-91.*
- 2) Tos M, Thomasen J, Charabi S. *Incidence of acoustic neuroma. Ear Nose Throat J 1992;71:391-3.*
- 3) Schwaber MK. *Acoustic neuroma and tumors of the cerebellopontine angle. In: Glasscock ME, Shambaugh GE, editors. Surgery of the ear. 4th ed. Philadelphia; WB Saunders;1990. p.535-70.*
- 4) Park K, Park HJ, Chun YM, Choung YH. *The significance of T2-weighted FSE MRI scan in a screening test for patients with acoustic tumor. Koran J Otolaryngol 2000;43:265-71.*
- 5) Chae SW, Kim MG, Choi JH, Hwang SJ. *MRI technique for the detection of acoustic neuroma. Koran J Otolaryngol 2000;43:488-92.*
- 6) Cushing H. *Tumor of the nervus acusticus. Philadelphia; WB Saunders;1917. p.273-80.*
- 7) Cairns H. *Acoustic neuroma of right cerebellopontine angle: Complete removal: Spontaneous recovery from post-operative facial nerve palsy. Proc Ray Soc Med 1931;25:7-12.*
- 8) Lee WS, Lee JH, Kim SS. *Hearing preservation surgery of intracanalicular tumors by the middle fossa approach. Korean J Otolaryngol 1994;37:795-802.*
- 9) Park K, Chun YM, Park HJ, Lee DH. *Decision analysis in diagnosis of small acoustic tumors. Korean J Otolaryngol 1999;42:22-8.*
- 10) House JW, Brackmann DE. *Facial nerve grading system. Otolaryngol Head Neck Surg 1994;93:146-7.*
- 11) Wiegand DA, Ojeman RG, Fickel V. *Surgical treatment of acoustic neuroma (vestibular schwannoma) in the United States: Report from the acoustic neuroma registry. 1996;106:58-66.*
- 12) Glasscock ME III, Hays JW, Minor LB, Haynes DS, Carrasco VN. *Preservation of hearing in surgery for acoustic neuromas. J Neurosurg 1993;78:864-70.*
- 13) Welling DB, Glasscock ME III, Woods CI, Jackson CG. *Acoustic neuroma: A cost-effective approach. Otolaryngol Head Neck Surg 1990;103:364-70.*
- 14) Barrs DM, Brackmann DE, Olson JE, House WF. *Changing concepts of acoustic neuroma diagnosis. Arch Otolaryngol 1985;11:17-21.*
- 15) Selesnik SH, Jackler RK, Pitts LW. *The changing clinical presentation of acoustic tumors in the MRI era. Laryngoscope 1993;103:431-6.*
- 16) Selters WA, Brackmann DE. *Acoustic tumor detection with brainstem electric response audiometry. Arch Otolaryngol*

결 론

가
 T2 - weighted FSE MRI scan
 9)
 가 가 가
 가
 가
 가
 가
 가
 가
 가

- 1977;103:181-7.
- 17) Ruckenstein MJ, Cueva RA, Morrison DH, Press G. *A prospective study of ABR and MRI in the screening for vestibular schwannomas. Am J Otol* 1996;17:317-20.
- 18) Selsnick SH, Robert KJ. *Clinical manifestations and audiologic diagnosis of acoustic neuromas. Otolaryngol Clin North Am* 1992;25:521-51.
- 19) Linthicum FH Jr, Waldorf R, Luxford WH, Caltogirone S. *Infrared/video ENG recording of eye movements to evaluate the inferior vestibular nerve using the minimal caloric test. Otolaryngol Head Neck Surg* 1998;98:207-10.