

## 작은 청신경종양의 임상적 고찰

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### Clinical Evaluation of Small Vestibular Schwannoma

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#### ABSTRACT

**Background and Objectives** : It is not easy to detect the small-sized vestibular schwannomas because they sometimes show atypical clinical presentation such as sudden deafness and detection by chance. However, it is very important to diagnose a vestibular schwannoma in the earlier stage to preserve facial nerve function and hearing. This study aimed to analyze clinical characteristics of small vestibular schwannomas and to make decision analysis of their diagnostic work-up. **Materials and Method** : We reviewed retrospectively 42 patients who were diagnosed with vestibular schwannoma of size less than 1.5cm at the Departments of Otolaryngology, Ajou University Hospital and Yonsei University Hospital from June, 1994 to May, 2002. This study analyzed chief complaints, size of tumor, audiological studies, caloric test, imaging study, and treatment modality. **Result** : Sixteen of 42 patients (38.1%) were in group IC, 20 patients (47.6%) for group 0 and 6 patients (14.3%) for group 1. One third of cases presented initial symptoms such as sudden hearing loss, the other third presented tinnitus, and 4 cases were detected by chance. Fourteen cases showed near normal hearing and auditory brainstem response (ABR) showed 76.2% sensitivity, which was relatively lower than we expected. **Conclusion** : Because acoustic neuroma was suspected in patients with unilateral hearing loss, tinnitus, and dizziness were very important considerations. We made the decision analysis in the diagnosis of small vestibular schwannoma. It consisted of earlier intervention of fast spin echo magnetic resonance imaging (MRI) based on a cost-effective approach. (Korean J Otolaryngol 2004;47:22-6)

**KEY WORDS** : Vestibular schwannoma · Diagnosis · Magnetic resonance imaging · Auditory brainstem response.

가  
가<sup>1)</sup>  
10 (magnetic resonance im-  
aging) 가  
가  
가<sup>2)</sup>  
1994 6 2002 5 8  
: 2003 1 17 / : 2003 6 23  
: , 442 - 791 5  
가 1.5cm 42  
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1996  
 AANR(American Acoustic Neuroma Registry)  
 4) Group IC  
 group 0  
 0.1~0.9 cm group 1  
 1.0~1.9 cm  
 42 46.2 (16~68 ) 가 19 ,  
 가 23 . 42 6 5

(Table 1)  
 42 group IC 16 (38.1%),  
 group 0 20 (47.6%), group 1  
 6 (14.3%) 가  
 group IC 0.5 cm .

(Table 2)  
 42 15 (35.7%) ,  
 14 (33.3%) . 5

**Table 1.** Tumor size distribution of patients with small vestibular schwannoma

Tumor extension*	Patient group	Number of case (%)
None (intracanalicular tumor)	Group IC	16 ( 38.1)
0.1 - 0.9 cm	Group 0	20 ( 27.6)
1.0 - 1.9 cm	Group 1	6 ( 14.3)
Total		42 (100.0)

\*Measurements represent extension of tumor into the cerebellopontine angle as determined by preoperative MRI

**Table 2.** Main symptoms of patients with small vestibular schwannoma according to tumor size\*

Symptoms	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
Progressive hearing loss	2	1	3 ( 7.1)	
Sudden hearing loss	5	6	14 (33.3)	
Tinnitus	8	6	15 (35.7)	
Dizziness	1	4	5 (11.9)	
Facial palsy	1		1 ( 2.3)	
Detected by chance	2	1	4 ( 9.5)	

\*For tumor size range for each patient group, see Table 1

(11.9%) , 3 (7.1%)  
 , 1 (2.3%)  
 , 4 (9.5%)  
 (Table 3 and 4)  
 가 42 14 (33.3%) 30 dB ,  
 8 (19.0%)가 31~50 dB, 16 (38.1%)가 51~90 dB,  
 4 (9.5%)가 91 dB  
 81% 가 8 (19.0%), 61~80%가 12  
 (28.6%), 41~60%가 7 (16.7%), 21~40%가 7 (16.7%),  
 20% 8 (19.0%) .

(Table 5)  
 wave V  
 interaural latency difference(IT5)가 0.2 msec

**Table 3.** Pure tone averages of patients with small vestibular schwannoma according to tumor size\*

PTA(dB)	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
0 - 30	6	5	3	14(33.3)
31 - 50	4	3	1	8(19.0)
51 - 90	4	10	2	16(38.1)
91 -	2	2		4(9.5)

PTA : pure tone averages

\*For tumor size range for each patient group, see Table 1

**Table 4.** Speech discrimination score of patients with small vestibular schwannoma according to tumor size\*

SDS(%)	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
81 - 100	5	3		8 (19.0)
61 - 80	3	7	2	12 (28.6)
41 - 60	3	3	1	7 (16.7)
21- 40	3	3	1	7 (16.7)
0- 20	2	4	2	8 (19.0)

SDS : speech discrimination score,

\*For tumor size range for each patient group, see Table 1

**Table 5.** Auditory brainstem response of patients with small vestibular schwannoma according to tumor size\*

IT5	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
Normal	5	5		10 (23.8)
Delayed	9	7	5	21 (50.0)
No response	2	8	1	11 (26.2)

IT5 : Interaural latency difference for wave V

\*For tumor size range for each patient group, see Table 1

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5) 42 21 (50%) (43.2%) , (middle cranial fossa approach) 14 , (suboccipital approach) 2 . 10 dB, 10% 11 (78.6%), 1 (50%) . 4 2 15 (35.7%) 2 가 , 1 1 . (Table 6) canal paresis(CP)가 27% . 42 15 (35.7%) CP가 , 27 (64.3%)

(Table 7 and 8) 42 37 (88.1%) , 4 (9.5%) , 1 (2.4%) (gamma knife radiosurgery) . 가 50 dB , 50% 가 가 . 37 16

(Table 9) 37 House - Brackman(HB) grade 24 (64.9%), grade II 7 (18.9%), grade 3 (8.1%), grade HB grade , 가 group IC 14 13 (92.9%), group 0 17 13 (76.5%), group 16 5 (83.3%) . HB grade 가 14 13 (92.9%) , 21 17 (81.0%) .

**Table 6.** Caloric test of patients with small vestibular schwannoma according to tumor size\*

Caloric test	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
Normal	8	5	2	15 (35.7)
No response	8	15	4	27 (64.3)

\*For tumor size range for each patient group, see Table 1

**Table 7.** Management of patients with small vestibular schwannoma according to tumor size\*

Managements	Patient group			Number of case (%)
	IC (n=16)	0 (n=20)	1 (n=6)	
MCFA	7	5	2	14(33.3)
TL	8	11	2	21(50.0)
SO			2	2( 4.8)
No surgery	1	4		5(11.9)

MCFA : middle cranial fossa approach, TL : translabyrinthine approach, SO : suboccipital approach

\*For tumor size range for each patient group, see Table 1

**Table 8.** The results of hearing preservation of small vestibular schwannoma

Managements	Hearing preservation		Number of case (n=17)
	Yes (n=12)	No (n=5)	
MCFA	11	3	14
SO	1	1	2
Gamma knife radiosurgery		1	1

MCFA : middle cranial fossa approach, SO : suboccipital approach

가 가 .<sup>6)</sup> 가 가 .<sup>1)7)</sup> 가 가 .<sup>8)</sup> 가

**Table 9.** Postoperative facial nerve status of patients with small vestibular schwannoma according to tumor size\*

Facial nerve status (House-Brackmann grade)	Patient group			Number of case (%)
	IC (n=14)	0 (n=17)	1 (n=6)	
I	12	7	5	24(64.9)
II	1	6		7(18.9)
III		2	1	3( 8.1)
IV	1	2		3( 8.1)
V				0( 0.0)

\*For tumor size range for each patient group, see Table 1

9) 가 . Selesnick 63%<sup>3)</sup> st-  
 acked ABR(auditory brain stem response)  
 가 , 가<sup>16)</sup> 78.6% ,  
 (1976 ) 0.8%<sup>10)</sup> 가 . Moffrat  
 12) (1999 ) 47.5%<sup>11)</sup> 가 . 10.2%<sup>13)</sup> Gd - enhanced 가<sup>17)</sup>  
 가 19% 가 , 가  
 가 33.3% . Fast Spin Echo(FSE)  
 Gd - enhanced  
 가 , 가 , 15  
 20 Gd - enhanced (40  
 가 . Selesnick<sup>7)</sup> 55 ) 1/3 .  
 Shelton<sup>18)</sup> FSE  
 가 가 가 (1cm ) 27% 가 Gd -  
 , (1~3cm) 19% , (3cm ) enhanced 1/4 350  
 10% , .<sup>19)</sup> FSE , 가 100%,  
 99.6%  
 Welling<sup>17)</sup> 11.9% ( 가 ) 가  
 14) 33 21%가 ( 가 ) Gd - enh-  
 , 71.4%가 2.5 cm anced 50%  
 48% 1 cm 가  
 .<sup>1)</sup> FSE  
 , 가 .  
 가  
 가  
 42 4 가<sup>20)</sup> 가  
 가 가<sup>14)20)</sup> 64.3%  
 , group IC  
 50%, group 0, 1 73.1% 가  
 98.5%<sup>15)</sup> .

42 37 (88.1%)  
 43.2%  
 10dB, 10%  
 75% ,  
 group 2  
 가  
 가  
 37 HB grade  
 가 group IC 92.9%, group 0  
 76.5%, group 1 83.3% 가  
 Wiegand 4) 1579 group IC 84%,  
 group 0 90%, group 1 79%  
 Wiegand 4) 가  
 group 2 56%, group 3 37%, group 4 43%,  
 group 5 27%

42  
 1) ,  
 2) '50-50 rule '(  
 50 dB - 50%) 가 52.4%

3) 가 2/3  
 4) 가 3/4  
 5) 가 가

fast spin echo

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