

CT

1

(computed tomography, CT)

CT

2 CT

82 (84) ,

58 (56 , / : 25/31, 15-61 , 36.2)

26 (26 , / : 11/15, 16-61 , 36.2) . CT (, ,)

, scutum, (tegmen tympani), ,

(ballooning), Prussak (retraction) ,

CT ,

chi-square test

CT

(24%, 81%), (14%, 89%), (10%, 58%), scutum(10%, 89%),

(0%, 8%), (0%, 8%)

(p-value<0.05). () 96.2%

() 36.2% . (3%, 8%) (p-value>0.05).

(4%, 27%), (16%, 96%)

Prussak (14%, 58%), (p-value<0.05).

Prussak (9%, 35%) (72%, 58%), (9%, 19%), (10%, 8%)

가 (p-value>0.05).

CT

tissue)

(1, 3).

가 (1, 2, 14, 15). (granulation 가 가

가 (Computed Tomography, CT) (retraction) CT 가 가 CT

2 CT chi-square test 가 가 chi-square test

82 (84) 56 2 25 31 26 58 21 25 (36.2%), 26 25 11 15 16-61 (36.2) (96.2%) 58 14 (24%), 58 8 (14%), 58 6 (10%) 26 21 (81%), 26 15 (58%) . Scutum 58 6 (10%), 26 23 (88%) 26 23 (88%) (Fig. 1). , scu- (p-value < 0.05). 58 2 (3%), 26 2 가 (p-value > 0.05)(Fig. 2). 58 2 (3%) (Fig. 3), 26 7 (27%)

CT Somatom Plus 24(Siemens Medical System, Erlangen, Germany) 1mm 5mm (orbitomeatal line) (tegmen) (window width) 2500, (level) 300 4000, 80 CT scutum, (ballooning), Prussak



A B C
 Fig. 1. Cholesteatoma; Erosion of lateral semicircular canal and facial canal.
 A, B. Axial scan & coronal scans. An erosion of bony labyrinthine portion of lateral semicircular canal was noted (arrow). In coronal scan, a fistula of lateral semicircular canal (arrow) was well visualized and the facial canal (arrowhead) was exposed to the middle ear cavity with shallow depth and widening.
 C. Axial scan. In same patient above, erosion of lateral bony wall of facial canal was visualized and a fistula of facial canal (arrowhead) was also noted.

26 25 (96%) 58 9 (16%)
 (Fig. 4).
 (p-value < 0.05)(Table 1).
 Prussak
 58 8 (14%), 26
 (Fig. 5),
 58 5 (9%), 26 9 (35%)
 (p-
 value < 0.05). Prussak (2, 5-7).
 58 42 (72%), 26 15 (58%)
 , 58 5 (9%), 26
 5 (19%)
 58 6 (10%), 26 2 (8%)
 (p-value > 0.05)(Table 2).
 88%) (21/26: 81%) (15/26: 58%)
 ,
 가 (p-value > 0.05),
 (p-value < 0.05).

granuloma), (osteitis), 가
 (4). 가
 (1, 2).
 가
 Prussak

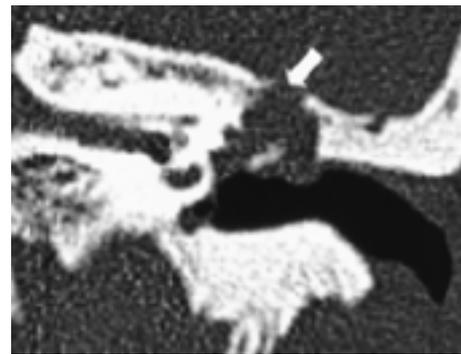


Fig. 2. Cholesteatoma; Ballooning of tympanic cavity and erosion of tegmen tympani. In coronal scan, a soft tissue lesion was noted in epitympanum. Associated findings were a ballooning of epitympanum and erosion of tegmen tympani (arrow).

(cholesterol

Table 1. Comparison of Bony Changes in Chronic Otitis Media with and without Cholesteatoma

	COM with Cholesteatoma(n= 58)	COM without Cholesteatoma (n= 26)	p-value
Bone Erosion	96.2 %	36.2 %	< 0.01
Ossicle	92.3 %	25.9 %	< 0.01
Malleus	80.8 %	24.1 %	< 0.01
Incus	88.5 %	13.8 %	< 0.01
Stapes	57.7 %	10.3 %	< 0.01
Scutum	88.5 %	10.3 %	< 0.01
Tegmen	7.7 %	3.4 %	0.40
Facial Canal	7.7 %	0.0 %	0.03
Lateral Semicircular Canal	7.7 %	0.0 %	0.03
Ballooning of Tympanic Cavity/Antrum	96.2 %	15.5 %	< 0.01
Displacement of Ossicles	26.9 %	3.5 %	< 0.01

COM: Chronic Otitis Media.

Table 2. Comparison of Other CT Findings in Chronic Otitis Media with and without Cholesteatoma

	COM with Cholesteatoma (n= 26)	COM without Cholesteatoma (n= 58)	p-value
Bulging Soft Tissue in Prussak Space	57.7 %	13.8 %	< 0.01
Soft Tissue in Prussak Space	57.7 %	72.4 %	0.18
Pars Flaccida Perforation	34.6 %	8.6 %	< 0.01
Tympanic Membrane Retraction	19.2 %	8.6 %	0.17
Tympanosclerosis	7.7 %	10.3 %	0.70

COM: Chronic Otitis Media.

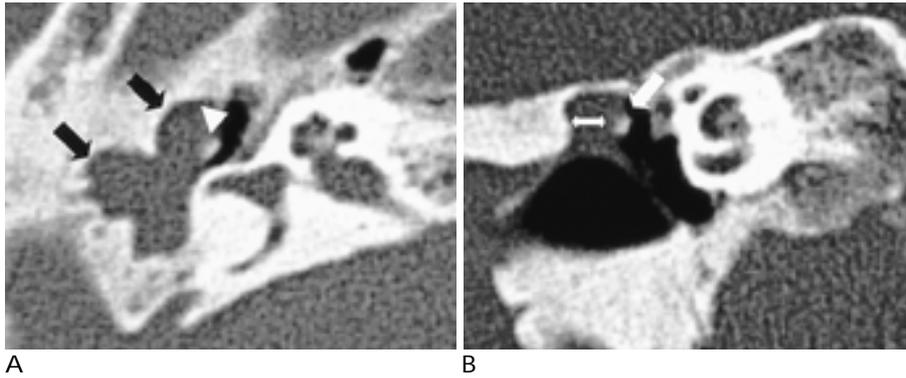


Fig. 3. Cholesteatoma; Medial displacement of the ossicular chain.
 A. Axial scan. A soft tissue lesion was noted at the mastoid antrum, aditus ad antrum and attic portion (arrows). The upper portion of body of incus was displaced to the medial portion of middle ear cavity (arrowhead).
 B. In coronal CT scan, a medial displacement of body of incus (arrow) and a widening of the Prussack's space were noted (bidirectional arrow).

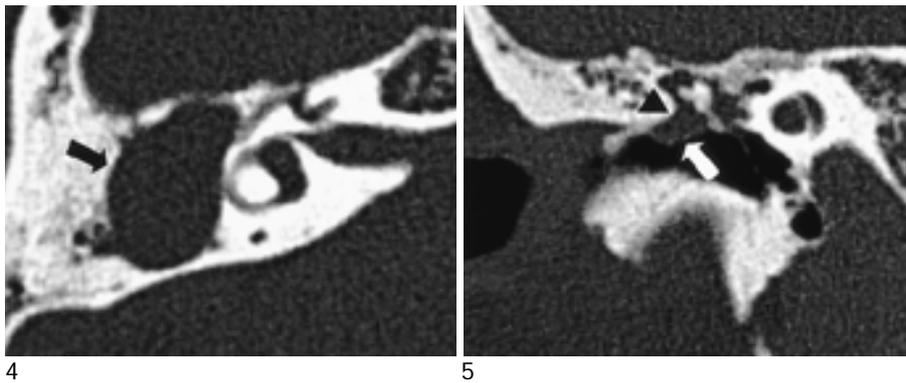


Fig. 4. Cholesteatoma; Ballooning of mastoid antrum. Axial scan. Mastoid antrum was markedly ballooned (arrow). This ballooning erosion was extended to the aditus ad antrum and attic portion.
 Fig. 5. Change in Prussack's space. Coronal scan. A lateral and inferior bulging of pars flaccida portion of tympanic membrane with a soft tissue lesion in Prussack's space (arrow) and erosion of scutum (arrow head) were noted in the case of chronic otitis media with cholesteatoma.

(2, 5, 7).
 (5). 38-62% 가
 58%
 (13).
 CT,
 (1, 8).
 CT
 (1, 2),
 (2),
 (pericyte)가
 (acid phosphatase)
 (3).
 CT 가
 (9). (collagen) (col-
 5-74%
 (10). (3, 4, 7).
 13-82% 50%
 CT
 40-60HU (15).
 (1, 2, 7, 11). 58 21 (36.2%)
 CT
 (1, 9, 12, 14, 15).

scutum, , 96% 97% , 96%
 90.5%, 36% 4% (4).
 (long process) 가 가
 (7). CT 가 가 (4).
 CT (7).
 (5). 가
 (1, 8). 가 tract (12).
 Prussak (lateral pro-cess) 가 (lateral malleolar ligament) (12).
 CT Prussak scutum (1). scutum, (,),
 Prussak (1). Prussak 가
 가 (scalloping) , K(rner 가
 (8). (1).
 (trabeculation) CT
 (air cell) 가 가 가 (8).
 가 (dehiscence)
 (8). (8).
 S-
 (8). 가
 (1), Prussak

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Differential Diagnosis between Chronic Otitis Media with and without Cholesteatoma by Temporal bone CT: Focus on Bone Change and Mass Effect¹

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Purpose : In order to determine specific differences, we compared the temporal bone CT findings of chronic otitis media(COM) with and without cholesteatoma, focusing on bone change.

Materials and Methods : Between 1997 and 1998, 82 patients(84 cases) underwent temporal bone CT and were shown to have COM, with or without cholesteatoma after mastoidectomy and tympanoplasty. There were 36 cases of COM with cholesteatoma(26 patients, M:F= 11:15; age range, 16-61 [mean, 36.2] years), and 58 cases without cholesteatoma(56 patients, M:F= 25:31, age range, 15-61 [mean, 36.2]years). The findings of temporal bone CT were analyzed at the point of bony changes including erosion and medial displacement of ossicles(malleus, incus, and stapes), erosion or destruction of the scutum, tegmen, facial canal, and lateral semicircular canal, and ballooning of the tympanic cavity and mastoid antrum. In addition, the soft tissue changes seen on temporal bone CT were analyzed at the site of lateral bulging of soft tissue in Prussak 's space, perforation of the pars flaccida, tympanic membrane retraction, and tympanosclerosis. We retrospectively compared the findings of temporal bone CT with the surgical findings, and to assess statistical significance, the Chi-square test was used.

Results : Bone erosion or destruction was seen in 36.2 % of COM cases without cholesteatoma, and in 96.2 % of cases with cholesteatoma. Comparing COM with and without cholesteatoma, the erosion of ossicles including the malleus(81 %, 24 %), incus(88 %, 14 %), stapes(58 %, 10 %), scutum(88 %, 10 %), facial canal(8 %, 0 %), and lateral semicircular canal(8 %, 0 %), was more common in COM with cholesteatoma(p-value< 0.05), with the exception of erosion of the tegmen(8 %, 3 %). Other bony changes including medial displacement of ossicles(27 %, 3 %), ballooning of tympanic cavity and mastoid antrum(96 %, 16 %), and the soft tissue changes including lateral bulging of soft tissue in Prussak 's space(58 %, 14 %) and perforation of the pars flaccida(35 %, 9 %) were more common in COM with cholesteatoma(p-value< 0.05). Soft tissue in Prussak 's space(58 %, 72 %), retraction of the tympanic membrane(19 %, 9 %), and tympanosclerosis(8 %, 10 %) were not however, important findings(p-value> 0.05).

Conclusion : Bone erosion or destruction was seen in COM without cholesteatoma, but expansile bone erosion or destruction with mass effect suggested COM with cholesteatoma. These findings of temporal bone CT in COM demonstrate the existence and extent of combined cholesteatoma, and are therefore valuable.

Index words : Ear, inflammation and infection
Cholesteatoma
Temporal bone, CT

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개회일 시간	4월 21일 (금)					4월 22일 (토)	
	Room A	Room B	Room C	중 대 취 즈 (1)	의 료 기 기 전 시	통합 Room	
07:00	등 록					의 료 기 기 전 시	등 록
08:00	소화기계	뇌신경계	흉부	핵소삼·저소삼 수상 및 논문발표 위암, Breast, 세로네키글 신장식 살립, 나이로제드, 흉갑, 위암 장막기글 신장식			
08:30				특강: 강우함 관장(국립경주박물관) - 경주문화의 이해 -			
09:00				Technical Forum - PACS -			
09:30				Symposium - Intracranial Aneurysms - 진행 : 김동익(연세의료)			
10:00				이사회			
10:30				오찬			
11:00	오찬						
12:00	오찬						
12:30	오찬						
13:00	오찬						
14:00	소화기계	두경부	종재	중 대 취 즈 (2)	의 료 기 기 전 시		2000년도 중대 전공의 연수교육 - Radiological Embryology -
15:00	근골격계	소아	심혈관계				
16:00			비뇨기계				
17:00			유방			컴퓨터 기타	
18:00		간담회					
19:00		간담회					
20:00		간담회					

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