

Chronic Suppurative Otitis Media with Acquired Cholesteatoma

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History

A 40-year-old male patient, complaining of right-sided otorrhea for the past few weeks, presented himself to the hospital. The physical examination revealed the suspicion of chronic suppurative otitis media (CSOM) with a cholesteatoma. A CT scan was requested for further clarification.

Diagnosis

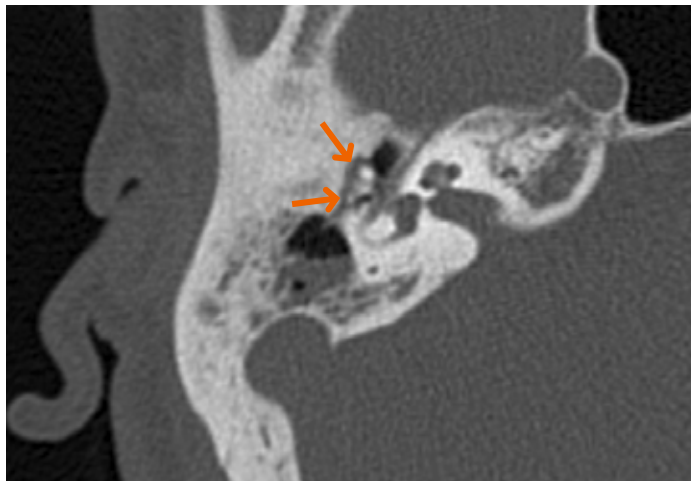
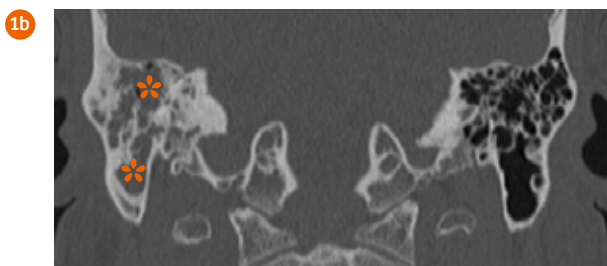
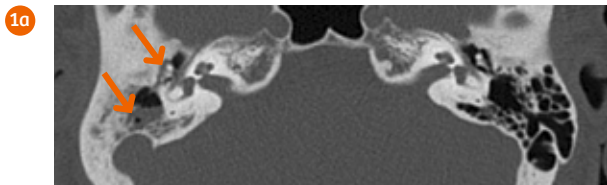
CT images showed a right-sided soft tissue opacification in the middle ear including Prussak's space and epitympanum with blunting of the scutum and erosion of the ossicles. An absence of air in the mastoid air

cells was seen suggesting sclerosis. These features are consistent with a cholesteatoma.

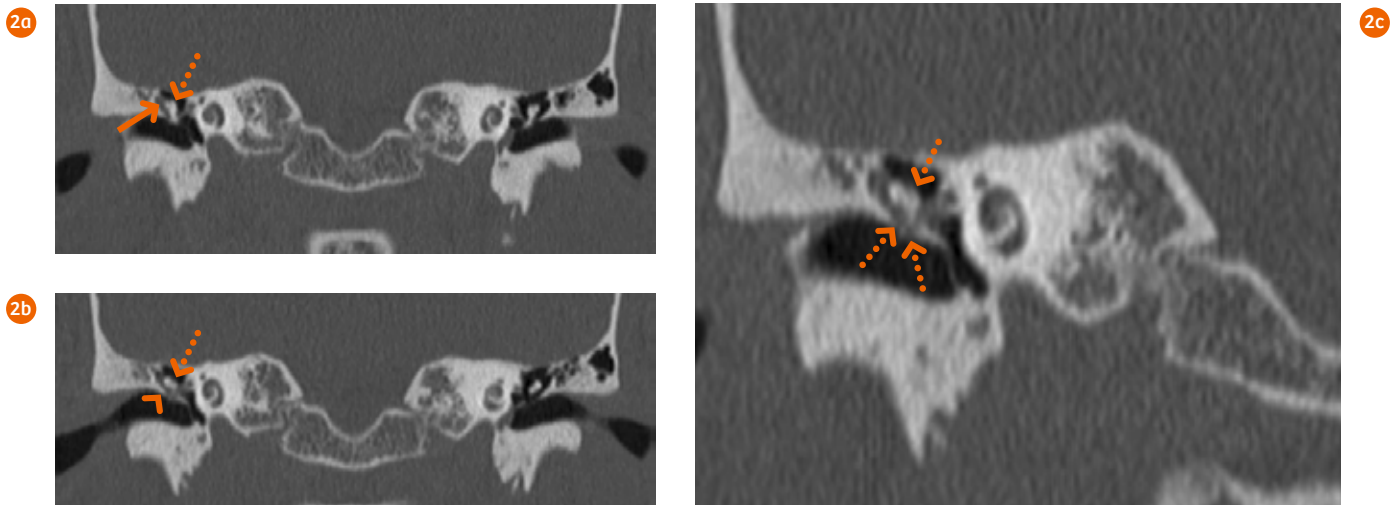
Comments

CSOM is a chronic inflammation of the middle ear and mastoid cavity. It is characterized by discharge from the middle ear through a perforated tympanic membrane for at least 6 weeks. It can occur with and without cholesteatoma and is often accompanied by hearing impairment. Cholesteatoma is traditionally diagnosed by an otoscopic examination. High resolution computed tomography (HRCT) is indicated to evaluate the extension and the complications of

the cholesteatoma, which can draw the surgeon's attention to potential surgical dangers and complications of the disease. The most frequent CT signs for diagnosing a cholesteatoma are middle ear mass and bony lysis. The challenge is to achieve high resolution images, for visualizing the minute structural details, and at the same time, to keep the radiation dose as low as possible. In this case, the Tin Filter technique was applied. This technique cuts out lower energies from the X-ray spectrum to reduce dose and minimizes beam-hardening artifacts to optimize image quality. Thus an exceptional low dose CTD_{vol} of 7 mGy was achieved without compromising image quality. ●



1 Axial (Figs. 1a and 1c) and coronal (Fig. 1b) MPR images show right-sided soft tissue opacification in the epitympanum (arrows) and absence of air in mastoid air cells (asterisks). Left side mastoid process is well pneumatized.



2 Coronal MPR images show soft tissue opacifying the Prussak's space (Fig. 2a, arrow) with blunting of the scutum (Fig. 2b, arrow head) and erosion of the ossicles (dashed arrows) on the right side.

Examination Protocol

Scanner	SOMATOM go.Now		
Scan area	Middle & inner Ear	DLP	112 mGy cm
Scan mode	Spiral	Effective dose	0.35 mSv
Scan length	89 mm	Rotation time	1 s
Scan direction	Cranio-caudal	Pitch	0.8
Scan time	10 s	Slice collimation	16 × 0.7 mm
Tube voltage	Sn110 kV	Slice width	0.8 mm
Effective mAs	226 mAs	Reconstruction increment	0.4 mm
Dose modulation	CARE Dose4D™	Reconstruction kernel	Hr64
CTDI _{vol}	7.02 mGy		

The outcomes by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.