

## Original Research

### Evaluation of efficacy of Computed Tomography in Chronic Suppurative Otitis Media

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#### ABSTRACT:

**Background:** The present study was conducted for evaluating efficacy of Computed Tomography in Chronic Suppurative Otitis Media. **Materials & methods:** The present prospective study was conducted on 50 consecutive adult cases of unsafe CSOM presenting. A detailed history with regard to otorrhoea, deafness, tinnitus, otalgia and vertigo was taken and recorded. A complete general physical examination was carried out. Each of the selected cases of unsafe CSOM were subjected to CT of temporal bone. All patients were assessed and surgery was performed. The operative findings were recorded and compared to the CT scan findings. **Results:** While correlating the CT findings with surgical findings, it was seen that sensitivity and specificity for soft tissue masses was 92.7 percent and 100 percent respectively. Sensitivity and specificity for presence of disease was 97.2 percent and 71.8 percent respectively. Sensitivity and specificity for malleus erosion was 92.3 percent and 91.3 percent respectively. Sensitivity and specificity for incus erosion was 73.2 percent and 75.9 percent respectively. Sensitivity and specificity for stapes erosion was 49.1 percent and 35.7 percent respectively. **Conclusion:** Otolologists should use CT findings more often, especially in complicated cases as an adjunct to better preoperative assessment, and thus, the surgical outcome.

**Key words:** Congenital, Nasal masses

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#### INTRODUCTION

Pathology of the external and middle ear is the third most common reason of visiting a general practitioner or a family doctor.<sup>1, 2</sup> In children and teenagers, inflammatory conditions of the middle ear are the most frequent reasons to prescribe antibiotics and perform surgery.<sup>3</sup> In the majority of these cases, proper diagnosis is made by clinical examination alone and patients will not benefit from additional diagnostic imaging studies. However, the prevalence of ear infections increased significantly between 1980 and 1996, and this may suggest that the current approach to preventing and treating middle ear inflammation is not adequate.<sup>2, 3</sup> Therefore, especially in complicated and recurrent conditions, imaging plays an important role; imaging findings may fundamentally influence the treatment. Also, in non-inflammatory conditions of external and middle ear computed tomography

(CT) or magnetic resonance imaging (MRI) would provide a diagnosis and/or necessary information for surgery in a significant number of cases.<sup>4-6</sup> Hence; the present study was conducted for evaluating efficacy of Computed Tomography in Chronic Suppurative Otitis Media.

#### MATERIALS & METHODS

The present prospective study was conducted on 50 consecutive adult cases of unsafe CSOM presenting. A detailed history with regard to otorrhoea, deafness, tinnitus, otalgia and vertigo was taken and recorded. A complete general physical examination was carried out. Each of the selected cases of unsafe CSOM were subjected to CT of temporal bone. All patients were assessed and surgery was performed. The operative findings were recorded and compared to the CT scan

findings. All the results were recorded and analyzed using SPSS software.

**RESULTS**

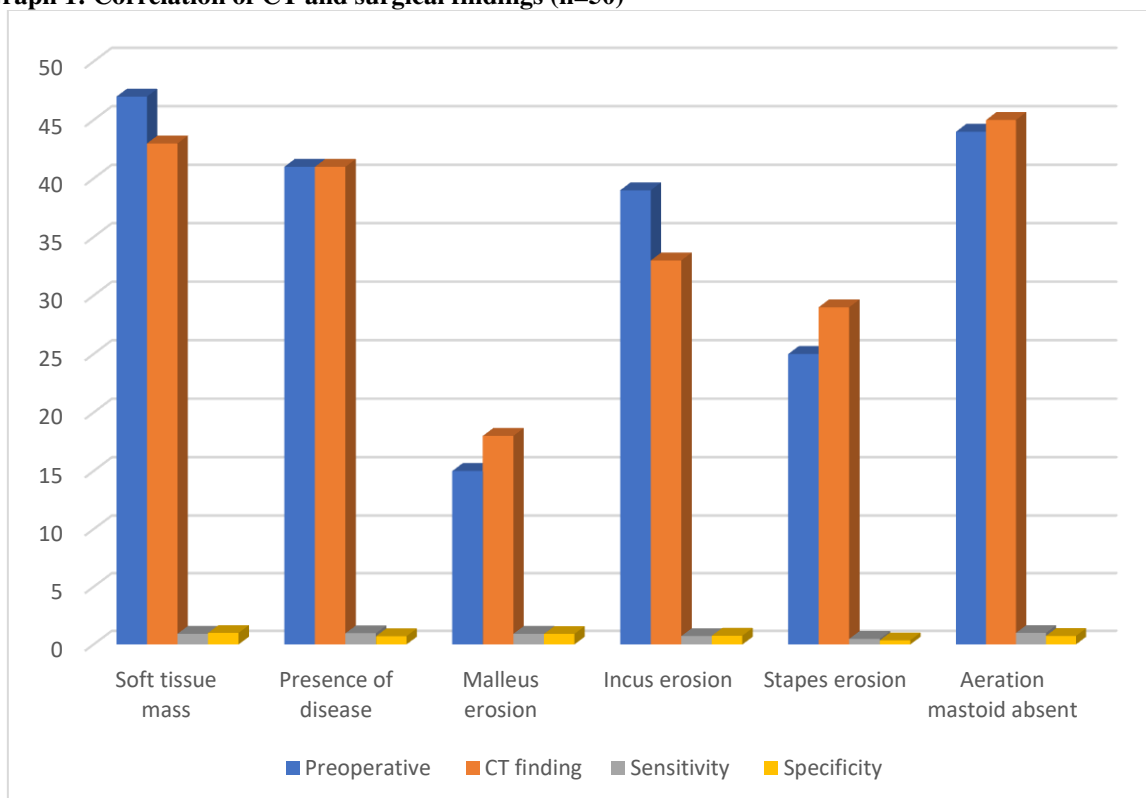
A total of 50 patients were enrolled. Mean age of the patients was 29.7 years. Out of 50 patients, 33 patients were males while the remaining 17 were females. While correlating the CT findings with surgical findings, it was seen that sensitivity and specificity for soft tissue masses was 92.7 percent and 100 percent

respectively. Sensitivity and specificity for presence of disease was 97.2 percent and 71.8 percent respectively. Sensitivity and specificity for malleus erosion was 92.3 percent and 91.3 percent respectively. Sensitivity and specificity for incus erosion was 73.2 percent and 75.9 percent respectively. Sensitivity and specificity for stapes erosion was 49.1 percent and 35.7 percent respectively.

**Table 1: Correlation of CT and surgical findings (n=50)**

Variable	Preoperative	CT finding	Sensitivity	Specificity
Soft tissue mass	47	43	92.7%	100%
Presence of disease	41	41	97.2%	71.8%
Malleus erosion	15	18	92.3%	91.3%
Incus erosion	39	33	73.2%	75.9%
Stapes erosion	25	29	49.1%	35.7%
Aeration mastoid absent	44	45	100%	73.9%

**Graph 1: Correlation of CT and surgical findings (n=50)**



**DISCUSSION**

Chronic suppurative otitis media (CSOM) causes recurrent or persistent discharge (otorrhoea) through a perforation in the tympanic membrane, and can lead to thickening of the middle-ear mucosa and mucosal polyps. It usually occurs as a complication of persistent acute otitis media with perforation in childhood. CSOM is a common cause of hearing impairment, disability, and poor scholastic performance. Occasionally it can lead to fatal intracranial infections and acute mastoiditis, especially in developing countries. In children with

CSOM, topical antibiotics may improve symptoms compared with antiseptics. The benefits of ear cleansing are unknown, although this treatment is usually recommended for children with ear discharge. In adults with CSOM, topical antibiotics either alone or in combination with topical corticosteroids may improve symptoms compared with placebo or either treatment alone, although we found few adequate studies. There is consensus that topical antibiotics should be combined with ear cleansing so that the antibiotics are able to reach the middle ear space.<sup>7- 10</sup> Hence; the present study was

conducted for evaluating efficacy of Computed Tomography in Chronic Suppurative Otitis Media.

A total of 50 patients were enrolled. Mean age of the patients was 29.7 years. Out of 50 patients, 33 patients were males while the remaining 17 were females. While correlating the CT findings with surgical findings, it was seen that sensitivity and specificity for soft tissue masses was 92.7 percent and 100 percent respectively. Sensitivity and specificity for presence of disease was 97.2 percent and 71.8 percent respectively. Sensitivity and specificity for malleus erosion was 92.3 percent and 91.3 percent respectively. Sensitivity and specificity for incus erosion was 73.2 percent and 75.9 percent respectively. Sensitivity and specificity for stapes erosion was 49.1 percent and 35.7 percent respectively. Qvarnberg Y et al measured area of the mastoid pneumatization planimetrically on lateral X-ray pictures of the ears of 232 patients with acute otitis media. In the present otitis media patients the mean size of the air cell system as a function of the age was similar to the values given in earlier investigations of "normal" populations. The size of the air cell system was classified as small, medium-sized or large as a function of the age based upon the mean  $\pm$  1 S.D. There were 61 patients who had no previous history of otitis media. However, 10% of these patients had a small air cell system and only 15% a large cell system, which indicated that many had suffered from otitis media which had not been recognized. The size and clouding of the air cell system had a significant prognostic value with regard to healing and eventual outcome of the disease.<sup>10</sup> Migirov L et al determined, by comparison of radiologic and surgical findings, the diagnostic value of CT in complicated acute otomastoiditis. The study group consisted of 37 patients without a history of chronic ear disease. In this study, CT enabled correct diagnosis of 26 of 27 cases (96%) of subperiosteal abscess, 17 of 18 cases (94%) of mastoid cortex erosion in patients with subperiosteal abscess, and several intracranial complications, including epidural abscess, subdural empyema, and perisinus abscess. The CT scan produced overdiagnosis in some cases: sigmoid sinus thrombosis in 1 patient, mastoid cortex erosion in 2 children with subperiosteal abscess, and bone erosion toward the posterior cranial fossa in 1 patient with meningitis. Their findings suggested that subperiosteal abscess is a disease of young children; however, when it develops in an older child, cholesteatoma should be suspected. Furthermore, acute mastoiditis complicated with facial nerve paralysis may be associated with cholesteatoma in 66% of cases. Their experience showed that CT had a sensitivity of 97% and a positive predictive value of 94% in the diagnosis of complicated acute otomastoiditis.<sup>11</sup>

## CONCLUSION

Otologists should use CT findings it more often, especially in complicated cases as an adjunct to better preoperative assessment, and thus, the surgical outcome.

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