

Misdiagnosis of Thin Tegmen as Superior Semicircular Canal Dehiscence Syndrome

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Introduction

Superior semicircular canal dehiscence syndrome (SSCDS) is caused by the absence of bone overlying the semicircular canal. Accurately diagnosing SSCDS may be difficult, as symptoms of true dehiscence are also associated with other otological issues. While CT imaging is the most common method utilized to identify SSCDS, limitations in this technology may lead to the misidentification of thin tegmen tympani as superior semicircular canal dehiscence. Furthermore, thinning of the tegmen tympani may also present symptoms similar to those associated with SSCDS, such as dizziness, oscillopsia, autophony, and disequilibrium. The identification of thin tegmen as SSCD may lead to unnecessary surgery. In this study, data was collected in order to identify the frequency of misdiagnosis of thinning of the tegmen tympani as SSCDS, and analyze the effectiveness of CT imaging as the primary method in diagnosing SSCDS.

Methods

A systematic review for relevant studies was conducted using PubMed. Search terms included superior semicircular canal dehiscence, near dehiscence, thinning of the tegmen, and thin bone over superior semicircular canal. Inclusion criteria consisted of cases in which misdiagnosis of superior semicircular canal dehiscence occurred. Exclusion criteria were tegmental defects besides thinning of the bone and cases that lacked symptoms of SSCD. Data was collected from three studies in which CT imaging was used to identify patients with SSCDS, and in which cases were later reviewed in order to identify the accuracy of the diagnosis. The rate at which thin tegmen is misdiagnosed as SSCDS was calculated by comparing the number of cases in each study in which patients with thin tegmen were misidentified as having SSCDS with the total number of patients in each study who were identified as having SSCDS.

Results

The study identified 245 cases characterized as probable SSCDS by CT imaging that fit our inclusion criteria. In 11% of the cases (27 cases), thinning of the tegmen overlying the superior semicircular canal was improperly identified as SSCDS.

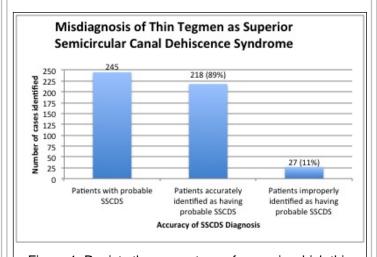


Figure 1: Depicts the percentage of cases in which thin tegmen was misidentified as SSCDS.

Conclusions

Patients with thin bone overlying the superior semicircular canal can exhibit symptoms similar to those found in patients with true SSCDS. Studies suggest that CT imaging may also improperly identify thin tegmen as true dehiscence. Our results suggest that while it is rare, thinning of the tegmen may be misdiagnosed as SSCDS. Therefore, it is important to know the condition of the bone preoperatively in order to develop an accurate surgical plan. Studies indicate that a combination of CT imaging and audiometry may help to reduce the number of cases in which thin tegmen is misidentified as SSCDS. Thus, further studies testing the limitations of CT imaging on accurately differentiating between thin bone and SSCDS should be conducted.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of improved CT imaging in the diagnosis of SSCDS, 2) Discuss, in small groups, the potential for improvements in CT imaging, 3) Identify an effective treatment for SSCDS and thinning tegmen.

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