Author’s response to reviews

Title: Value of CT and three-dimensional reconstruction revealing specific radiological signs for screening causative high jugular bulb in patients with Menière's disease

Authors:

Junjiao Hu (Hujujiao91@csu.edu.cn)
Anquan Peng (penganquan@csu.edu.cn)
Kai Deng (Dengkai0303@csu.edu.cn)
Chao Huang (huangchaofan@csu.edu.cn)
Qin Wang (455616210@qq.com)
Xueying Pang (Panxue2004@sina.com)
Wei Liu (liuwei007@csu.edu.cn)
Zhiwen Zhang (zhangzhiwen@csu.edu.cn)
Wenqi Jiang (wenqijiang@csu.edu.cn)
Yichao Chen (2204120818@csu.edu.cn)

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I have carry out the corrections, thank you.

Abstract

Background

The aim of the present study was to investigate the pathological features of vestibular aqueduct (VA) related high jugular bulb (HJB) and explore the possible cause-consequence relation between HJB and endolymphatic hydrops (EH), and the potential specific radiological signs for screening causative HJB in MD.

Methods

High-resolution computed tomography (HRCT) and three-dimensional reconstruction (3DRC) were used to detect the anatomical variables associated with VA and jugular bulb (JB) in hydropic and non-hydropic ears. The presence or absence of EH in the inner ear was determined by gadopentetate dimeglumine-enhanced magnetic resonance imaging.

Results
JB was classified as: Type 1, no bulb; type 2, below the inferior margin of the posterior semicircular canal (PSCC); type 3, between the inferior margin of the PSCC and the inferior margin of the internal auditory canal (IAC); type 4, above the inferior margin of the IAC. There were no significant differences in the presence of types 1, 2 and 3 JB between two groups. The presence of type 4 JB, average height of the JB and prevalence of the non-visualization of the VA in CT scans showed significant differences between two groups. The morphological pattern between the JB and VA revealing by 3DRC was classified as: Type I, the JB was not in contact with the VA; type II, the JB was in contact with the VA, but the latter was intact without obstruction; type III, the VA was obliterated by HJB encroachment. There were no significant differences in the presence of type I and II between two groups. Type III was identified in 5 hydropic ears but no non-hydropic ears, with a significant difference observed between the two groups.

Conclusion
The present results showed that JB height and non-visualization of the VA on Pöschl's plane could render patients susceptible to the development of EH. A jugular bulb reaching above the inferior margin of the IAC (type 4 JB) could obstruct VA, resulting in EH in a few isolated patients with MD. VA obliteration revealed by 3DRC, as a specific radiological sign, may have the potential for screening causative HJB in MD.