Using radiomics to predict hearing conditions in vestibular schwannoma patients

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A recent study demonstrates that radiomics imaging analysis can effectively forecast the hearing status of patients with vestibular schwannoma. Since treatment methods, such as surgery or active surveillance, vary for these patients based on tumor size and hearing condition, predicting hearing status is crucial in planning and determining the appropriate treatment.

The research team led by Professor June Choi from the Department of Otorhinolaryngology-Head and Neck Surgery at Korea University Ansan Hospital (including Professors June Choi, Kang Hyeon Lim from the Department of Otorhinolaryngology-Head and Neck Surgery and Seung-hak Lee from Core Research & Development Center) utilized radiomics to retrospectively analyze MRI scans and hearing data from 73 patients, encompassing 115 MRI examinations. This is the first study to analyze the correlation between vestibular schwannoma and hearing status using radiomics imaging analysis.

The paper is published in the journal *European Archives of Oto-Rhino-Laryngology*.

Radiomics imaging analysis is a technique that extracts and analyzes various quantitative and statistical features from imaging data, creating genetic findings and prognostic models for individual patients. The research team isolated specific radiomics features from 70 characteristics in MRI images that best predict hearing status.

They conducted over ten repeated analyses to ensure the reliability and stability of their findings. This approach offers an objective method to predict the hearing status of patients with vestibular schwannoma.

Professor Choi explained, "When deciding on the treatment approach for vestibular schwannoma, we consider a range of factors, including the size of the tumor and the patient's hearing condition. By analyzing the data obtained from MRIs using AI-based radiomics techniques, we were able to predict the hearing status of patients with vestibular schwannoma. Demonstrating that radiomics can yield advanced outcomes holds significant importance."

The team plans to integrate this technique with the Korea University Medical Center's P-HIS (Cloud-based Precision Hospital Information

System) to facilitate its use in clinical settings.

More information: Kang Hyeon Lim et al, Analysis of the association between vestibular schwannoma and hearing status using a newly developed radiomics technique, *European Archives of Oto-Rhino-Laryngology* (2024). DOI: 10.1007/s00405-023-08410-1

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