ABSTRACT

Meniere’s disease is a disease characterized by recurrent vertigo, fluctuant hearing loss, tinnitus and aural fullness. The pathogenesis of the disease remains elusive but is thought to be due to a distortion of the membranous labyrinth. The unpredictable, fluctuating nature of Meniere’s disease, the lack of an objective diagnostic test, and the high rate of spontaneous resolution make it difficult to come to a conclusive diagnosis.

In recent years, attempts to quantify endolymphatic hydrops has been increasing. Advances in imaging techniques have enabled visualization of the inner ear, allowing identification of separate perilymph and endolymphatic partitions. Our study aims to evaluate the utility of delayed contrast MRI in the initial diagnosis of Meniere’s disease, and to compare our data to that from multiple publications reporting on MRI findings and their correlation to Meniere’s disease.

This study in our institute has 22 subjects who all presented with suspected Meniere’s disease. There were a range of duration of symptoms, but none had confirmed diagnosis of Meniere’s disease. The patients underwent a four-hour delayed intravenous contrast MRI of the inner ear. The Radiologist interpreting the MRI findings and the Otolaryngologist interpreting the patients’ symptoms were each blinded to the other’s report (Radiological evidence of hydrops versus definite, probable Meniere’s disease). Volumetric calculations and comparisons of the right and left endolymph in the vestibule were compared within each patient. Differences of more than 25% between each side was treated as a positive finding.

Of the 10 ears that were deemed to show MRI signs of hydrops, 8 were found to have definite Meniere’s disease (according to 2015 AAO-HNSF definition). Of the 12 ears reported to have negative MRI findings, 8 of those were found not to have clinically defined Meniere’s. This gives a specificity of 80.0% and sensitivity of 66.7%. This is lower than what has been published in the literature. Publications on the imaging processes and their interpretation vary widely and continuously evolving. This may imply a need to review our own MRI protocols and to further refine the imaging and reporting processes.

The initial review of our data is encouraging and could suggest a role for delayed contrast MRI to aid in the diagnosis of suspected Meniere’s disease. Most studies on imaging are on patients with established diagnosis of Meniere’s disease. However, the greatest utility would be in the early stages of the diseases when the diagnosis is unclear. In this aspect, more studies need to be done to assess if delayed contrast MRI can be used as an initial diagnostic tool.