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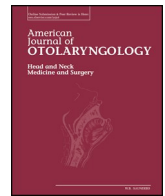
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T2-weighted MRI screening algorithm for patients with asymmetric sensorineural hearing loss



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Dear Editor:

We read with interest the article by Valesano et al. [1]. As noted in the article, gadolinium-enhanced T1-weighted MRI (GdT1WI) has been the “gold standard” imaging study for many years in the diagnosis of vestibular schwannoma in asymmetric sensorineural hearing loss (ASNHL). In recent years, with improved imaging technology, a push toward non-contrast T2-weighted MRI (T2WI) for screening of patients with ASNHL has been made in an effort to decrease patient exposure to gadolinium, acquisition time, and cost. Previously, when compared with GdT1WI, non-contrast T2WI had not been shown to provide an acceptable level of sensitivity in ruling out intralabyrinthine schwannoma (ILS) as a possible etiology of ASNHL. We commend the authors for showing that non-contrast T2WI is sensitive enough to rule out ILS in most cases of ASNHL. In an era of medicine desperate for improved outcomes, decreased time and financial costs, and fewer iatrogenic adverse events, we wish to propose a simple algorithm to screen patients who present with ASNHL. Our aim is to increase the yield of abnormal T2WI findings while avoiding imaging in those who may not need it.

A patient who presents with ASNHL should first undergo thorough history and physical examination by an otolaryngologist. If ASNHL is suspected, audiological examination should follow. Patients with ASNHL plus 1 or more of the following 3 criteria should proceed to MRI: a 15 dB asymmetry at 3 kHz frequency, unilateral tinnitus, and/or dizziness/vertigo. These findings have been shown to increase the yield of positive findings on MRI [2,3]. Following this screening, patients requiring MRI should undergo thin-slice high-resolution fast spin echo T2WI (FSE T2WI). Image slices should be 2 mm or less with minimal intersection gap to rule out presence of ILS, which can be 2–5 mm in diameter or less [4,5]. FSE T2WI will show a focal filling defect of the normal high-signal-intensity fluid within the labyrinth [5]. If equivocal findings are achieved on FSE T2WI, subsequent GdT1WI for further workup should follow. Patients not meeting initial criteria for MRI should be followed with biannual audiological examination [3].

Proper implementation of this algorithm to screen patients with ASNHL could provide significant cost-saving benefits for institutions [4,6] and reduce unnecessary patient exposure to gadolinium contrast while still detecting both common and rare causes of ASNHL with high sensitivity. In

the modern era of big data and computer learning, algorithms such as this can be tested and improved to enhance the standard of medical care. Further studies need to be performed to determine the efficacy and cost-savings of this algorithm in the screening of patients with ASNHL, being mindful of the possibility of ILS as a potential cause.

Declarations of interest

None.

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