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Intra-Cochlear Lipoma- A rare case diagnosed with specific MRI protocols

A rare case of a lipoma within the internal auditory canal (IAC) extending to the basal turn of the cochlea is presented. A 70-year-old female presented with a worsening left sided sensorineural hearing loss (SNHL). She reported no associated tinnitus or vertigo with a background of bilateral hearing loss for over 10 years and previous industrial noise exposure. Her audiogram demonstrated a moderate to severe SNHL with corresponding "roll over" on speech perception ie. reduced speech recognition with increased amplification of sound. This feature can be seen in patients with vestibular nerve schwannoma¹. Magnetic Resonance Imaging (MRI) was requested to exclude retro-cochlear pathological causes for her worsening unilateral hearing loss, commonly used to exclude vestibular schwannoma. Initial unenhanced MRI study demonstrated a 4mm x 3.6mm intracanalicular hyperintense focus on T1 weighted imaging extending to the base of the cochlea (image 1). This oval mass displaced both the facial nerve and the vestibular nerve superiorly, with otherwise normal bilateral vestibulocochlear apparatuses. Subsequent T1 MRI with gadolinium contrast and fat suppression demonstrated complete signal loss (image 2). The case was discussed at a multidisciplinary meeting and the working diagnosis of IAC lipoma was made. The patient was subsequently managed conservatively with monitoring of the lipoma. A repeat MRI organised 12 months and 24 months after demonstrated no change in the lipoma dimensions. The patient's hearing remained stable during 2 years of monitoring.

Intracranial lipomas have been described as a rare entity comprising fewer than 0.5% of intracranial tumours². Of these rare intracranial lipomas, reports indicate less than 9% are found at the IAC or the cerebellopontine angle (CPA)³. When considering all tumours of the IAC or CPA, only 0.14-1% are lipomas⁴. In addition, lipomas involving the cochlea are rare even in the literature⁵. CPA or IAC lipomas may present with symptoms similar to those caused by vestibular schwannomas, with hearing deficits, tinnitus and dizziness being the most commonly reported⁶.

Little is known about the growth progression of IAC or CPA lipomas because of their rare occurrence. The literature describes a general assumption that lipomas have a slower growth rate than schwannomas^{7,8}. Furthermore, lipomas are commonly described to incorporate nerve tissue and other neural structures which may render less favorable post-surgical outcomes compared to surgery for schwannomas⁷. Thus emphasizing the importance of establishing a non-invasive diagnosis.

Schwannoma and meningiomas usually appear iso-hypointense on T1 weighted MRI images and iso-hyperintense on T2 weighted images, which enhance with gadolinium contrast. Lipomas, however, are characteristically different with

hyperintense signals on T1 weighted imaging and usually do not enhance with gadolinium contrast. However cases of gadolinium enhancement in lipomas have been reported previously⁹ and therefore fat suppression sequence of T1 weighted MRI images aids in confirming the diagnosis.

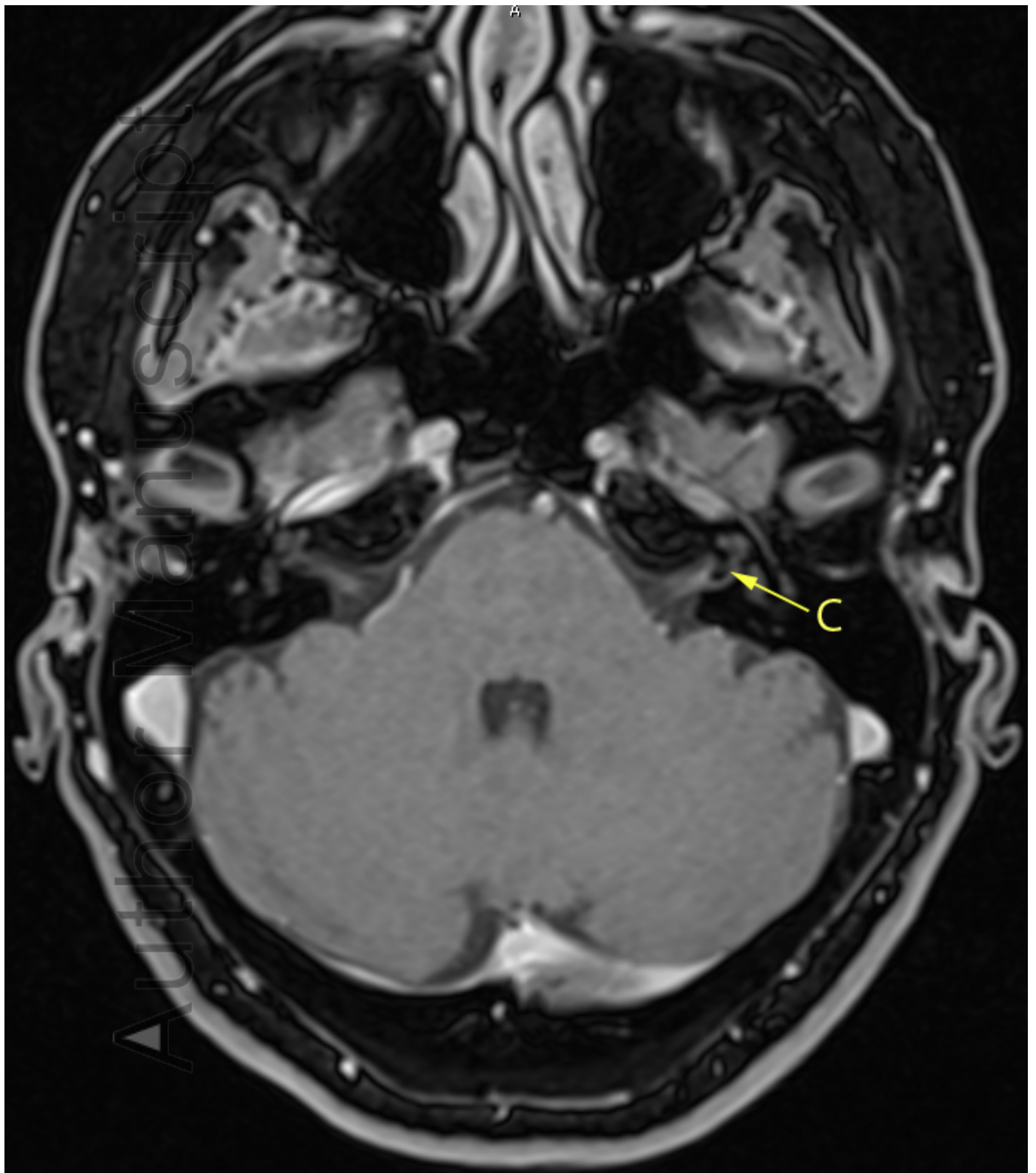
A retrospective case series reported by Bacciu et al featured 4 lipomas at the IAC or CPA, which were incorrectly deemed to be vestibular schwannomas¹⁰. These patients had nonserviceable hearing and underwent translabyrinthine surgical resection¹⁰. All 4 cases were ultimately confirmed to be lipomas on histological examination. Two of the four patients developed post-operative facial nerve palsies. The same case series also reported 4 other cases where lipomas were suspected and managed conservatively with repeat MRI. The authors reported 1 patient had demonstrated growth on monitoring but no further details were provided. The other 3 cases demonstrated no growth at a mean of 28 months. None of the 4 cases had worsening auditory symptoms whilst being managed conservatively¹⁰.

Mukherjee et al reported their experience of 10 patients with IAC or CPA lipomas. The authors managed 9 out of the 10 cases conservatively and the last case had surgical resection for intractable vertigo. The surgical resection was performed via retrosigmoid resection with no post-operative sequelae⁴. The authors guided that surgical management should only be considered for patient symptoms, a view held by other authors also^{4,8}. Scuotto et al commented that where stereotactic radiotherapy could be considered for schwannomas, it may not be suitable for lipomas as the radiation may increase fibrosis of the CPA/IAC area making salvage surgical undertakings even more difficult⁸.

Clinicians should consider imaging protocols with fat suppression to help make the diagnosis of lipomas. This may result in avoidance of unnecessary surgery and risks associated with this. Until more is known about the natural course of lipomas at the IAC/CPA sites, conservative management with yearly MRI based follow up of these patients is recommended, with surgical offerings only for patients in whom symptoms can not be controlled medically.

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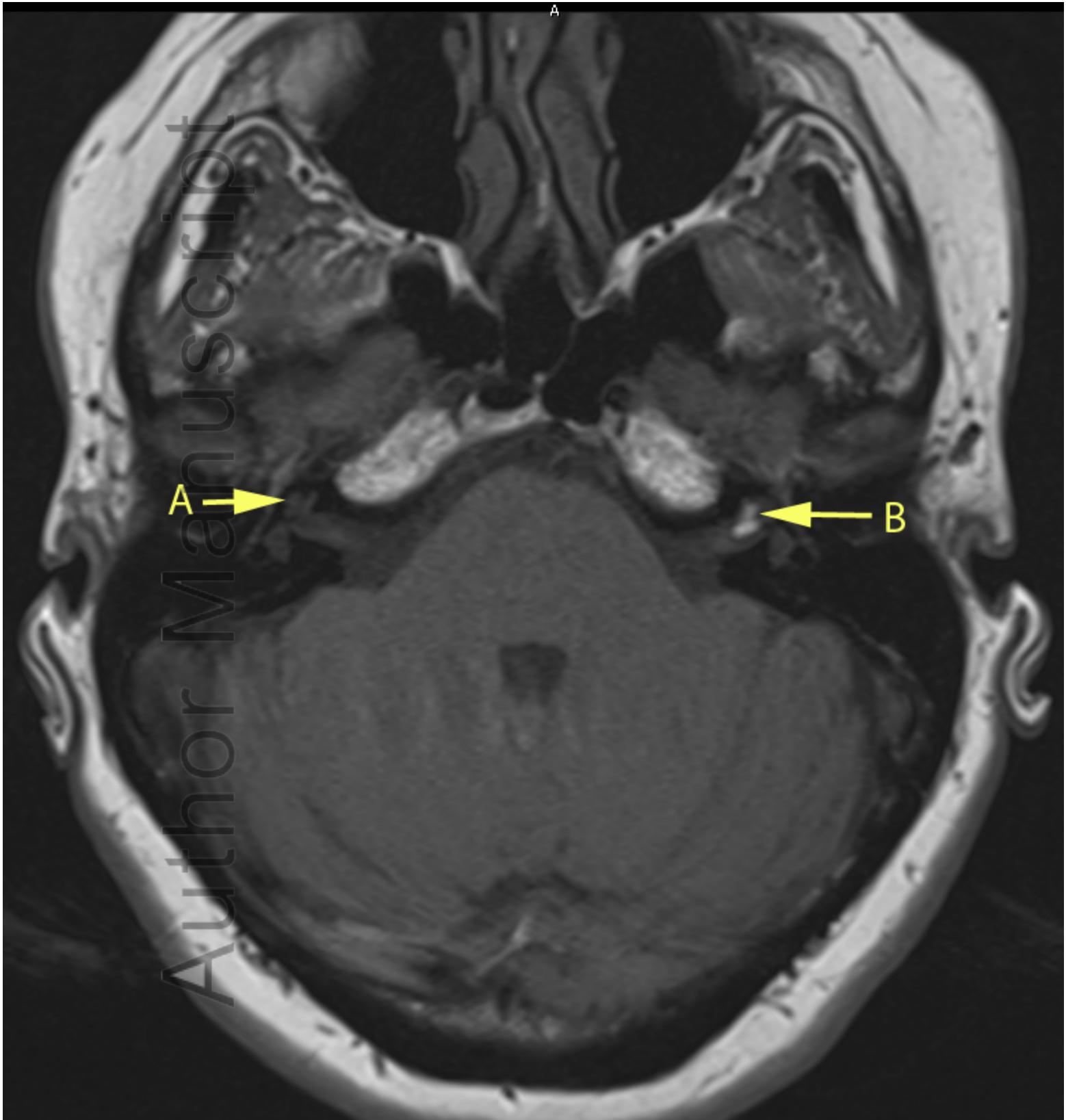


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