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ScienceDirect
Surgical Neurology 70 (2008) 312–318
SURGICAL NEUROLOGY
www.surgicalneurology-online.com

Meningioma

Remote tentorium meningioma causing sudden sensorineural deafness☆

Dirk De Ridder, MD, PhD[a,*], Tomas Menovsky, MD, PhD[a], Carl Van Laer, MD[b], Paul Van de Heyning, MD, PhD[b]

Departments of [a]Neurosurgery, and [b]ENT, University Hospital Antwerp, 2650 Edegem, Belgium

Received 28 December 2006; accepted 16 April 2007

Abstract

Background: Sudden sensorineural deafness is a well-known symptom mostly of unknown etiology.
Case Description: A case of sudden sensorineural deafness is reported to be caused by a small, remote, ipsilateral tentorial meningioma not compressing the vestibulocochlear nerve or auditory tract. Surgical resection of the meningioma immediately restored the patient's hearing.
Conclusion: The authors hypothesize that the sudden sensorineural deafness resulted from a growing meningioma inducing a neurovascular compression of the vestibulocochlear nerve, the vertebral artery already being in close relationship with the vestibulocochlear nerve in the premorbid phase. Resection of the meningioma allows for an autodecompression of this vascular conflict resulting in hearing restoration.

Keywords: Microvascular compression; Meningioma; Neurovascular compression; Overcrowding; Sudden sensorineural deafness

1. Introduction

Sudden sensorineural deafness is a symptom with an incidence in the United States of 1.5/100.000 [13]. Treatment for idiopathic sudden sensorineural deafness does not seem to surpass the spontaneous recovery rate (25–68%) seen in the natural history [10,14,33], though steroids [33] and hyperbaric oxygen treatment [14] might be beneficial in selected patients. Possible causes of sudden sensorineural deafness are viral and autoimmune disease, Ménière disease, trauma, vestibular schwannoma, multiple sclerosis, perilymphatic fistula, vascular disorders [8], and MVC [28,31,37]. Reports of meningiomas causing deafness are usually related to cerebellopontine tumors with direct compression of the vestibulocochlear nerve [19,27]. To our knowledge, no reports have been published on tumors at a distance from the cochlea, vestibulocochlear nerve, or auditory tract causing ipsilateral sudden sensorineural deafness.

The authors present a case of immediate restoration of hearing after resection of a small ipsilateral tentorial meningioma in the posterior fossa.

2. Case report

2.1. History

A 68-year-old woman presented with a sudden sensorineural deafness in the right ear associated with a nonpulsatile tinnitus. There was no vertigo or aural fullness. Noise trauma or other possible etiologies for her hearing loss could not be found. Except for a breast tumor, which was surgically removed 2 years ago and postoperatively irradiated, the patient never had other major pathologies.

2.2. Clinical examination

Micro-otoscopy was normal, Weber test lateralized to the left, and Rinne test was positive on the left and negative on the right.

2.3. Functional studies and imaging

Tone audiometry demonstrated an asymmetric hearing deficit, with hearing thresholds at 110 dB on the right side and normal thresholds on the left side. Tympanometry showed normal middle ear pressures and acoustic

Abbreviations: AICA, anterior inferior cerebellar artery; BAEP, brainstem auditory evoked potentials; CISS, constructive in steady state; ENG, electronystagmography; CNS, central nervous system; IPL, interpeak latencies; MRI, magnetic resonance imaging; MVC, microvascular compression; 3D, 3-dimensional.

☆ Disclosure statement: The authors have not received any financial support in preparation of this submission.

* Corresponding author. Tel.: +32 3 821 3336; fax: +32 3 825 2428.
E-mail address: dirk.de.ridder@uza.be (D. De Ridder).

0090-3019/$ – see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.surneu.2007.04.014

admittance on both sides with intact ipsi- and contralateral stapedius reflex curve. Electronystagmographic analysis revealed a discrete hypofunctioning of the right side with normal central compensation. Transtympanic electrocochleography gave no arguments for endolymphatic hydrops. Serology and autoimmune testing were within reference range except for positive antinuclear (1/320) and cytoplasmatic (1/160) antibodies. Brainstem auditory evoked potentials could not be obtained due to the hearing deficit. Hyperbaric oxygen treatment was initiated consisting of a 5-day, 10-treatment sessions combined with intravenous corticosteroids administration, resulting in an improvement of 30 dB (Fig. 1A).

Magnetic resonance imaging examination of the brain revealed an ipsilateral tentorial meningioma or a metastasis of the tentorium (Fig. 2A, B). On the thin-slice CISS images, a microvascular conflict of the vestibulocochlear nerve could be assumed (Fig. 3).

2.4. Operation

The patient was operated 1 week after termination of the hyperbaric oxygen therapy via a right-sided lateral suboccipital infratransverse sinus approach. A Simpson I resection was achieved consisting of a microscopically complete resection plus focal resection of the tentorium at the tumor base. Microscopic pathology confirmed the diagnosis of meningotheliomatous meningioma.

2.5. Postoperative course

The postoperative course was uneventful. Two days post surgery, the patient noted that she answers the phone holding

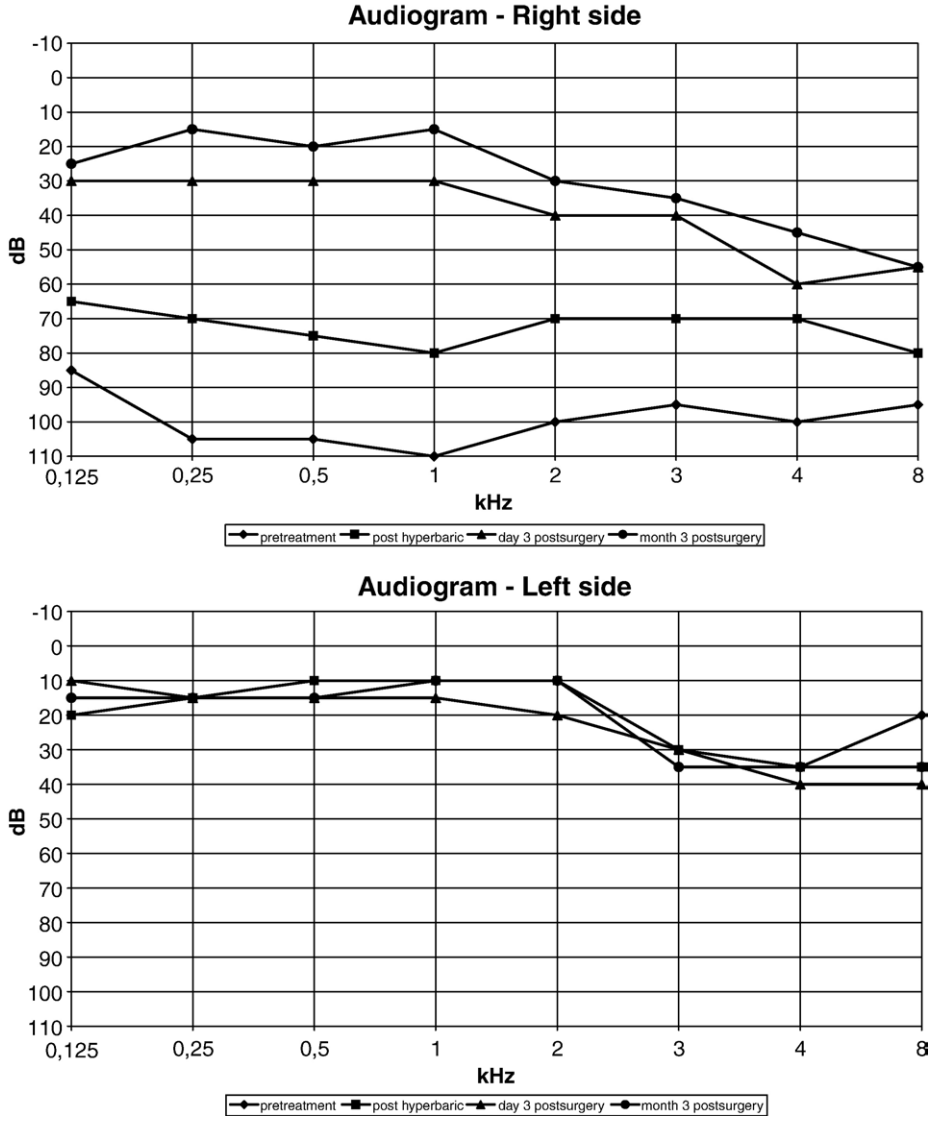

Fig. 1. Audiogram depicting the hearing evolution. Upper figure: an improvement of 25 dB is achieved by hyperbaric oxygen treatment followed by a more dramatic improvement of 60 dB after meningioma removal. Lower figure: contralateral hearing status during same period.