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Sudden hearing loss due to meningeal carcinomatosis from rectal carcinoma

Toshihiro Suzuki *, Hirofumi Sakaguchi, Satoshi Yamamoto, Yasuo Hisa

Department of Otolaryngology-Head and Neck Surgery, Kyoto Prefectural University of Medicine, Kawaramachi Hirokoji, Kamigyo-ku, Kyoto 602-8566, Japan

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Abstract

We present a case of meningeal carcinomatosis with bilateral hearing loss secondary to a rectal adenocarcinoma. A 60-year-old woman developed progressive loss of hearing in the left ear 19 months after an abdominoperineal resection for an adenocarcinoma of the rectum. Three months after the onset of left hearing loss, she visited our hospital. Pure tone audiometry revealed profound sensorineural hearing loss in the left ear and mild sensorineural hearing loss in the right ear. Gadolinium-enhanced MRI revealed tumor in the left internal auditory canal and cerebellopontine angle and enhancement in the right internal auditory canal. Six days after the first examination, pure tone audiometry revealed profound loss of hearing in the right ear. DPOAE of the right ear were still detected 6 days after the first examination, but were clearly decreased 9 days after it, and reached noise level 10 days after it. Gadolinium-enhanced MRI revealed rapid growth of the tumor of the right internal auditory canal and cerebellopontine angle. We clearly demonstrate here the rapid course of hearing loss using pure tone audiometry, MRI, and DPOAE.

Keywords: Meningeal carcinomatosis; Rectal adenocarcinoma; Hearing loss; Magnetic resonance imaging; Distortion product otoacoustic emission

1. Introduction

Meningeal carcinomatosis is characterized by diffuse infiltration of the leptomeninges by malignant cells in patients with a past history of malignancy. It can cause a variety of neurological symptoms. The primary tumors responsible for meningeal carcinomatosis are commonly adenocarcinomas of breast or lung [1–4], and it is rare for rectal carcinoma to give rise to meningeal carcinomatosis. To date, only five cases of meningeal carcinomatosis from rectal carcinoma have been reported [5–9]. In these five cases, two-cases exhibited hearing loss. We report here a case of meningeal carcinomatosis with bilateral hearing loss secondary to a rectal adenocarcinoma. Furthermore, we demonstrate the rapid course of hearing loss by pure tone audiometry, magnetic resonance imaging (MRI), and distortion product otoacoustic emissions (DPOAE).

* Corresponding author. Tel.: +81 75 251 5603; fax: +81 75 251 5604.
E-mail address: tsuzuki@koto.kpu-m.ac.jp (T. Suzuki).

2. Case report

A 60-year-old woman developed progressive loss of hearing in the left ear 19 months after an abdominoperineal resection for an adenocarcinoma of the rectum. She was treated for the left hearing loss at the previous hospital, without improvement of her hearing. Gadolinium-enhanced MRI of the brain revealed no lesion in the internal auditory canal or cerebellopontine angle at that time. Two months after the onset of the left hearing loss, she developed peripheral facial nerve paresis on the left side.

Three months after the onset of left hearing loss, she visited our hospital for further evaluation. Pure tone audiometry revealed profound sensorineural hearing loss in the left ear and mild sensorineural hearing loss in the right ear (Fig. 1(A)). Gadolinium-enhanced MRI revealed tumor in the left internal auditory canal and cerebellopontine angle and enhancement in the right internal auditory canal without leptomeningeal enhancement (Fig. 2(A)). The day after the first examination, she complained of loss of hearing in the

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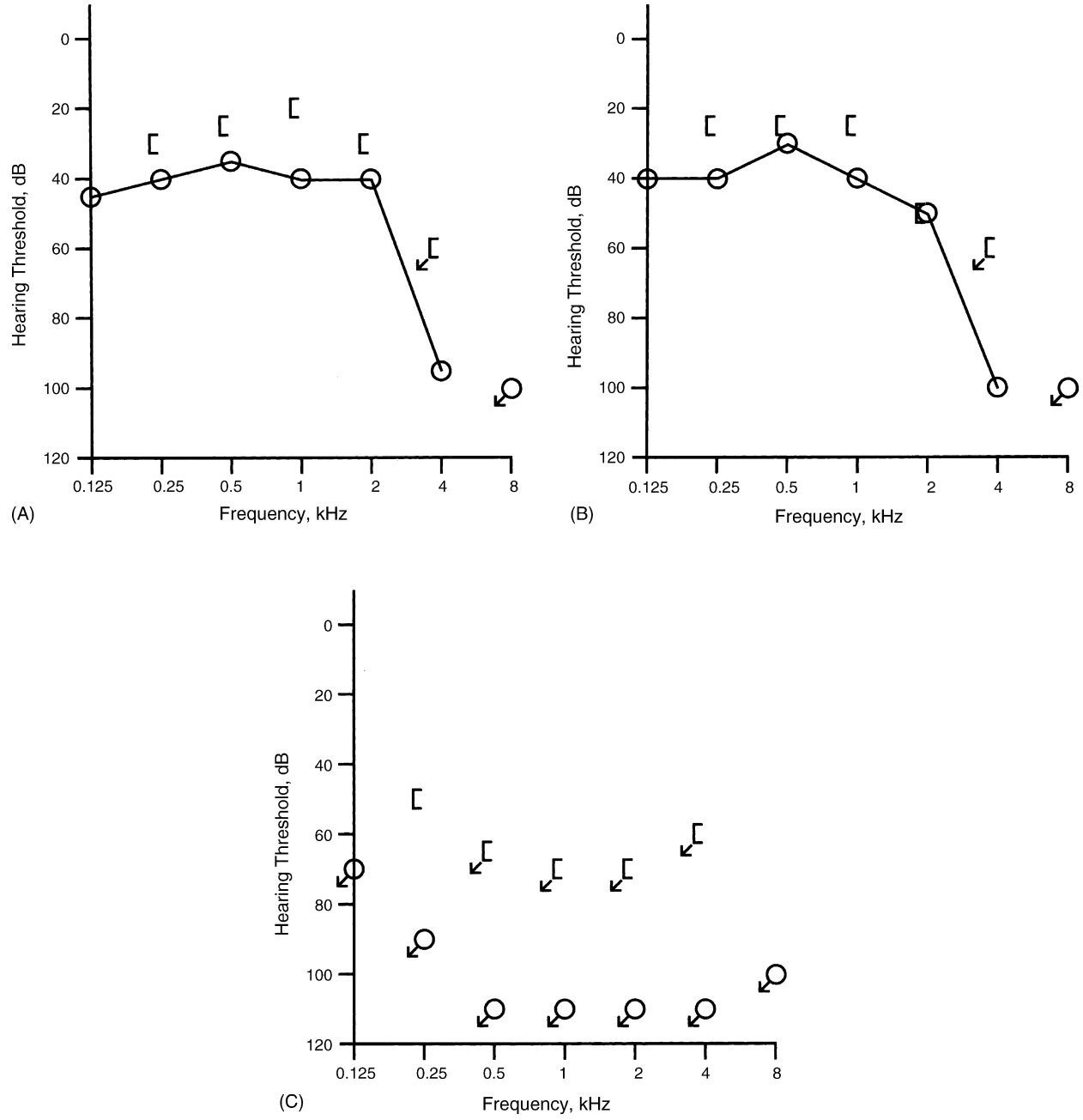

Fig. 1. Audiograms of the right ear. (A) On the day of the first examination, mild sensorineural hearing loss was detected. (B) On the following day, no progression of hearing loss was noted. (C) Six days after the first examination, profound hearing loss was noted.

right ear for the first time. Pure tone audiometry revealed no progression of right hearing loss (Fig. 1(B)), but 6 days after the first examination it revealed profound loss of hearing in the right ear (Fig. 1(C)). DPOAE of the right ear were still detected 6 days after the first examination (Fig. 3(A)), but were clearly decreased 9 days after it (Fig. 3(B)), and reached noise level 10 days after it (Fig. 3(C)). Gadolinium-enhanced MRI revealed rapid growth of the tumor of the right internal auditory canal and cerebellopontine angle (Fig. 2(B) and (C)). She also exhibited loss of caloric responses bilaterally 13 days after the first examination. The cytological diagnosis of cerebrospinal fluid extracted by lumbar puncture was poorly differentiated adenocarcinoma, and meningeal carcinomatosis was diagnosed. She also developed peripheral facial nerve paresis on the right side a month after the onset of the right hearing loss. She died 4 months after the diagnosis of meningeal carcinomatosis. An autopsy was not performed.

3. Discussion

We have reported here a rare case of meningeal carcinomatosis secondary to a rectal adenocarcinoma and