Giant prolactinoma: the sound of silence

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Abstract

Prolactinomas typically present with oligo-amenorrhea or galactorrhea in woman and headaches, visual changes or impotence in men with auditory symptoms being a rare presentation. We describe a case of a man who presented with bilateral hearing loss and was found to have a giant prolactinoma. Initial audiogram indicated an air-bone conduction gap suggesting a mixed sensorineural and conductive hearing loss. Measured prolactin was 3711.0 ng/mL and an a magnetic resonance revealed a 3.0×3.0×3.3 cm heterogeneously enhancing mass arising from the sella turcica compressing the left half of the optic chiasm. Several months after treatment, prolactin was 26 ng/mL and the patient reported marked improvement in his vision with mild improvement of his hearing. Although prolactinomas typically present with classic symptoms, one must be aware of unusual presentations. Further investigation is needed to access the correlation between prolactin and hearing loss, which may impact potential audiology screening for those with elevated prolactin.

Introduction

Classic presentations of prolactinomas include oligo-amenorrhea, infertility and galactorrhea in women and headache, vision loss and decreased libido in men. Unusual presentations include rhinorrhea, photophobia, Horner’s syndrome and twelfth nerve palsy.12 Several cases have documented unilateral hearing loss.3,4 We describe the second reported case of a man who presented with bilateral hearing loss and was found to have a giant prolactinoma.

Case Report

A 41-year-old, previously healthy male, presented to his primary care physician with progressive bilateral hearing loss. An audiogram revealed moderate hearing loss (45 dB left, 50 dB right) with an air-bone conduction gap of 10 dB at of 1000, 3000 and 4000 Hz (Figure 1).

Following a trial with hearing aids, he presented to our emergency department with headaches, peripheral vision loss and impotence. He denied taking any medications. Physical exam was significant for bitemporal hemianopia diagnosed by confrontational visual fields, bilateral gynecomastia and microchidia. A MRI of his head revealed a 3.0×3.0×3.3 cm heterogeneously enhancing lobulated mass arising from the sella turcica, extending superiorly into the suprasellar cistern and compressing the left half of the optic chiasm (Figure 2).

Labs were significant for prolactin 3711.0 ng/mL, testosterone 128 ng/dL, FSH 2 mIU/mL and LH 2 mIU/mL. TSH, IGF-1 were within normal limits and a cortisol level was drawn after he had received steroids. Bromocriptine and intravenous dexamethasone were administered with a significant decrease of prolactin level to 410 ng/mL upon discharge. During his four-month follow-up visit he reported marked improvement in his vision and headaches with mild improvement of his hearing. Due to persistent elevation of prolactin (196 ng/mL) bromocriptine was increased and eventually switched to cabergoline with a subsequent prolactin of 26 ng/mL. Repeat MRI (Figure 3) revealed a decrease in tumor size and mass effect. Unfortunately the patient refused a repeat audiometry exam.

Discussion

Prolactinomas have a reported prevalence range of 10 to 50 per 100,000.4,5 Typical presentations include oligo-amenorrhea and galactorrhea in woman and headaches, visual changes and impotence in men. Auditory symptoms are a rare presentation. Whereas bilateral hearing loss is typically associated with systemic exposures such as noise exposure, unilateral hearing loss has been associated with focal processes including infections, circulatory disorders and local tumors.3,9 Although prolactinomas have been associated with tinnitus, vertigo and unilateral hearing loss, these hearing deficits are secondary to mass effect.10-12 Meniere’s disease, characterized by tinnitus, unilateral sensorineural hearing loss followed by vertigo, has been associated with elevated levels of prolactin, raising concerns for a potential relationship between prolactin and hearing loss.12 K.C Horner has theorized that prolactin receptors located on the lymphocyte-macrophage complexes within the endolymphatic sac are affected during stress when high levels of prolactin are released, thus affecting the immune-defense of inner ear.13 He further confirmed his theory using an animal model by inducing hearing loss through administration of high levels of prolactin.14 Another study demonstrated that prolactin increased hippocampal precursor survival both in vitro and vivo.15

Although numerous prolactinoma case reports have been published, only one other one eluded to bilateral hearing loss. Barkan et al.11 reported a case of a 43-year-old man who presented with bilateral ptoia and hearing loss, the latter being attributed to bilateral temporal bone infiltrate. The patients’ prolactin was only 28 ng/mL however once corrected for high-dose hook effect the value increased to 280,000 ng/mL. Following treatment the patient’s ptoia and hearing improved.

Conclusions

Although prolactinomas typically present with classic symptoms, one must be aware of unusual presentations. We described a case of a man who initially presented with bilateral hearing loss and was later found to have a giant prolactinoma. After reviewing the images we concluded that our patients hearing loss was most likely not due to mass effect. Additionally the initial audiogram indi-
cated an air-bone conduction gap of at least ten decibels present at several frequencies with asymmetry, thus suggestive of a mixed sensorineural and conductive hearing loss. Unfortunately our patient refused a repeat audiogram though he reported subjective improvement in hearing. Further investigation is needed to access the correlation between prolactin and hearing loss, which may impact potential audiology screening for those with elevated prolactin.

References

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