The Danger of Flying with Acute Otitis Media, Which May Result in Gradenigo’s Syndrome

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Learning Objective

- Gradenigo’s syndrome includes a triad of ipsilateral trigeminal neuralgia, ipsilateral paresis of abducens nerve, and infection of the ear involving the petrous apex of the temporal bone.1
- Gradenigo’s syndrome is rare, given the frequently prompt antibiotic treatment for otitis media.3
- Patients with otitis media should consider not flying.4

History of Present Illness

67-year-old right-handed male former warehouse worker with a past medical history of HTN, HLD, COPD, alcohol dependence, childhood epilepsy, and treated syphilis presented with sudden onset left-sided facial numbness, hearing loss. His symptoms began acutely during airplane descent with a “popping” sensation in his left ear. He endorsed rhinorrhea for two days prior to presentation.

Physical Exam

Gen: Thin male in no acute distress with frequent cough.
HEENT: Tender pinna. Erythematous auditory canal with bulging tympanic membrane.
MS: A&Ox3.
CN: Left V1-V3 numbness, decreased L hearing.
Motor: Tone normal. Strength 5/5 throughout.
Sensory: Intact.
Reflexes: 2+ throughout. Absent Babinski.
Gait: Narrow-based with normal stride.

Pathophysiology

On descent, ambient pressure increases, while middle ear pressure is relatively unchanged. In otitis media, the patient is unable to equalize this pressure through opening the eustachian tube.7

Imaging

Figure 1. Axial CT Head with contrast images demonstrating left external auditory canal wall thickening with lobular density obscuring the left tympanic membrane. Soft tissue density within the left lateral epitympanic recess, mesotympanum and hypotympanum.

Figure 2. Otoscopic view of the left ear of a normal patient1 and a patient with bullous myringitis4. Note the bullae in the inferior tympanic membrane.

Figure 3. Change in cabin pressure for 170-min flights departing from Pittsburgh, PA (PIT) and arriving at Miami, FL (MIA), PiT, and Denver, CO (DEN).

Discussion

The patient was diagnosed with bullous myringitis with temporal bone inflammation involving CN V and CN VIII. Due to initial concern for vesicles on examination, acyclovir was administered briefly, but discontinued. Patient was discharged with Amoxicillin / Clavulanate.

We describe a case of Gradenigo’s syndrome triggered by descent from high altitude during air travel. Patient with otitis media may experience adverse side effects from air travel due to the increase in atmospheric pressure during flight descent.10

In decreasing frequency, cranial nerves V, VIII, VII, and VI are most commonly implicated in Gradenigo’s syndrome.7

Conclusion

In the right clinical context, patients presenting to the emergency department with acute unilateral cranial neuropathies and an otologic examination suspicious for infection, one should consider peripheral etiologies involving middle ear and middle cranial fossa of the skull base, in addition to central nervous system etiologies to explain the patient’s constellation of symptoms.

References