

Otitis in Aerospace-Aerotitis: A Review

Shweta Sharma¹, Heeral Joshi¹, Pooja Anand²

¹Assistant Professor, ³Professor & H.O.D, Department of Physiotherapy, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana

Abstract

Background: Aerotitis media is a painful disorder of ear which is experienced during ascent & descent of the flight, caused by rapid change in external pressure leading to discomfort, pain, hearing loss, tinnitus and vertigo. It can also lead to permanent hearing loss.

Objective Methods: Various research articles have been reviewed from different databases such as Google Scholar to study the various preventive strategies which can be taken to avoid this condition during flight.

Result: Valsalva maneuver is helpful in decreasing the symptoms of aerotitis media and making passengers comfortable during the air travel.

Conclusion: As aerotitis media is prevalent in ascent and descent of flight passengers, Valsalva maneuver and other preventive strategies shows beneficial effects on the symptoms of the condition through incorporating its principles.

Key Words: *Aerotitis, Tinnitus, Vertigo, Valsalva maneuver.*

Introduction

Aerotitis or otic barotrauma, a painful disorder occurs during air travel, is defined as a traumatic inflammation of middle ear. It occurs because of the difference in the pressure of middle ear and external air pressure. When the equalization of this pressure disrupts leads to initiation of this disorder called AEROTITIS (Armstrong). When the ventilation of middle ear is not adequate during ascend and descend of airplane leads to AEROTITIS. (1,2)

Etiology And Pathophysiology

It is a common problem, occurring because of the failure of Eustachian tube to maintain the equilibrium

of pressure of middle ear and atmospheric pressure.(1,2)

The Eustachian tube is a narrow tube which connects middle ear to the nose and throat, this tube opens and helps in equalization of pressure. The changes in the pressure of cabin is very rapid during air travel, the Eustachian tube fails to open wide enough to equalize the pressure between cabin air and middle ear air. Thus, it stretches the ear drum causing ear pain or discomfort. (6)

The pathological changes in AEROTITIS media varies from slight congestion to extensive rupture of tissues (4).

Risk Factors

Due to anatomical difference in Eustachian tube and frequent upper respiratory tube, children may also be prone to this infection (3). Common cold, sinusitis, otitis media, allergic rhinitis, nap during rapid pressure changes in middle ear are the risk factors of this condition.(5)

Corresponding author:

Dr. Shweta Sharma (PT)

Assistant Professor, Department of Physiotherapy,
Manav Rachna International Institute of Research and
Studies, Faridabad, Haryana

E-Mail id- shwetasharmamph27@gmail.com

Contact no.- 8860405721

CLINICAL FEATURES AND COMPLICATIONS

Aerotitis media can occur unilaterally as well as bilaterally⁽⁵⁾. Clinical features of Aerotitis media are pain, discomfort, tinnitus, vertigo, hearing loss. In extreme or severe cases, bleeding can occur. Permanent hearing loss and chronic tinnitus can be major complication in this condition.⁽⁴⁾

PREVENTIVE STRATEGY

According to various researchers, various preventive strategies can be adopted to reduce this problem at different level of disease.

Ø Prevention at primary level – yawning, swallowing, chewing helps in activating the muscles that are anatomically responsible for maintaining Eustachian tube bilaterally^(3,5).

Ø To prevent napping during ascend or descend of air travel – we can practice preventive measures during any discomfort in our ear during the period of sudden change in pressure if we are awake⁽⁵⁾.

Ø If a person is already suffering from common cold, allergic rhinitis or any recent ear surgeries/infection should avoid air travel⁽⁵⁾.

Ø Use of ear plugs helps in equalization of pressure against the ear drum⁽⁵⁾.

Ø Decongestants can be taken 30 minute to 1 hour prior to air travel⁽⁵⁾.

Ø Use of warm or wet towels over external ear is also suggested to decrease external pressure⁽⁶⁾.

Ø PREVENTION AT SECONDARY LEVEL – Valsalva maneuver or gentle blow maneuver. The maneuver helps in equilibration of the pressure between middle ear and external pressure of atmosphere, it can be performed when a person feels any discomfort in ear. It is done by gently closing your nostrils and blowing through mouth not allowing air to pass through nostrils or mouth.^(3,5) Breastfeeding or bottle feeding can be used a preventive measure in children.

Ø Ear packing, its recommended immediately in case of bleeding⁽⁵⁾.

Ø PREVENTION AT TERTIARY LEVEL –

surgically placed tubes in ear drums is a helpful air in middle ear in case of frequent fliers prone to severe aerotitis media⁽⁵⁾.

Conclusion

Airplane ear or Aerotitis media, one of the commonest problem in people who travels via air. It is also recognized as an occupational injury in crew members but ignored^(4,5). Previously lozenges were used as a preventive measure which was quite helpful in avoiding such ear problems but are abandoned in recent times. The flight attendants should be trained for ear preventive measures so that the rate of aerotitis media can be reduced⁽⁵⁾.

Acknowledgement: The authors of this research article would like to thank all the authors of those articles, sources and journals that are referred in preparing the manuscript.

Conflict of Interest: No Conflict Of Interest.

Source of Funding: Self as no such fund is required in this study.

Ethical Clearance: No ethical clearance is required for the study.

References

- (1) Wolf, C. Richard. Aerotitis in air travel. *California medicine* 117.5 (1972): 10.
- (2) Mirza, S., and H. Richardson. Otic barotrauma from air travel. *The Journal of Laryngology & Otolaryngology* 119.5 (2005): 366-370.
- (3) Buchanan, Brian J., Jason Hoagland et al. Pseudoephedrine and air travel-associated ear pain in children. *Archives of pediatrics & adolescent medicine* 153.5 (1999): 466-468.
- (4) Haines, Henry L., and J. Donald Harris. XXXI Aerotitis Media in Submariners. *Annals of Otolaryngology, Rhinology & Laryngology* 55.2 (1946): 347-371.
- (5) Bhattacharya, Sudip, Amarjeet Singh et al. Airplane ear—A neglected yet preventable problem. *AIMS public health* 6.3 (2019): 320.
- (6) The Super Pharmacist. Airplane Ear-Understanding treatment perspectives. Allergy, General, Infant and children. August 27,2015.

Original Research