

Headache Attributed to Airplane Travel in a Child-First Case in Brazil

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Abstract

Headache attributed to airplane travel (HAAT) is a rare form of headache disorder that develops exclusively during plane travel. HAAT is characterized by occurring during takeoff or landing or both and improves spontaneously within 30 minutes after the ascent or descent of the airplane is completed. We report the case of a 9-year-old Brazilian boy with recurrent episodes of headache without associated symptoms occurring during airplane travel, but only during landing. Paranasal sinus tomography and brain magnetic resonance imaging did not reveal barotrauma or inflammation of the paranasal sinuses or any brain injury. This case fulfilled the diagnostic criteria for HAAT. It appears that HAAT may occur without prior history of barotrauma or inflammation of the paranasal sinuses.

Keywords: Airplane headache; Air travel headache; Childhood headache

Introduction

Headache attributed to airplane travel (HAAT) is a rare form of headache disorder that develops exclusively during plane travels. It was first described by Atkinson and Lee in 2004 [1]. The onset pain occurs during takeoff or landing or both. However, in 85% of the patients, the headache occurs during the landing. This headache improves spontaneously within 30 minutes after the ascent or descent of the airplane is completed [2].

According to the diagnostic criteria of the International Classification of Headache Disorders, Third Edition (beta version) (ICHD-3 β) this is a severe headache with at least two of the following three characteristics: unilateral location, orbitofrontal, and jabbing or stabbing quality, but pulsation may also occur. Generally, HAAT has no associated symptoms, but nasal congestion or tearing ipsilateral may occur in 5% of cases. Moreover, it is not better accounted for by another ICHD-3 β diagnosis [2].

In the literature there are few cases of HAAT reported in children. To our knowledge, only four cases have been described so far [3,4]. We report the case of a child with headache attacks occurring only during his airplane travel, being the first HAAT Brazilian case and the fifth in the world.

Case Report

A 9-year-old boy was referred to our Headache Centre because he complained of headache attacks for the last 3 years that occurred during his plane travels (an average of two trips per year). The headache attacks were triggered only by airplane descents with a bilateral frontotemporal location, pulsatile quality, and severe intensity. The pain lasted 10-15 minutes and disappeared after landing. He denied any associated photophobia, phonophobia, nausea, vomiting, olfactory disturbances, autonomic features, or any form of aura. During the flight there was no history of preceding viral infection, trauma, fever, lethargy, or clinical evidence of sinusitis. Occasionally, he presented headache associated with nausea and in the pain-free period, he complained of motion sickness. He fulfilled the diagnostic criteria of a probable migraine without aura. His physical and neurological examinations were unremarkable. Brain MRI and paranasal sinus tomography were normal. Routine blood tests (biochemical, haematological, liver, kidney and metabolic investigations) yielded normal results. He was recommended to take only a single dose of Ibuprofen, 10 mg/kg/dose, 1 h prior to airplane landing. During a 2 year-follow-up, he traveled by plane for four more times and did not complain of headache during landing. He always visited our Headache Clinic after his airplane travel.

Discussion

HAAT is a rare form of headache disorder that develops exclusively during plane travels. Studies show that its prevalence ranges from 0.16% to 8.3% [5,6]. This headache was described for the first time [1].

Since then, many cases have been reported in the adult population [6-11] with a mean age of 36 years [12], but few cases in children [3,4].

From 2013, this type of headache was included in ICHD-3 β [2], which diagnostic criteria are summarized in Table 1. This headache

disorder occurs during airplane travel, exclusively on the takeoff or landing of the aircraft. It is a severe throbbing headache, located in the unilateral orbitofrontal region and improving spontaneously within 30 minutes.

A.	At least two episodes of headache fulfilling criterion C
B.	The patient is travelling by aeroplane
C.	Evidence of causation demonstrated by at least two of the following:
	1. Headache has developed exclusively during aeroplane travel
	2. Either or both of the following:
	a) headache has worsened in temporal relation to ascent after take-off and/or descent prior to landing of the aeroplane
	b) headache has spontaneously improved within 30 minutes after the ascent or descent of the aeroplane is completed
	3. Headache is severe, with at least two of the following three characteristics:
	a) unilateral location
	b) orbitofrontal location (parietal spread may occur)
	c) jabbing or stabbing quality (pulsation may also occur)
D.	Not better accounted for by another ICHD-3 diagnosis.

Table 1: ICHD-3 β diagnostic criteria for headache attributed to airplane travel.

Our study describes the first Brazilian case of a child diagnosed with headache attacks occurring only during his airplane travels. This is an unusual case because most patients with HAAT are adults and to our knowledge, this is the fifth case described in children. Previously, three cases were described in Turkey in 2010; and one case in the United Kingdom [3,4].

It has been postulated that HAAT may be the result of several etiological factors, such as deviated nasal septum, acute intraparenchymal frontal pneumatocele, frontal sinus polyp, edema and inflammation of the nasal mucosa and barotrauma or inflammation of the paranasal sinuses [11-13]. However, the exact pathophysiological mechanisms of HAAT have not yet been elucidated.

Possibly, during the take-off and landing of the airplane there may have been a sudden change in the internal pressure of the aircraft. This change in pressure interferes with the functioning of the body's air cavities, such as the inner ear and the paranasal sinuses [11]. In addition, decreased oxygen saturation may occur during flight causing hypoxia and hypercapnia in passengers. This mechanism disappears with the end of the flight, so the pain decreases spontaneously [14].

It is known that some branches of the trigeminal nerve are responsible for sensory innervation of the sinuses and nasal mucosa. Stimulation of these areas triggers headache in the supraorbital and temporal-zygomatic regions. Possibly these changes activate the trigeminovascular system and causes headache [11].

Due to HAAT being specifically associated with plane travel, some authors believe that this headache disorder may be classified as a secondary headache [11,12]. Therefore, in the first episode of severe and sudden headache during an airplane trip, a complete evaluation of the evidence of barotrauma or other brain injury should be performed [13].

We found no other triggering factor to justify our patient's headache. We also did not find any organic lesions that could explain this headache, such as barotrauma or inflammation of the paranasal sinuses or any brain injury. As this headache was not attributed to another disease, it appears that HAAT could be classified as a primary headache and included in group 4 of ICHD-3 β [2].

Occasionally, when not traveling by plane, our patient presented headache associated with nausea and in the pain-free period, he complained of motion sickness, characterizing a probable migraine without aura. This coexistence with primary headaches is common in more than 50% of HAAT patients. In a recent review, the authors observed that tension-type headache (53.7%) and migraine without aura (34.1%) were the most frequent primary headaches [14].

Our patient's headache appeared during the landing, but according to ICHD-3 β , the pain is related to both takeoff and landing [2]. Other authors have stated that pain occurs during takeoff or landing or both. There is a suggestion to classify this headache into two subtypes: headache of takeoff and headache of landings [15].

Our patient used ibuprofen one hour before the landing the plane and during a 2-year follow-up, he traveled by plane four more times and did not complain of headaches during landing. About 30.0% of HAAT patients use simple analgesics or non-steroidal antiinflammatory drugs during headache attacks [6,9,10]. These medications are taken about 30 minutes before the likely onset of pain. The therapeutic efficacy of at least 50% occurs in more than half of the patients [12].

Conclusion

In conclusion, it appears that HAAT may occur without prior history of barotrauma or inflammation of the paranasal sinuses.

Highlights

Headache attributed to airplane travel is a secondary headache.

Headache attributed to airplane travel is rare in children.

Ethical Approval

This clinical report was authorized for publication by the patient's guardian who completed a signed informed consent form.

Conflict of Interest

There is no conflict of interest.

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