CASE REPORT

Plane palsy: a case of transient facial weakness during an aircraft flight

Rebecca White,¹ David Shackleton²

¹Emergency Department, West Middlesex University Hospital, Chelsea and Westminster NHS Foundation Trust, Isleworth, London, UK

²Emergency Department, West Middlesex University Hospital, Chelsea and Westminster NHS Foundation Trust, Isleworth, London, UK

Correspondence to

Dr David Shackleton,
david.shackleton@chelwest.nhs.uk

Accepted 20 June 2018

SUMMARY

Changes in atmospheric pressure have been reported to cause a transient lower motor neuron weakness of the facial nerve. We report the case of a passenger on an international flight who developed a unilateral facial weakness after take-off which resolved within 45 min. The effect is thought to be due to an ischaemic neuropraxia of the facial nerve caused by increased middle ear pressure compressing the facial nerve in an exposed facial canal. The condition has been commonly reported in scuba-divers but less frequently in airline passengers. Treatment is not necessary.

BACKGROUND

Lower motor neuron facial nerve weakness is an important presentation to recognise for primary care and emergency clinicians. Treatment can involve high dose steroids and therefore identification of baroparesis as a cause of transient facial weakness can prevent unnecessary investigations and treatments.

CASE PRESENTATION

A 31-year-old man presented to our department after travelling from Italy to London on a passenger aircraft. Shortly after take-off, he developed a sensation of pressure behind his right ear followed by an inability to move the right hand side of his face. After alerting the cabin crew, he was reviewed by a fellow passenger with medical qualifications.

This doctor noted he was unable to close his right eye and was unable to elevate the right side of his forehead. After 45 min, the symptoms resolved completely. He denied any other symptoms during the journey. After landing in Heathrow, he attended our emergency department for review.

On examination, there was no evident facial weakness or other abnormality of the cranial nerves or peripheral nervous system. There were no signs of a rash in the ear canals and both tympanic membranes were normal.

He described experiencing an upper respiratory tract infection in the preceding week for which he had been prescribed an antibiotic. He had no other significant past medical or family history.

We surmised that the patient had experienced transient facial nerve weakness due to an increase in pressure in the middle ear that could not equilibrated with the cabin air pressure due to impaired Eustachian tube function,¹ likely caused by his recent upper respiratory tract infection.

This increase in pressure is believed to cause an ischaemic neuropraxia of the facial nerve as it runs through the facial canal adjacent to the middle ear. Bony dehiscence of the facial canal commonly occurs thus exposing the nerve directly to the middle ear.² When middle ear pressure is equalised with atmospheric pressure (either through clearance of the Eustachian tube or on the landing of the plane) the symptoms resolve.

This cause of facial nerve weakness has been described as baroparesis or alternobaric facial palsy. It is a relatively well-known complication of diving but only a few reports of it occurring in aircraft passengers are documented.

Identifying that it can occur can prevent the unnecessary radiological investigation of the patient or treatment with high-dose corticosteroids.

INVESTIGATIONS

A full blood count, urea and electrolytes and liver function tests were all within normal parameters. A C-reactive protein was minimally elevated at 10.6 mg/L.

TREATMENT

No treatment was given.

OUTCOME AND FOLLOW-UP

We surmised that the patient had experienced transient facial nerve weakness due to an increase in pressure in the middle ear that could not equilibrated with the cabin air pressure due to impaired Eustachian tube function from his recent upper respiratory tract infection.

This increase in pressure causes an ischaemic neuropraxia of the facial nerve. When middle ear pressure is equalised with atmospheric pressure the symptoms resolve.

He was advised that this may occur again and that he should see an otolaryngologist for review when he returned home.

DISCUSSION

This cause of facial nerve weakness has been described as baroparesis or alternobaric facial palsy. It is a relatively well-known complication of diving but only a few reports of it occurring in aircraft passengers are documented.^{3 4}

The facial nerve travels through the facial canal adjacent to the middle ear, and bony dehiscence can commonly occur exposing the nerve directly to pressure changes.²

© BMJ Publishing Group Limited 2018. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: White R, Shackleton D. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2018-224593

Identifying that air pressure changes may cause facial nerve weakness can prevent the unnecessary investigation of the patient with ionising radiation scans or treatment with steroids.

Learning points

- Atmospheric pressure changes can be a cause of transient facial nerve weakness.
- Recognising this can prevent a patient being exposed to unnecessary radiological scans or being treated with high-dose steroids.

Contributors RW and DS designed the report, acquired information and analysed related articles (as seen in the Discussion section). They agree to be accountable for the article and to ensure that all questions regarding the accuracy or integrity of the

article are investigated and resolved. DS is the second author, who helped edit the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Cooper JS, Hexdall EJ. *Diving, Alternobaric Facial Paresis. In Treasure Island (FL)*, 2017.
- 2 Perez B, Campos ME, Rivero J, *et al.* Incidence of dehiscences in the fallopian canal. *Int J Pediatr Otorhinolaryngol* 1997;40:51–60.
- 3 Ah-See KL, Shakeel M, Maini SK, *et al.* Facial paralysis during air travel: case series and literature review. *J Laryngol Otol* 2012;126:1063–5.
- 4 Vivekananda U, Omer S. Transient facial weakness whilst on a flight. *J Neurol Sci* 2017;375:299–300.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow