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Ischemic Optic Neuropathy after a Long Airplane Flight: Coincidence or Rare Economy Class Syndrome Manifestation?

Ischämische Optikusneuropathie nach langer Flugreise. Zufall oder seltene Economy-Class-Syndrom-Manifestation?

Introduction

Air travel has become very common nowadays. Subsequently, an increase of reports concerning flight-induced medical incidents has occurred. The association between thromboembolic episodes and long distance airplane journeys is well documented [1–6]. Deep vein thrombosis (DVT) and pulmonary embolism (PE), known as “economy-class syndrome”, are the most frequently reported conditions [1]. Flight-induced ocular incidents are very uncommon. This report presents a patient, with no previous medical history, who developed ischemic optic neuropathy in his right eye (OD) after a 12-hour-long airplane flight.

Case Presentation

A 52-year-old man was referred to our department complaining of severe vision loss OD of approximately 6 weeks duration, developed within 6 hours after a 12-hour-long airplane flight. Medical history was clear and no smoking, diabetes, arterial hypertension, hyperlipidemia or any cardiovascular disease were mentioned. Ophthalmic examination revealed best corrected visual acuity (BCVA) of 20/30 OD and 20/20 in his left eye (OS). In-

traocular pressure was 14 mmHg in both eyes. Ocular motility was normal; pupils were round and reactive to light. A relative afferent pupillary defect was noted OD. Colour vision by Ishihara pseudo-isochromatic plates was normal and symmetric in both eyes. Slit-lamp examination revealed normal anterior segment bilaterally. Fundus examination showed normal maculae, however optic disc pallor was present OD (● Fig. 1 a) without papillary oedema. Fluorescein angiography was normal in both eyes. Octopus automated perimetry revealed diffuse visual field defect in all four quadrants OD (● Fig. 1 b) (normal OS). Laboratory tests, including complete blood count, liver function tests, blood electrolytes, albumin, glucose, cholesterol, triglycerides, erythrocyte sedimentation rate, C-reactive protein, blood urea nitrogen, calcium, creatinine, prothrombin time, partial thromboplastin time were within normal limits. Complete hypercoagulable work-up and immunologic examination, including Lyme disease antibodies, antinuclear antibodies, sarcoidosis, Wegener's granulomatosis, polyarteritis nodosa, homocysteine levels, anti-cardiolipin antibodies, factor V Leiden, activated proteins C and S, VDRL test, and fluorescent treponemal antibody absorption test (FTA-Abs), was negative. Bilateral duplex

sonogram of the carotid arteries and chest radiograph were normal. Magnetic resonance imaging (MRI) excluded intracranial masses, infarcts, haemorrhage, hydrocephalus, meningitis or other similar conditions under which optic disc atrophy can be produced, however atrophy of the right optic nerve was observed (● Fig. 1 c). An ischemic optic neuropathy was diagnosed, and aspirin treatment (200 mg/day) was administered. Three months later, BCVA was slightly improved to 20/25 OD, intraocular pressure was 15 mmHg in both eyes, and a mild relative afferent pupillary defect was noted OD. Octopus automated perimetry was normal OS and stable OD (similar to ● Fig. 1 b). The rest of the slit-lamp findings were unchanged.

Discussion

DVT and PE consist a major medical problem of air travel and are responsible for almost 20% of deaths in individuals with no medical history [5]. The theory for the economy-class syndrome is that long-term immobilization causes the development of thromboembolic phenomena like DVT and PE [2]. A study by Landgraf [3] reported an average fluid retention of 1150 ml and a significant lower leg volume increase during simulated long-distance flights. Scurr et al. showed that symptomless DVT may occur in up to 10% of healthy airline travellers older than 50 years [6]. Such thromboembolic phenomena may lead to occlusion of the small nutrient vessels, which feed the optic nerve, causing ischemic optic neuropathy. Moreover, high-flying altitude leads to lower cabin pressure and, subsequently, to decreased blood saturation. Decreased blood oxygen contents may

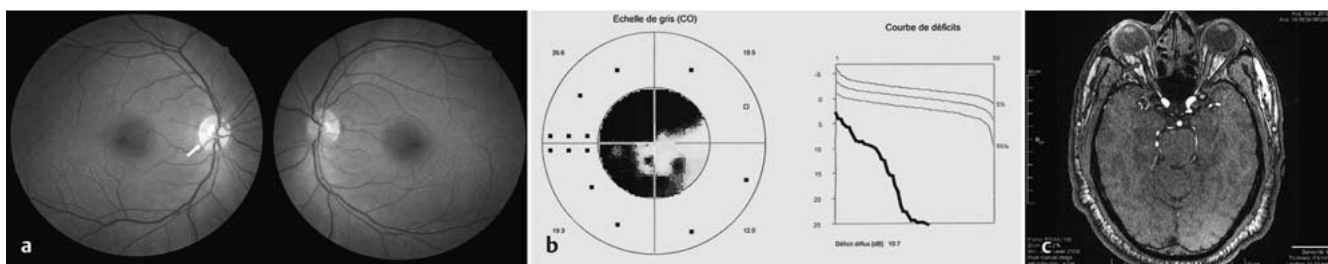


Fig. 1 a Fundoscopy upon initial presentation. Note optic disc atrophy in the right eye (white arrow). b Octopus automated perimetry. Diffuse visual

field defect in all four quadrants (right eye). c MRI. Optic nerve atrophy (arrow).

lead to optic nerve hypoxia and cause ischemic optic neuropathy.

We assume that the reported ischemic optic neuropathy was probably caused by a thromboembolic or an hypoxic mechanism associated with the prolonged flight. There is only one publication reporting flight-induced anterior ischemic optic neuropathy by Kaiserman and Frucht-Pery [7]. We report another case of ischemic optic neuropathy associated with economy-class syndrome, thereby highlighting the dramatic ocular effects that prolonged flight may have on distinct patients. Therefore, physicians should be aware of this rare complication, which may occur even in patients without any predisposing factors.

Conflict of Interest: The authors declare that they have no competing interests.

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