Cerebrovasc Dis 2014;37:470–471

DOI: 10.1159/000363370

Sudden Loss of Consciousness during a FlightGuillaume Saliou^a, Pierre Etienne Leblanc^b, Cecile Cauquil^c,
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Bronchogenic cysts can very rarely be responsible for air embolism in a context of significantly increased atmospheric pressure. To our knowledge, only 7 similar cases have been reported in the Medline literature [1]. This cause of stroke can be quickly diagnosed in a suggestive context and if brain imaging (including CT scanner) is properly interpreted. We herewith describe a patient who suddenly became comatose during a flight, due to diffuse cerebral ischaemia caused by air embolism from a pulmonary bronchogenic cyst and review the previous literature.

Case Report

A 61-year-old hypertensive, dyslipidaemic and overweight woman suddenly developed severely altered consciousness 30 min after take-off. On initial assessment, she had left hemiplegia and coma with a Glasgow score of 6, requiring intubation and ventilation. An ECG was in favour of acute myocardial infarction confirmed by elevation of serum troponin to 11 $\mu\text{mol/l}$. Otherwise, laboratory work-up was normal. Brain CT scan was considered normal. Brain MRI performed 2 h after onset demonstrated diffuse T2-FLAIR signal abnormalities, with limited diffusion and multiple T2* hypo-intense foci, suggesting a combination of ischaemic and haemorrhagic lesions (fig. 1a–c). However, review of the CT scan showed gas bubbles, with a hypo-intense appearance on MRI T2* sequences, responsible for diffuse cerebral ischaemia (fig. 1a–c). In view of the diagnosis delay (10 days), hyperbaric oxygen therapy was no longer indicated. Chest CT scan revealed a bronchogenic cyst (fig. 1d), which was the origin of air embolism. The patient died 6 months later from complications of immobilization.

Discussion

Air embolism arising from a lung lesion can occur extremely rarely in a context of atmospheric pressure variations. The rarity of this type of stroke can explain our diagnostic difficulties, resulting in a delayed diagnosis. However, brain MRI during the acute phase rapidly revealed irreversible and extensive brain lesions for which aetiological treatment would probably not have improved the patient's prognosis. In the limited number of cases reported in the literature, patients also presented serious cerebral ischaemic lesions and a severe clinical condition. Six of the 8 published patients, including ours, died as a result of cerebral ischaemic lesions

Fig. 1. Brain CT scan (a) and MRI T2* axial (b) and diffusion (c) sequences during the acute phase. CT retrospectively demonstrates several gas bubbles (a, empty arrow), more clearly visible on the MRI T2* sequence in the form of suggestive focal hypo-intensities in a context of air embolism (b, empty arrow) with additional small gas bubbles visible as small black dots (b, small arrows). The initial ischaemic lesions are very extensive (c), indicating multiple, diffuse air embolisms either not visualized or only poorly visualized on CT scan. Chest CT scan in coronal reconstruction (d) shows a bronchogenic cyst as an air-density image in the middle lobe.

despite 3 of them having received hyperbaric oxygen therapy. Only 2 patients completely recovered, included 1 treated by hyperbaric oxygen therapy at 48 h, good prognosis being probably related more to the limited extent of the cerebral lesions than to late hyperbaric oxygen therapy [2].

Despite its rarity, medical teams involved in the management of strokes should be aware of this aetiology, in order to rapidly consider this diagnosis in a patient with sudden onset of a neurological deficit or coma during a flight. Indeed, the initial CT abnor-

malities, especially gas bubbles, may be difficult to demonstrate [2–4] or may be missed [5], as in our case. Focal leptomeningeal hypo-intense images on MRI may wrongly suggest microhaemorrhages, particularly in a context of ischaemia. The concomitant presence of myocardial infarction or livedo is also suggestive. In this context, chest imaging can be helpful. Even in the absence of cerebral intravascular gas, the combination of disseminated cerebral ischaemic lesions and a bronchogenic cyst is highly suggestive. Although the benefit from hyperbaric oxygenation has never been proven, such air embolism should be considered as a decompression illness and rapid initiation of hyperbaric oxygen therapy should be considered to improve its severe prognosis [6].

Disclosure Statement

We disclose no conflict of interest.

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