A Case Of Suspected, Shunt-Related, Cerebral Helium Micro-Embolism And Its Delayed Treatment With Hyperbaric Oxygen

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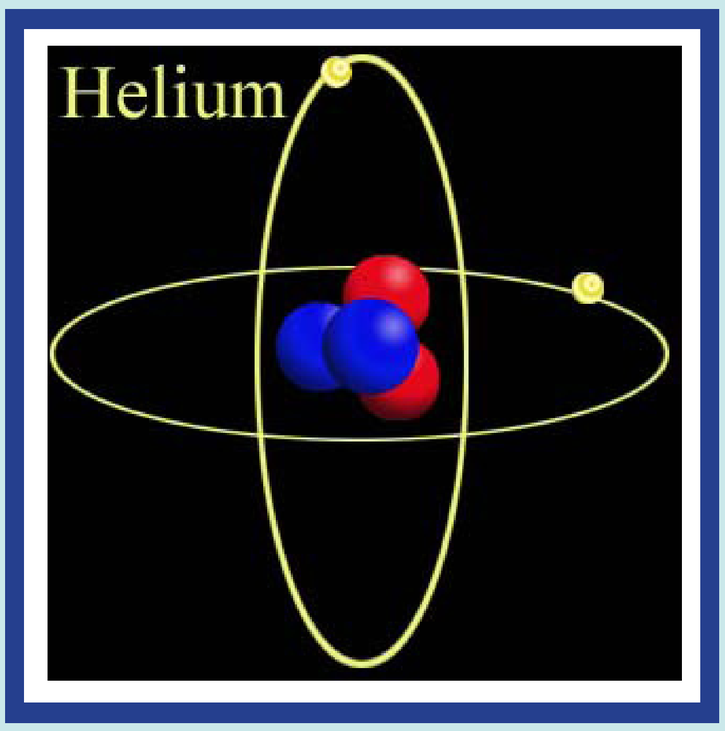
INTRODUCTION: Lung injury and lung shunt are known risk factors for cerebral arterial gas embolism (CAGE). Hyperbaric oxygen is considered an effective treatment in early presentations. We report the case of a male who, after inhaling helium, may have suffered a CAGE and received a delayed HBO treatment.

CASE SUMMARY: A 43-year-old man and experienced diver was referred to the hyperbaric unit. He reported to have inhaled helium from a rubber balloon at a party three weeks before. This had led to a sudden onset of the following symptoms, which had not subsided since then: headache, light-flashes, intentional tremor, insomnia and impaired short-term memory. Mini Mental score on examination was 27/30.



His past medical history included a successful HBO treatment for undeserved neurological DCI and a diagnosis of lung shunt by bubble test. Under the suspicion of a CAGE, the patient received three hyperbaric oxygen exposures to 2,4 ATA and reported a gradual improvement of symptoms. On follow-up a month later, he described himself as completely recovered. Mini Mental score was 30/30. No cerebral lesions were detected on MRI scan.

CONCLUSION: It remains uncertain whether cerebral arterial gas embolism has occurred in this case; however, Helium inhalation from a pressurized source has been previously linked to CAGE (1). Possible causal mechanisms include lung shunt or lung barotrauma. Blowing up a balloon can build sufficient intraalveolar pressure to cause alveolar rupture (2). The symptoms in this case were not severe enough for the patient to seek immediate medical attention. We found other case reports where cerebral embolism, due to its variety of manifestations, was not immediately recognized and treatment was delayed (3). Cognitive changes should be regarded as a leading symptom. They are also highly indicative for cerebral microembolisms in patients after cardiopulmonary bypass surgery (4). Early Hyperbaric Oxygen is the gold standard treatment for cerebral air embolism (5). Our case suggests that HBO treatment may also be effective in late presenting patients.

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