Open Access
Publish Free

http://jept.ir
doi 10.15171/jept.2017.17

Journal of Emergency Practice and Trauma
Volume 4, Issue 2, 2018, p. 53-54

Letter to Editor

Brain multi-infarct and decompression sickness

Luis Rafael Moscote-Salazar[1*], Guru Dutta Satyarthee[2], Nidia Escobar Hernandez[3,4], Jorge Aquino Matus[5,4], Willem Guillermo Calderon-Miranda[5,4], Marco Antonio Blancas-Varas[6], Johana Maraby[7], Joulen Mo-Carrascal[7]

[1]Neurosurgeon-Critical Care, RED LATINO. Latin American Trauma & Intensive Neuro-Care Organization, Bogota, Colombia
[2]All India Institute of Medical Sciences, New Delhi, India
[3]Department of Radiology, National Autonomous Universitiy of Mexico, Mexico City, Mexico
[4]Department of Radiology Hospital, General Dr. Manuel Gea González, Mexico City, Mexico
[5]Department of Internal Medicine, National Autonomous Universitiy of Mexico, Mexico City, Mexico
[6]National Autonomous Universitiy of Mexico, Mexico City, Mexico
[7]Universidad de Cartagena, Cartagena de Indias, Colombia

Dear Editor

Scuba diving is associated with an important risk of developing decompression sickness secondary to formation of gas bubbles inside the body. The latter is formed mainly by nitrogen in the body on the diver's way to the surface (1,2). In some cases, it might injure the central nervous system. Several decompression cases that have been associated with neurologic symptoms are described in the literature; however, brain multi-infarct with lethal outcome has never been described.

A 41-year-old male, came to the ER with clinical suspicion of decompression sickness (he dived for 15 minutes at a depth of 50 m). Among his health history, he was a heavy smoker, 30 minutes after leaving the water; he suddenly had dysarthria and vertigo.

Upon admission, the patient had a poor general condition, Glasgow Coma Scale (GCS) 9 points, and horizontal nystagmus with right hemiparesis 4/5. Brain magnetic resonance imaging (MRI) demonstrated multiple cerebral and cerebellar infarctions. Echocardiography did not reveal the presence of patent foramen ovale (Figure 1). The patient was required to be transferred to intensive care unit and to a hyperbaric chamber session. He progressed to hemodynamic instability, dying within 36 hours after admission.

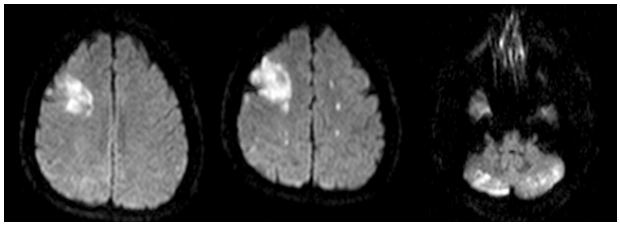

Figure 1. Brain MRI showing brain multiple and cerebellar infarct.

Decompression sickness is thought to be associated with thrombotic events due to intravascular gas bubbles. It is accepted that mechanical abrasion to vessel's walls may induce endothelial dysfunction and activation of the blood cells that are responsible to start the inflammatory reaction, vasomotor dysfunction, platelet aggregation pathway and coagulopathy. This disease has been classified into two types: type I and II, based on the severity of signs and symptoms. Type I is a mild form that requires less recompression and treatment, type II is associated with neurologic symptoms (3). The latter requires an extensive therapy and may lead to significant neurologic sequelae. Our case report represents a type II decompression sickness. It is known that the delay to start recompression treatment represents a poor prognosis. Early start of hyperbaric therapy will reduce the size of the gas bubbles, improve perfusion and re-oxygenate ischemic tissue before late inflammatory processes might occur. These include cytokines, platelet activation and complement activation (4,5).

Ethical issues

Not applicable.

Authors' contributions

All authors contributed equally.

Received: 13 January 2017; **Accepted:** 20 May 2017;
Published online: 27 May 2017
***Corresponding author**: Luis Rafael Moscote-Salazar, Email: mineurocirujano@aol.com
Competing interests: Authors declare that they have no competing interests.
Funding information: There is none to be declared.
Citation: Moscote-Salazar LR, Satyarthee GD, Hernandez NE, Moscote-Salazar LR, Matus JA, Calderon-Miranda WG, Blancas-Varas MA, et al. Brain multi-infarct and decompression sickness. Journal of Emergency Practice and Trauma 2018; 4(2): 53-54. doi: 10.15171/jept.2017.17.

References

1. Goldhahn RT Jr. Scuba diving deaths: a review and approach for the pathologist. Leg Med Annu 1977; 1976: 109-32.
2. Landsberg PG. South African underwater diving accidents, 1969-1976. S Afr Med J 1976; 50(55): 2155-59.
3. Klingmann C, Gonnermann A, Dreyhaupt J, Vent J, Praetorius M, Plinkert PK. Decompression illness reported in a survey of 429 recreational divers. Aviat Space Environ Med 2008; 79(2): 123-8. doi:10.3357/ASEM.2126.2008.
4. Jankowski LW, Tikuisis P, Nishi RY. Exercise effects during diving and decompression on postdive venous gas emboli. Aviat Space Environ Med 2004; 75(6): 489-95.
5. Chojdak-Łukasiewicz J, Dziadkowiak E, Bladowska J, Paradowski B. Vertebral artery dissection and stroke after scuba diving. Neurol India 2014;; 62(6): 711. doi: 10.4103/0028-3886.149455.