Can Hyperbaric Oxygen Improve Post-Concussion Syndrome (PCS)?

Presenter: Nadia Colavecchio, SRT

July 22, 6:30 PM Eastern

Session Abstract

INTRODUCTION: Brain injuries are a leading cause of death and disability worldwide for individuals under the age of 40. In fact, one in three Canadians is directly impacted by brain injuries. Currently, there is no effective intervention/treatment in clinical practice for post mild traumatic brain injury (mTBI) patients experiencing neurological dysfunction. Although there are intensive rehabilitation programs, these are only partially successful as every patient's journey with mTBI is both unique and complex. Recent studies show that hyperbaric oxygen therapy (HBOT) may induce angiogenesis and neuroplasticity in this population leading to a neurological improvement, reversal of symptoms and improved quality of life.

OBJECTIVE: To determine the effectiveness of Hyperbaric Oxygen Therapy (HBOT) in improving brain function, and quality of life in patients suffering from prolonged post-concussion syndrome (PCS) as a result of a mTBI.

METHODOLOGY: A literature search was performed using PubMed, IOS Press, BioMedCentral and ResearchGate databases. Randomized control trials (RCT), case studies and retrospective analyses were included in this review.

RESULTS: One RCT found that patients receiving a HBOT protocol demonstrated significant improvements in cognitive function, brain activity and quality of life. A retrospective analysis conducted by Tal, Hadanny, Berkovitz, Ben-Jacob, and Efrati (2015), showed those who underwent HBOT had significant increase blood flow and cerebral blood volume as well as improvement in global cognitive scores (p= 0.007). Research by Harch, Fogarty, Staab, and Van Meter (2009) found that the administration of low pressure HBOT caused a reduction in signs and symptoms of chronic mTBI. Single- photon emission computerized tomography (SPECT) imaging done pre and post HBOT shows an increase in blood flow to multiple lobes of the brain, and an overall normalization of blood flow following intervention.

CONCLUSION: HBOT may induce cerebral angiogenesis and neuroplasticity, which not only improves perfusion to damaged brain tissue but repairs chronically impaired brain function in mTBI patients with prolonged PCS.

Session Objectives

1. To determine the effectiveness of Hyperbaric Oxygen Therapy (HBOT) in improving brain function, and quality of life in patients suffering from prolonged post-concussion syndrome (PCS) as a result of a mTBI.

Speaker Biography

Nadia is a Respiratory Therapy student at Conestoga College. She has always had a passion for healthcare and the intricate workings of the human body. Prior to life as an SRT, she completed a bachelor's degree in Kinesiology at McMaster University. There, she fulfilled many placements in a variety of settings and was fortunate to work with diverse populations, acquiring a growing interest in concussion management. She completed certification as a concussion management practitioner allowing her to administer baseline tests, assessments and exertional return to play protocols. When she is not in class or studying, you can find her in the clinic working with these patients.