CUHMA ACMHS
Canadian Undersea and Hyperbaric Medical Association
Association Canadienne de Médecine Hyperbare et Subaquatique

E-NEWS

EDITORIAL NOTE – September 2019

The E-News is the monthly newsletter of CUHMA used to share news and information. We invite relevant content, including announcements, upcoming conferences, new publication abstracts, job postings, professional perspectives, incident reports, and relevant images of related professional scenes. Please share with interested colleagues. Past issues are available at https://cuhma.ca.

Neal W. Pollock, PhD
Université Laval

NEWS/ANNOUNCEMENTS

Low Pressure Regulator Hose Safety Notice

Dive Rite was notified by vendor Danicorp, Inc. in July 2019 of a safety concern affecting rubber low-pressure regulator hoses produced between February 2018 and September 2018. This can affect hose material marked with the date codes of: 0308, 0388, 0598, 0808, 1648, 1738, and 1998. Suspect low-pressure regulator hoses sold by Dive Rite include multiple lengths, and hoses sold individually and as part of regulator or rebreather packages. For details: https://www.diverite.com/uncategorized/rubber-low-pressure-regulator-hose-safety-notice.

UPCOMING EVENTS

CUHMA Annual Scientific Meeting 2019

The 2019 CUHMA ASM will be held October 03-06 in St. John's, NL, hosted by Memorial University Faculty of Medicine. Two pre-conference event days are followed by two days of scientific talks. Pre-conference events include:

- Diving Bell Island wrecks - Thursday and Friday
- BLS/ACLS refresher course - Thursday full day
- Board of Directors meeting - Thursday evening
- Offshore Safety and Survival Centre tour (underwater helicopter escape training facility) - Friday AM
- Hyperbaric emergency procedures course - Friday PM

A welcome reception with be held on Friday evening, and the awards banquet on Saturday evening. Visit our website (https://cuhma.ca) or register on the Memorial University Office of Professional and Educations Development website (https://www.med.mun.ca/opd/programs/info.asp?id=4228).

AAUS/CAUS Joint Conference 2019

The American Academy of Underwater Sciences and the Canadian Association for Underwater Science will hold a joint diving for science symposium in Vancouver, BC October 08-11. A variety of workshops augment the main conference. Visit: https://www.aaus.org/annualsymposium.

Hyperbaric Medical Technologist Course 2019

Simon Fraser University is offering a two-week introductory course October 21-November 02 in Burnaby, BC. It will cover the fundamentals of clinical hyperbaric oxygen therapy and practical skills of chamber operation. Week 1 (fundamentals) is accredited by NBDHMT and UHMS for 40 h of AMA PRA Category 1. Week 2 (chamber operation) meets the CSA Z275.4 standards and includes certification by the Diver Certification Board of Canada. For details: https://www.sfu.ca/science/faculty-support/facilities-services/empu/courses/hyperbaric-medical-technologist.html.

UMC Introductory Diving Medicine Course 2019

Undersea Medicine Canada is offering a CSA Z275.2-15 Level 1 'Introductory Course in Diving Medicine - Fitness to Dive' October 28-November 01 in Quebec City, QC. Upon successful completion of the course, physicians will qualify as CSA Z275.2-15 Level 1 Diving Medical Examiners and can have their names listed with the Diver Certification Board of Canada (DCBC) to conduct commercial diver medicals in Canada. This 40-h course has been accredited for 35 MAINPRO+ CME credits by the College of Family Physicians of Canada. Contact Dr. Debbie Pestell (drdeb1@ns.sympatico.ca; 902-225-8214) or visit: https://underseamedicine.ca for more information.

UHN Introductory Hyperbaric Medicine Course

The University Health Network, Toronto General Hospital, is offering this course November 26-30, 2019. The program will provide participants the basic competencies to practice in hyperbaric medicine. Content will include indications and contraindications for hyperbaric treatments and guidelines on treatment table usage. There will be hands-on practice of clinical skills, chamber management, and clinical emergencies during hyperbaric treatments, as well as theory and historical background. For more information, visit: https://www.uhn.ca/Surgery/PatientsFamilies/Clinics_Tests/Hyperbaric_Medicine_Unit/Pages/Continuing_Education.aspx

Hyperbaric Technician Training Course 2020

Simon Fraser University is offering a hyperbaric technician course February 02-07 in Burnaby, BC. It will cover skills and knowledge to maintain a hyperbaric facility including: operating principles of the main control equipment; air filtration systems; hyperbaric electric systems; and maintenance and inspection of acrylic windows. Hands-on components include: valve & regulator service, Swagelok fittings and tube bending; HP Bauer compressor servicing; oxygen cleaning; and HP cylinder inspection. Visit: https://www.sfu.ca/science/faculty-support/facilities-services/empu/courses/hyperbaric-technician.html.

Hyperbaric Safety Director Course 2020

Simon Fraser University, in Burnaby, BC, is offering this 3-day program in collaboration with International ATMO February 07-09. It will provide necessary tools and resources to fulfill the responsibilities of the Hyperbaric Safety Director (as defined by CSA Z275.1). Both classroom instruction and practical exercises are provided. Visit: https://www.sfu.ca/science/faculty-support/facilities-services/empu/courses/hyperbaric_safety_director.html.

Hyperbaric Medical Emergency Simulation 2020

Simon Fraser University, in Burnaby, BC, is offering this HMES course on February 10. It is an interactive team simulation program aimed at improving team dynamics to optimize patient outcomes in a crisis. It is intended for both physicians and non-physicians. Participants will gain hands-on experience with simulated monoplace and multiplace emergencies. The program is approved for 6.75 h of AMA PRA Category 1 credits. For more information, visit: https://www.sfu.ca/science/faculty-support/facilities-services/empu/courses/hyperbaric-medical-emergency-simulation.html.

International Congress on Hyperbaric Medicine

The 20th ICHM will be held November 11-15, 2020 at the Rio Othon Palace Hotel, in Copacabana, Rio de Janeiro, Brazil. The conference is held every three years, and is unusual in not being linked to any single institution. The scientific program will include oral and poster research presentations and invited lectures by renowned national and international speakers. CUHMA members are being offered 10% off the registration price. Visit www.ichm2020.rio.br.

RECENT PUBLICATIONS

Chandrasekhar SS, Tsai Do BS, Schwartz SR, Bontempo LJ, Faucett EA, Finestone SA, Hollingsworth DB, et al. Clinical practice guideline: sudden hearing loss (update) executive summary. Otolaryngol Head Neck Surg. 2019;161(2):195-210.

OBJECTIVE: Sudden hearing loss is a frightening symptom that often prompts an urgent or emergent visit to a health care provider. It is frequently, but not universally, accompanied by tinnitus and/or vertigo. Sudden sensorineural hearing loss affects 5 to 27 per 100,000 people annually, with about 66,000 new cases per year in the United States. This guideline update provides evidence-based recommendations for the diagnosis, management, and follow-up of patients who present with sudden hearing loss. It focuses on sudden sensorineural hearing loss in adult patients aged 18 and over and primarily on those with idiopathic sudden sensorineural hearing loss. Prompt recognition and management of sudden sensorineural hearing loss may improve hearing recovery and patient quality of life. The guideline update is intended for all clinicians who diagnose or manage adult patients who present with sudden hearing loss. PURPOSE: The purpose of this guideline update is to provide clinicians with evidence-based recommendations in evaluating patients with sudden hearing loss and sudden sensorineural hearing loss, with particular emphasis on managing idiopathic sudden sensorineural hearing loss. The guideline update group recognized that patients enter the health care system with sudden hearing loss as a nonspecific primary complaint. Therefore, the initial recommendations of this guideline update address distinguishing sensorineural hearing loss from conductive hearing loss at the time of presentation with hearing loss. They also clarify the need to identify rare, nonidiopathic sudden sensorineural hearing loss to help separate those patients from those with idiopathic sudden sensorineural hearing loss, who are the target population for the therapeutic interventions that make up the bulk of the guideline update. By focusing on opportunities for quality improvement, this guideline should improve diagnostic accuracy, facilitate prompt intervention, decrease variations in management, reduce unnecessary tests and imaging procedures, and improve hearing and rehabilitative outcomes for affected patients. METHODS: Consistent with the American Academy of Otolaryngology-Head and Neck Surgery Foundation's Clinical Practice Guideline Development Manual, Third Edition, the guideline update group was convened with representation from the disciplines of otolaryngology-head and neck surgery, otology, neurotology, family medicine, audiology, emergency medicine, neurology, radiology, advanced practice nursing, and consumer advocacy. A systematic review of the literature was performed, and the prior clinical practice guideline on sudden hearing loss

was reviewed in detail. Key action statements (KASs) were updated with new literature, and evidence profiles were brought up to the current standard. Research needs identified in the original clinical practice guideline and data addressing them were reviewed. Current research needs were identified and delineated. RESULTS: The guideline update group made strong recommendations for the following: clinicians should distinguish sensorineural hearing loss from conductive hearing loss when a patient first presents with sudden hearing loss (KAS 1); clinicians should educate patients with sudden sensorineural hearing loss about the natural history of the condition, the benefits and risks of medical interventions, and the limitations of existing evidence regarding efficacy (KAS 7); and clinicians should counsel patients with sudden sensorineural hearing loss who have residual hearing loss and/or tinnitus about the possible benefits of audiological rehabilitation and other supportive measures (KAS 13). These strong recommendations were modified from the initial clinical practice guideline for clarity and timing of intervention. The guideline update group made strong recommendation against the following: clinicians should not order routine computed tomography of the head in the initial evaluation of a patient with presumptive sudden sensorineural hearing loss (KAS 3); clinicians should not obtain routine laboratory tests in patients with sudden sensorineural hearing loss (KAS 5); and clinicians should not routinely prescribe antivirals, thrombolytics, vasodilators, or vasoactive substances to patients with sudden sensorineural hearing loss (KAS 11). The guideline update group made recommendations for the following: clinicians should assess patients with presumptive sudden sensorineural hearing loss through history and physical examination for bilateral sudden hearing loss, recurrent episodes of sudden hearing loss, and/or focal neurologic findings (KAS 2); in patients with sudden hearing loss, clinicians should obtain, or refer to a clinician who can obtain, audiometry as soon as possible (within 14 days of symptom onset) to confirm the diagnosis of sudden sensorineural hearing loss (KAS 4); clinicians should evaluate patients with sudden sensorineural hearing loss for retrocochlear pathology by obtaining a magnetic resonance imaging or auditory brainstem response (KAS 6); clinicians should offer, or refer to a clinician who can offer, intratympanic steroid therapy when patients have incomplete recovery from sudden sensorineural hearing loss 2 to 6 weeks after onset of symptoms (KAS 10); and clinicians should obtain follow-up audiometric evaluation for patients with sudden sensorineural hearing loss at the conclusion of treatment and within 6 months of completion of treatment (KAS 12). These recommendations were clarified in terms of timing of intervention and audiometry, as well as method of retrocochlear workup. The guideline update group offered the following KASs as options: clinicians may offer corticosteroids as initial therapy to patients with sudden sensorineural hearing loss within 2 weeks of symptom onset (KAS 8); clinicians may offer, or refer to a clinician who can offer, hyperbaric oxygen therapy combined with steroid therapy within 2 weeks of onset of sudden sensorineural hearing loss (KAS 9a); and clinicians may offer, or refer to a clinician who can offer, hyperbaric oxygen therapy combined with steroid therapy as salvage therapy within 1 month of onset of sudden sensorineural hearing loss (KAS 9b). DIFFERENCES FROM PRIOR GUIDELINE: Incorporation of new evidence profiles to include quality improvement opportunities, confidence in the evidence, and differences of opinion Included 10 clinical practice guidelines, 29 new systematic reviews, and 36 new randomized controlled trials Highlights the urgency of evaluation and initiation of treatment, if treatment is offered, by emphasizing the time from symptom occurrence Clarification of terminology by changing potentially unclear statements; use of the term sudden sensorineural hearing loss to mean idiopathic sudden sensorineural hearing loss to emphasize that over 90% of sudden sensorineural hearing loss is idiopathic sudden sensorineural hearing loss and to avoid confusion in nomenclature for the reader Changes to the key action statements (KASs) from the original guideline: KAS 1: When a patient first presents with sudden hearing loss, conductive hearing loss should be distinguished from sensorineural. KAS 2: The utility of history and physical examination when assessing for modifying factors is emphasized. KAS 3: The word routine is added to clarify that this statement addresses a nontargeted head computed tomography scan that is often ordered in the emergency room setting for patients presenting with sudden hearing loss. It does not refer to targeted scans such as a temporal bone computed tomography scan to assess for temporal bone pathology. KAS 4: The importance of audiometric confirmation of hearing status as soon as possible and within 14 days of symptom onset is emphasized. KAS 5: New studies were added to confirm the lack of benefit of nontargeted laboratory testing in sudden sensorineural hearing loss. KAS 6: Audiometric follow-up is excluded as a reasonable workup for retrocochlear pathology. Magnetic resonance imaging, computed tomography scan if magnetic resonance imaging cannot be done, or, secondarily, auditory brainstem response evaluation are the modalities recommended. A time frame for such testing is not specified, nor is it specified which clinician should be ordering this workup; however, it is implied that it would be the general or subspecialty otolaryngologist. KAS 7: The importance of shared decision making is highlighted, and salient points are emphasized. KAS 8: The option for corticosteroid intervention within 2 weeks of symptom onset is emphasized. KAS 9: Changed to KAS 9a and 9b; hyperbaric oxygen therapy remains an option but only when combined with steroid therapy for either initial treatment (9a) or for salvage therapy (9b). The timing is within 2 weeks of onset for initial therapy

and within 1 month of onset of sudden sensorineural hearing loss for salvage therapy. KAS 10: Intratympanic steroid therapy for salvage is recommended within 2 to 6 weeks following onset of sudden sensorineural hearing loss. The time to treatment is defined and emphasized. KAS 11: Antioxidants were removed from the list of interventions that the clinical practice guideline recommends against using. KAS 12: Follow-up audiometry at conclusion of treatment and also within 6 months posttreatment is added. KAS 13: This statement on audiologic rehabilitation includes patients who have residual hearing loss and/or tinnitus who may benefit from treatment. Addition of an algorithm outlining KASs Enhanced emphasis on patient education and shared decision making with tools provided to assist in the same

Churchill S, Deru K, Weaver LK, Wilson SH, Hebert D, Miller RS, Lindblad AS. Adverse events and blinding in two randomized trials of hyperbaric oxygen for persistent post-concussive symptoms. Undersea Hyperb Med. 2019 BIMA Special Edition No;46(3):331-40.

Safety monitoring and successful blinding are important features of randomized, blinded clinical trials. We report chamber- and protocol-related adverse events (AEs) for participants enrolled in two randomized, double-blind clinical trials of hyperbaric oxygen (HBO2) for persistent post-concussive symptoms clinicaltrials.gov identifiers NCT01306968, HOPPS, and NCT01611194, BIMA), as well as the success of maintaining the blind with a low-pressure sham control arm. In both studies, participants were randomized to receive HBO2 (1.5 atmospheres absolute, >99% oxygen) or sham chamber sessions (1.2 atmospheres absolute, room air). In 143 participants undergoing 4,245 chamber sessions, chamber-related adverse events were rare (1.1% in the HOPPS study, 2.2% in the BIMA study). Minor, non-limiting barotrauma was the most frequently reported. Rarely, some participants experienced headache with chamber sessions. No serious adverse events were associated with chamber sessions. An allocation questionnaire completed after intervention revealed that the sham control arm adequately protected the blind in both trials. Participants based allocation assumptions on symptom improvement or lack of symptom improvement and could not discern intervention arm by pressure, smell, taste, or gas flow.

Fischer KD, Heitzman JA, Townsend D. Hyperbaric therapy provides no benefit for skeletal muscle and respiratory function and accelerates cardiac injury in mdx mice. Sci Rep. 2019;9(1):12306. doi: 10.1038/s41598-019-48744-7.

Duchenne muscular dystrophy (DMD) is a uniformly fatal condition of striated muscle wasting resulting in premature death from respiratory and/or cardiac failure. Symptomatic therapy has prolonged survival by limiting deaths resulting from respiratory insufficiency, but there is currently no effective therapy for most patients with DMD. This grim prognosis has led patients and their families to seek unproven therapeutic approaches. One such approach is the use of hyperbaric therapies, which 14% of DMD patients self-report using. The primary goal of this study was to determine if intermittent hyperbaric exposure altered the muscle function of the mdx mouse, a genetic model of DMD. To do this, mdx mice were exposed to three daily 90-minute 1.3 atmosphere hyperbaric exposures for 4 weeks. Skeletal muscle, respiratory, and cardiac function were assessed in treated and untreated wild type and dystrophic mice. The results of these studies find that hyperbaric and hyperoxic approaches resulted in increased cardiac fibrosis in dystrophic mice and no beneficial effects on the functional parameters measured. These data suggest that these oxygen-based therapies are unlikely to provide therapeutic benefit to DMD patients.

Hadanny A, Zubari T, Tamir-Adler L, Bechor Y, Fishlev G, Lang E, Polak N, Bergan J, Friedman M, Efrati S. Hyperbaric oxygen therapy effects on pulmonary functions: a prospective cohort study. BMC Pulm Med. 2019;19(1):148. doi: 10.1186/s12890-019-0893-8.

BACKGROUND: Oxygen toxicity is one potential side effect of hyperbaric oxygen therapy (HBOT). Previous small studies showed mild reductions in pulmonary functions reflecting reductions in small airway conductance after repetitive hyperbaric oxygen sessions. However, there are no updated data with well performed pulmonary tests that address the pulmonary effect of the currently used HBOT protocols. The aim of this study was to evaluate the effect of HBOT on pulmonary functions of patients receiving the currently used HBOT protocol. METHODS: Prospective analysis included patients, 18 years or older, scheduled for 60 daily HBOT sessions between 2016 and 2018. Each session was 90 min of 100% oxygen at 2 ATA with 5 min air breaks every 20 min, 5 days per week. Pulmonary functions, measured at baseline and after HBOT, included forced vital capacity (FVC), forced expiratory volume in 1 sec (FEV_1) and peak expiratory flow rate (PEF). RESULTS: The mean age was 60.36 ± 15.43 and 62.5% (55/88) were males. Most of the patients (83/88, 94.3%) did not have any pulmonary disease prior to inclusion and 30.7% (27/88) had a history of smoking. Compared to baseline values, at the completion of 60 HBOT sessions, there were no significant changes in FEV_1 (0.163), FEV_1/FVC ratio (0.953) and FEF25-75% (0.423). There was a statistically significant increase though not clinically relevant increase in FVC (0.1 ± 0.38 l) and PEF (0.5 ± 1.4 l) with a 0.014 and 0.001 respectively. CONCLUSION: Regarding pulmonary functions, repeated hyperbaric oxygen exposure based on the currently used HBOT protocol is safe. Surprisingly, there was a modest non clinically significant though statistically significant improvement in

PEF and FVC in the current cohort of patients who were without chronic lung diseases. TRIAL REGISTRATION: Clinicaltrials.gov trial ID: NCT03754985 (Nov 2018) Retrospectively registered.

Hart BB, Weaver LK, Gupta A, Wilson SH, Vijayarangan A, Deru K, Hebert D. Hyperbaric oxygen for mTBI-associated PCS and PTSD: pooled analysis of results from Department of Defense and other published studies. Undersea Hyperb Med. 2019 BIMA Special Edition No;46(3):353-83.

BACKGROUND: Some clinical trials report improvement in persistent post-concussive symptoms (PCS) with hyperbaric oxygen (HBO_2) following mild traumatic brain injury (mTBI), but questions remain regarding the utility of HBO_2 for PCS, the effects of HBO_2 on post-traumatic stress disorder (PTSD), and the influences of sham control exposures. METHODS: A systematic review and pooled analysis was conducted to summarize available evidence for HBO_2 in mTBI-associated PCS±PTSD. Data aggregated from four Department of Defense (DoD) studies with participant-level data (n=254) were grouped into pooled HBO2 and sham intervention groups. Changes from baseline to post-intervention on PCS, PTSD, and neuropsychological measures were assessed using linear mixed models to evaluate main intervention and intervention-by-baseline PTSD effects. Potential dose-response relationships to oxygen partial pressures were investigated. Intervention effects from three other published studies with summary-level participant data (n=135) were also summarized. RESULTS: Pooled DoD data analyses indicated trends toward improvement favoring HBO_2 for PCS (Rivermead Total Score: -2.3, 95% CI [-5.6, 1.0], p=0.18); PTSD (PTSD Checklist Total Score: -2.7, 95% CI [-5.8, 0.4], p=0.09); and significant improvement in verbal memory (CVLT-II Trial 1-5 Free Recall: 3.8; 95% CI [1.0, 6.7], p=0.01). A dose-response trend to increasing oxygen partial pressure was also found, with a greater HBO_2 effect in mTBI-associated PTSD suggested. The direction of results was consistent with other published studies. CONCLUSION: A definitive clinical trial, with an appropriate control group, should be considered to identify the optimal HBO_2 dosing regimen for individuals with mTBI-associated PTSD±PCS.

Hart BB, Wilson SH, Churchill S, Deru K, Weaver LK, Minnakanti M, Lindblad AS. Extended follow-up in a randomized trial of hyperbaric oxygen for persistent post-concussive symptoms. Undersea Hyperb Med. 2019 BIMA Special Edition No;46(3):313-27.

To date, several Department of Defense (DoD) and civilian studies have evaluated hyperbaric oxygen for mild forms of traumatic brain injury. Prior to the DoD-sponsored "brain injury and mechanisms of action of hyperbaric oxygen for persistent post-concussive symptoms after mild traumatic brain injury (mTBI) (BIMA)" trial, none included post-intervention follow-up beyond three to six months. Post-hoc attempts at long-term follow-up were complicated by low participation and potential self-selection bias. BIMA planned for follow-up through 12 months but was amended to add post-concussive and post-traumatic stress disorder, quality of life, pain, depression, anxiety, and alcohol use assessments at 24 and 36 months. A total of 42 of 71 BIMA participants consented to extended follow-up, and 40 and 14 completed a 24 or 36 month visit, respectively, representing an overall response rate of 59% and 20%. Participants who completed extended follow-up were similar to the study group that did not in terms of demographics, perceived intervention allocation, and initial response to intervention. There were no significant differences at 24 or 36 months between intervention groups, and group mean scores were near pre-intervention values. This return to baseline could be due to waning treatment effect, selection bias, or participant or perception effects. Though BIMA implemented several participant retention strategies, more frequent participant contact and increased compensation might improve long-term retention in future studies. clinicaltrials.gov Identifier NCT01611194.

Teksam O, Sabuncuoğlu S, Girgin G, Özgüneş H. Evaluation of oxidative stress and antioxidant parameters in children with carbon monoxide poisoning. Hum Exp Toxicol. 2019 Aug 18:960327119867751. doi: 10.1177/0960327119867751. [Epub ahead of print]

OBJECTIVE: In this study, we aimed to investigate oxidative stress and antioxidant parameter levels in patients with carbon monoxide (CO) poisoning. METHODS: The study was conducted prospectively between March 1, 2015 and April 30, 2016 in the pediatric emergency department. Eligible patients included children aged 0-18 years old with a diagnosis of CO poisoning. To determination of oxidative stress and antioxidant parameter levels, venous blood with heparinized and urine samples were drawn during the admission and after normobaric oxygen (NBO) and hyperbaric oxygen (HBO) treatment. RESULTS: Forty-seven children with CO poisoning for study group and 29 patients as control group were included to the study. Sixteen patients treated with HBO. Basal plasma malondialdehyde levels were found to be significantly higher in the CO poisoning group when compared with the control group (p=0.019). There is no significant difference in oxidative stress and antioxidant parameter levels except erythrocyte catalase enzyme levels in patients treated with NBO when comparing before and after NBO treatment (p>0.05). Decreasing of basal erythrocyte catalase enzyme levels were found statistically significant after NBO treatment (p=0.04). There was no significant difference in oxidative stress and antioxidant parameter levels in patients treated with HBO before and after therapy (p>0.05). CONCLUSIONS: CO

poisoning is associated with increased lipid peroxidation in children immediately after the poisoning. However, both treatment modalities including NBO or HBO do not have a significant effect on oxidative stress or antioxidant parameter levels.

Weaver LK, Churchill S, Wilson SH, Hebert D, Deru K, Lindblad AS. A composite outcome for mild traumatic brain injury in trials of hyperbaric oxygen. Undersea Hyperb Med. 2019 BIMA Special Edition No;46(3):341-52.

INTRODUCTION: Global outcomes can strengthen inferences from clinical trials. We evaluate global outcomes for persistent post-concussive symptoms (PCS) after mild traumatic brain injury (mTBI) in two clinical trials of hyperbaric oxygen (HBO_2) in United States service members. METHODS: During study design, outcomes of symptom, cognitive, and functional impairments planned for a trial of HBO_2 for PCS (HOPPS) were weighted and grouped into different domains to formulate the composite outcome total score. The composite outcome was compared between the intervention groups in HOPPS and those in a subsequent HBO_2 trial (BIMA) for validation. Additionally, two post hoc global outcome measures were explored, including one composed of components that demonstrated favorable characteristics in both studies and another via components used in another TBI randomized trial (COBRIT). RESULTS: In total, 143 active-duty or veteran military personnel were randomized across the two studies. Composite total scores improved from baseline for HBO_2 (mean±SD -2.9±9.0) and sham (-2.9±6.6) groups in HOPPS but did not differ significantly between groups (p=0.33). In BIMA, 13-week changes from baseline favored the HBO_2 group (-3.6±6.4) versus sham (-0.3±5.2; p=0.02). No between-group differences were found when COBRIT composite scoring was applied to BIMA. Overall, HBO_2 effects were maximized when the post hoc global measure derived from both studies was applied to the data. CONCLUSIONS: Composite total scores in HOPPS and BIMA were consistent with primary study results. The global measures considered may offer utility as endpoints to achieve maximal HBO_2 effect in future trials of the mTBI population. IDS: clinicaltrials.gov Identifiers NCT01611194 (BIMA) and NCT01306968 (HOPPS).

Weymouth W, Pedersen C. Central retinal artery occlusion associated with carotid artery occlusion. Clin Pract Cases Emerg Med. 2019;3(3):233-6.

Sudden, painless vision loss in patients with stroke risk factors is suspect for central retinal artery occlusion (CRAO), an ophthalmic emergency that in addition to ocular treatment warrants a thorough neurologic and vascular evaluation. In addition to the high risk of concurrent stroke, carotid artery stenosis and occlusion is often overlooked during the initial evaluation. Here we report a case of CRAO with concurrent ipsilateral complete left internal carotid artery (ICA) occlusion and right ICA critical narrowing, dissection and pseudoaneurysm, which subsequently improved with prompt hyperbaric oxygen therapy.

CUHMA-ACMHS is the Canadian voice for the advancement of hyperbaric and diving medicine throughout our country and beyond. Our activities include continuous medical education for physicians, nurses, respiratory therapists and anyone involved in the fields of hyperbaric and diving medicine. We are also promoting dissemination of clinical research, publishing position statements, liaising with related professional associations and government agencies. Our main goal is advocating on behalf of our patients. Our vision is to be the reference for the development and delivery of hyperbaric and diving medicine in Canada and beyond. Our mission is to promote excellence in hyperbaric and diving medicine through leadership in education, promotion of best practices and advocacy for our patients. Our values are excellence, leadership, collaboration, communication, and integrity.

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