

Comment

Evidence brief: hyperbaric oxygen therapy (HBOT) for traumatic brain injury and/or post-traumatic stress disorder

Peterson K, Bourne D, Anderson J, Boundy E, Helfand M. Evidence brief: hyperbaric oxygen therapy (HBOT) for traumatic brain injury and/or post-traumatic stress disorder. VA ESP Project #09-199; 2018. [cited 018 May 14]. Available from: <https://www.hsrd.research.va.gov/publications/esp/hbot.pdf>.

This report is a product of the VA Evidence-based Synthesis Program. The purpose is to provide “*timely and accurate syntheses of targeted healthcare topics to improve the health and healthcare of Veterans*”. The authors have made a comprehensive search and analysis of the literature and make recommendations to assist clinicians in dealing with veterans suffering from either traumatic brain injury (TBI) or post-traumatic stress disorder (PTSD). The report is timely and of great potential impact given the vigorous and lengthy debate among hyperbaric physicians and lay people determined to find an answer for the large numbers of veterans deeply affected with some combination of PTSD and post-concussion dysfunction.

The authors lament the evidence on using hyperbaric oxygen treatment (HBOT) for TBI/PTSD has been “*controversial, widely debated, and potentially confusing*.” Unfortunately, this report will not improve that situation. The report is as much a political document as it is evidence-based. That politics are involved is apparent from the outset with the statement “*The ESP Coordinating Center is responding to a request from the Center for Compassionate Innovation (CCI)...*” The report fails to further illuminate the situation than the many thousands of words already spent on summarising the evidence.

Let me save you some time and get to the quick of this report. The authors (rightly) highlight the fact that uncontrolled case series and a randomised, controlled trial (RCT) without blinding or a sham control all suggest HBOT may be of benefit for these Veterans. Somewhat disappointingly, well-controlled, blinded RCTs using a sham exposure to 1.2 or 1.3 ATA (121 or 131 kPa) breathing air fail to confirm any such benefit. While the conventional interpretation of these data is that there is no reliable evidence of an effect of HBOT, proponents have responded by postulating these control exposures are not ‘sham’ because they are clinically active. Any putative mechanism remains unknown and unproven outside the context of this clinical area. These exposures just happen to be about equipotent with true HBOT. With this accurate summary, the authors conclude that any effect of HBOT is as yet unclear. They suggest that in Veterans who have not responded to other therapeutic options, the use of HBOT is “*reasonable*”.

This conclusion allows for a similar recommendation for any unproven therapeutic option where there is no clearly

effective treatment available and is, to this reviewer, unacceptable. While any putative mechanism for low-pressure air exposure owes more to magical thinking than physics, physiology or therapeutics, this is an argument the authors of this report seem to have accepted at some level. The proponents of HBOT have an obligation to both show the greater effectiveness of HBOT than a functional sham and to demonstrate a plausible mechanism. Until then, the strongest recommendation that should be made is that the ‘sham’ therapy can be used until the case is proven. It is not clear why the proponents of HBOT do not advocate this, given the ‘efficacy’ seems roughly equal with HBOT.

Logic determines one cannot prove a negative. This reviewer agrees it is not possible to definitively prove trivial pressure exposures breathing air may have a comparable effectiveness in treating TBI/PTSD as true HBOT. Using the principle of Occam’s razor it seems far more likely any apparent effect is the result of a ‘participation effect’ in both groups.

In my view, the authors of this report have taken an easy option in allowing that HBOT use is reasonable. The tragedy is potentially the waste of time, money and hope this may bring to the very Veterans the authors are charged to serve. I have discussed this issue in more detail previously in the pages of this journal.^{1,2}

References

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Key words

Hyperbaric research; Central nervous system; Medical condition and problems; Outcome

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