



ARTICLE OF THE MONTH

Cerebral Autoregulation-oriented Therapy at the Bedside: A Comprehensive Review

Rivera-Lara L, Zorrilla-Vaca A, Geocadin RG, Healy RJ, Ziai W, Mirski MA
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Welcome to the October 2017 installment of the SNACC Article of the Month! The featured article by Rivera –Lara *et al* aims to review the evidence regarding the use of cerebral autoregulation-oriented therapy at the bedside and the impact of this approach on optimizing cerebral perfusion. This month we have Philip Bickler, MD, PhD sharing his thoughts on this article. Dr. Bickler is professor of anesthesiology, chief of neuroanesthesia division and the director of Hypoxia Research Laboratory at UCSF. His research focuses on studying how neurons adapt to oxygen deprivation. He also oversees the high altitude protocols, clinical projects investigating regional and cerebral oximetry during neurosurgery and the effects of acute hypoxia and pre-conditioning on cognition. He has published over 80 peer reviewed studies.

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~ Oana Maties, MD, Adrian Pichurko, MD and Nina Schloemerkemper, MD

Commentary

Philip Bickler, MD, PhD

Cerebral autoregulation-based therapy has been proposed to enable the clinician to rationally determine optimal management of blood pressure, intracranial pressure and cerebral oxygenation to improve neurological outcomes. Assessing autoregulation involves assessing how blood pressure influences some critical aspect of cerebral oxygen delivery, such as intracranial pressure, cerebral blood flow or brain tissue oxygenation (cerebral oximetry). The pressure reactivity index, derived from the correlation between ICP changes and MAP changes is the most commonly used index to describe cerebrovascular reactivity. The review by Rivera-Lara *et al* from Johns Hopkins University provides a comprehensive review of the current state of knowledge on this topic. Some highlights of the article include a review of the basic mechanisms of cerebral blood flow autoregulation, a review of the technology used to assess flow and oxygen delivery, the details of the many currently used indices that describe autoregulation and a discussion of what is known about how using assessments of autoregulation change outcomes for patients at risk for brain ischemia. The review correctly notes that there is currently no accepted standard for measuring autoregulation and that study of the relationship between autoregulation-guided therapy and clinical outcomes is at an early stage.