

INVITED COMMENTARY



ICP Monitoring for Bacterial Meningitis: Is This Just One of the Blind Spots in Neurocritical Care?

Jose Javier Provencio* 

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Neurocritical care developed in the interspace between neurology, neurosurgery, and critical care. As such, it has adopted many of the cultural aspects of each specialty. This has led to a number of incongruous treatment paradigms that are based on the specialties that claim ownership of the condition.

In this issue, we see another example of this. El-Hajj and colleagues [1] review the evidence for intracranial pressure (ICP) monitoring in the setting of community-acquired bacterial meningitis. The studies are variable in design, number of patients, inclusion of pediatric and adult populations, and statistical rigor. The authors do a good job of accounting for this variability by limiting combined data assessments. Unfortunately for the reader and the specialty of neurocritical care, the findings are suggestive that ICP monitoring is useful but not conclusive. The authors appropriately recommend larger well-constructed clinical trials to answer this question definitively. As such, it leaves the practitioner with little guidance about the appropriate approach.

There is a larger issue at play in this evaluation. The uncertainty of whether to monitor ICP in the setting of bacterial meningitis is quite different from the certainty with which we, as a profession, promote the use of ICP monitoring in traumatic brain injury (TBI) or intraparenchymal intracerebral hemorrhage (ICH). The data for improving outcome with ICP monitoring in meningitis are limited and variable, but so are the data for

ICP monitoring in TBI and ICH [2, 3]. The best explanation for the poor adoption of ICP monitoring in meningitis and the better adoption in TBI is that meningitis was traditionally managed by neurologists and medical intensivists and TBI was traditionally managed by neurosurgeons.

This begs the question of whether there are “blind spots” in the care of patients in the neurocritical care setting that are due to traditional “disease ownership”. For example, seizures occur relatively frequently after acute ischemic stroke (AIS), aneurysmal subarachnoid hemorrhage, and ICH. The tradition has been to treat the ICH and subarachnoid hemorrhage with prophylactic anticonvulsants, despite little evidence to support their use, and only to treat patients with AIS who have demonstrated seizures [4–6]. Another example is the use of hemispherectomy after AIS versus ICH. The mechanism for herniation after both entities is similar, as is the outcome without treatment. Yet large-scale randomized trials have been conducted for AIS but not for ICH [7, 8]. Other incongruities are littered in the practice of neurocritical care, for example, the use of unfractionated heparin versus low-molecular-weight heparin in critically ill patients, the choice and implementation of antibiotics for febrile patients, and others.

Understanding the “why” may be more difficult. One could surmise that in the case of ICP monitoring, neurologists, neurointensivists, and medical intensivists in many cases need to advocate for ICP monitoring device placement to a consulting neurosurgeon, who may not be as invested as they would if the patient were treated primarily in a neurosurgery service. This is not supported in the case of hemispherectomy for AIS and ICH. Neurologists and neurointensivists are still in the position to

*Correspondence: jp3b@UVAHealth.org
Department of Neurology, University of Virginia, PO Box 800394,
Charlottesville, VA 22908, USA

This article is related to the review article available at <https://link.springer.com/article/10.1007/s12028-023-01937-5>.

advocate to a consulting neurosurgeon, but this therapy is considered standard of care in AIS. In contrast, hemispherectomy for ICH is not standard of care even though patients with ICH are traditionally in the domain of neurosurgery. More likely, it has to do with what paradigm to which particular specialties have grown accustomed. It is accepted in the neurosurgery culture that patients with severe TBI need close and advanced monitoring, whereas in the more medical specialties (internal medicine and neurology), advanced monitoring takes a back seat to initiation of definitive treatment (antibiotics in the case of meningitis); in fact, in the last century, the most important debate of meningitis treatment has not been about monitoring ICP but about whether adjunctive corticosteroids improve outcomes [9].

Care in the neuroscience intensive care unit is a combination of evidence-based practices, physiological theories, ideas borrowed from other critical care settings, and traditional mindsets. In the absence of rigorously controlled randomized trials, as a field, we are left with making decisions based on incomplete and adjacent, as opposed to directly applicable, data. Laid on top of this decision analysis are treatment decisions that we favor just because “we have always done it that way”. What makes neurocritical care different from many other critical care specialties is that it grew out of three specialties (neurology, neurosurgery, and critical care) that have different answers for similar conditions in regard to “we have always done it that way”. This is an opportunity to evaluate our practice in a unique way, such as whether we should treat a patient with increased ICP due to TBI the same way as we do a patient with meningitis.

Author contributions

JJP researched, wrote, and is responsible for all the work.

Source of support

None.

Conflicts of interest

The author has no conflicts of interest for the content of this work. The author is a member of the *Neurocritical Care* editorial board.

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Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Received: 23 December 2023 Accepted: 5 January 2024

Published online: 17 February 2024

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