

INTRODUCTION

Diversity of cranial infections and their management**Vedantam Rajshekhar, MCh,¹ Stephen J. Haines, MD,² Dattatraya Muzumdar, MCh,³
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MOST neurosurgeons infrequently encounter cranial infections, and when they do, the infections are often related to prior cranial surgery such as craniotomies or ventricular shunt insertions. But primary cranial infections due to the spread of infection from other sites, such as the middle ear, paranasal sinuses, or elsewhere in the body, are still prevalent to various extents in different geographies. Hence, neurosurgeons, regardless of their practice location, must periodically refresh their knowledge about cranial infections, both primary and secondary, as well as their management.

Articles in this issue of *Neurosurgical Focus* bring to the fore the diversity of cranial infections with respect to predisposing factors, causative organisms, and management strategies. Most of the articles are understandably focused on the presentation, management, and outcome of common primary cranial infections, namely brain abscess and subdural empyema. Some deal with the mundane aspects of management such as the ideal surgical strategy for a brain abscess (aspiration vs excision), which has remained unresolved to date. One of the main drawbacks of previous attempts to settle this issue has been the lack of clear-cut study inclusion criteria. In a German-Austrian multicenter study with well-defined inclusion criteria, Eibl et al. have attempted to provide an answer to which strategy is superior (aspiration or excision) in patients with superficial brain abscesses. A cutting-edge approach to bacteriological diagnosis in brain abscess is the subject of another article. While traditional microbiological techniques such as smear and culture have been the mainstay of identifying the causative organisms in patients with cranial infections such as brain abscess and subdural empyema, they fail to yield a positive result in nearly a third of these patients. Parmar et al. highlight the

possibility of applying a proteomics-based approach using mass spectrometry to identify organisms in pus and tissue obtained from brain abscesses. This approach, if found to be feasible, will help guide the antibiotic management of patients with brain abscess in whom the conventional microbiological techniques have not identified the causative organisms.

The issue also features articles that deal with other aspects of cranial infections, such as their prevention and management. The prevention of infection after inserting external ventricular drains, endoscopic management of intraventricular and subarachnoid neurocysticercosis, and a simple but effective ventricular lavage technique to manage ventriculitis are the focus of some of these articles. An interesting article from Poland by Koźba-Gosztyła et al. documents an increase in the incidence of an uncommon entity, namely pituitary abscess, following the COVID-19 pandemic; however, a causal relationship is difficult to establish. It would be interesting to see whether other centers have had a similar experience. Finally, there is an article on the contribution of plastic surgeons to the management of complex cranial wounds following neurosurgical interventions. In most cases, the management was complicated by poor wound healing related to infection and prior radiation therapy. The authors of this article rightly point out that it is beneficial to anticipate the need for collaboration between neurosurgeons and plastic surgeons prior to surgery rather than after failed attempts by neurosurgeons alone to manage these wounds.

Readers of this issue of *Neurosurgical Focus* can expect to benefit from learning about different aspects of cranial infections. The articles focusing on brain abscess and empyema will act as knowledge updates on these topics. Some novel prognostic factors in patients with brain

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abscesses, such as the size of the abscess, will help in predicting outcomes in these patients. An awareness of the efficacy of uncommonly used management techniques in the context of cranial infections, such as decompressive craniectomy, external ventricular or lumbar drainage, and bilateral occipital horn ventricular lavage and endoscopic techniques, will invite readers to consider these unconventional strategies when confronted with patients with uncommon or complex and difficult-to-manage cranial infections. The article on proteomics-based identification of

the causative organisms of brain abscess may even inspire some readers to further explore this diagnostic avenue.

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Disclosures

The authors report no conflict of interest.

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