



The Silent Intruder: Stroke in Tuberculous Meningitis

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INTRODUCTION

Stroke in tuberculous meningitis (TBM) represents a complex interplay of factors, often overlooked amidst the more prominent manifestations of this devastating disease. Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, remains a significant global health concern, with extrapulmonary manifestations like TBM posing unique challenges due to its potential to affect multiple organ systems, including the central nervous system (CNS). Within this intricate clinical landscape, stroke emerges as a silent yet formidable complication, demanding comprehensive understanding and proactive management. TBM-related strokes arise from a multifactorial etiology, involving vasculitis, vasospasm, thrombosis, and aneurysm formation. The hallmark of TBM pathogenesis lies in its propensity to induce inflammation, leading to meningeal irritation and subsequent vascular involvement. Inflammatory mediators trigger endothelial dysfunction, disrupting the delicate balance of vascular homeostasis and paving the way for ischemic or hemorrhagic events within the CNS. Moreover, the presence of caseating granulomas further exacerbates vascular compromise, culminating in the insidious onset of stroke in affected individuals.

DESCRIPTION

The clinical manifestation of stroke in TBM encompasses a diverse spectrum, ranging from focal neurological deficits to global cognitive impairment. Given the intricate anatomy of the CNS, strokes in TBM often exhibit a predilection for the basal ganglia, thalamus, and brainstem, reflecting the underlying vascular pathology characteristic of this disease. Consequently, patients may present with hemiparesis, dysarthria, or altered mental status, mimicking the clinical features of traditional stroke syndromes. However, the concurrent presence of meningeal signs, such as neck stiffness or cranial nerve palsies, serves as a crucial diagnostic clue, underscoring the nuanced presentation of stroke in the context of TBM. Diagnostic evaluation of stroke in TBM poses significant challenges, necessitating a multimodal

approach encompassing neuroimaging, cerebrospinal fluid (CSF) analysis, and ancillary studies. Neuroimaging modalities, including computed tomography (CT) and magnetic resonance imaging (MRI), play a pivotal role in delineating the extent of cerebral ischemia or hemorrhage, guiding subsequent management strategies. Additionally, CSF analysis remains indispensable, with characteristic findings of lymphocytic pleocytosis, elevated protein levels, and decreased glucose concentrations serving as diagnostic hallmarks of TBM. Ancillary studies, such as polymerase chain reaction (PCR) assays or adenosine deaminase (ADA) levels, further augment diagnostic accuracy, facilitating timely intervention in the setting of TBM-related strokes. The management of stroke in TBM hinges upon a multidisciplinary approach aimed at addressing both the underlying infection and cerebrovascular complications. Anti-tubercular therapy forms the cornerstone of treatment, consisting of a multidrug regimen targeting the causative organism and mitigating disease progression within the CNS. Adjunctive corticosteroid therapy holds particular significance in attenuating inflammatory-mediated vascular injury, thereby minimizing the risk of recurrent strokes and improving clinical outcomes. Additionally, supportive measures, including antiepileptic drugs and neurorehabilitation services, play a pivotal role in optimizing functional recovery and mitigating long-term disability in affected individuals.

CONCLUSION

Despite advancements in diagnostic modalities and therapeutic interventions, stroke in TBM continues to pose formidable challenges, necessitating ongoing research endeavors to unravel its intricate pathophysiology and refine management strategies. Early recognition of stroke-related complications, coupled with prompt initiation of anti-tubercular therapy and adjunctive measures, holds promise in mitigating the burden of this silent intruder within the realm of tuberculous meningitis. By elucidating the complex interplay between infection and cerebrovascular pathology, clinicians can strive towards optimizing outcomes and enhancing the quality of life for individuals afflicted by stroke in TBM.

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