Perspective

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Stroke Etiologies and Clinical Outcomes in Endovascular Therapy for Large-Vessel Occlusion

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Description

Endovascular Therapy (EVT) has revolutionized the management of acute ischemic stroke caused by Large-Vessel Occlusion (LVO), offering a promising avenue for improving patient outcomes. With a focus on enhancing revascularization rates and minimizing time to treatment, neurointerventionalists have dedicated efforts to refining techniques and streamlining workflows in EVT procedures. Despite these advancements, challenges persist, particularly in cases of LVO attributed to large-artery atherosclerosis. Large-artery atherosclerosis stands as a significant contributor to LVO, presenting clinicians with unique considerations in treatment planning and execution. Within this subtype, Intracranial Atherosclerotic Disease (ICAD) poses particular challenges due to its propensity for low recanalization rates and high rates of reocclusion post-EVT.

Patient prognosis

Managing ICAD-related LVOs requires a nuanced approach, given the complexities associated with achieving successful revascularization and preventing recurrent occlusions. While some studies have hinted at differences in clinical outcomes based on stroke etiology, the specific impact of ICAD on EVT outcomes remains incompletely understood. Furthermore, there is a dearth of research examining the early changes in neurological severity following EVT in patients with ICAD-related LVO. Addressing these gaps in knowledge is essential for optimizing treatment strategies and improving patient outcomes in this subset of stroke patients. Our study aims to bridge these gaps by leveraging real-world data to compare clinical outcomes between patients with and without ICAD-related LVO. By analyzing factors such as recanalization rates, reocclusion rates, and functional outcomes post-EVT, we seek to elucidate the influence of ICAD on treatment response and patient prognosis. Additionally, by examining early changes in neurological severity using the NIHSS score, we aim to provide insights into the immediate effects of EVT in patients with ICAD-related LVO. Through our comprehensive analysis, we endeavor to contribute valuable insights that can inform clinical decision-making and refine treatment protocols for patients with ICAD-related LVO. By better understanding the interplay between stroke etiology, treatment response, and clinical outcomes, we hope to optimize EVT strategies and ultimately improve the quality of care and outcomes for patients experiencing acute ischemic stroke due to large-artery atherosclerosis. Intracranial LVOs attributed to ICAD represent a unique clinical challenge due to the underlying pathophysiology and associated treatment complexities. Unlike cases of artery-to-artery embolism, ICAD involves *in situ* stenosis or occlusion resulting from atherosclerotic plaque formation within the intracranial arteries. This localized pathology poses hurdles to EVT, including difficulties in achieving optimal recanalization and a heightened risk of reocclusion post-procedure.

Intracranial vasculature

The management of ICAD-related LVOs demands a tailored approach that addresses the specific characteristics of atherosclerotic disease within the intracranial vasculature. Techniques such as angioplasty and stent placement may be employed to address underlying stenoses and improve vessel patency, but these interventions carry their own set of considerations and potential complications. Furthermore, the presence of ICAD may influence the choice of devices and procedural strategies utilized during EVT, necessitating careful pre-procedural planning and intraoperative decision-making. Despite these challenges, the treatment landscape for ICAD-related LVOs has evolved with advancements in endovascular techniques and devices. Novel approaches, such as direct aspiration thrombectomy and balloon-mounted stent retrievers, offer promising options for achieving successful revascularization in this patient population. Additionally, emerging technologies, including advanced imaging modalities and artificial intelligence-driven algorithms, hold potential for enhancing treatment planning and procedural outcomes in ICAD-related LVOs. By elucidating the impact of ICAD on EVT outcomes and early changes in neurological severity, our study aims to inform clinical practice and guide the development of tailored treatment algorithms for this challenging patient cohort. Through a deeper understanding of the nuances associated with ICAD-related LVOs, we can strive towards optimizing EVT strategies and improving patient outcomes in the realm of acute ischemic stroke management.