Opinion Article

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Emerging Complications of Cerebral Hyperperfusion Syndrome Post-Endovascular Treatment

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Description

Cerebral Hyperperfusion Syndrome (CHS) is a rare yet serious complication that can occur following revascularization procedures for cerebrovascular diseases. While it has been documented after treatments for acute ischemic stroke, including intravenous thrombolysis and endovascular therapy for large vessel occlusion, there have been limited reports on CHS following endovascular treatment for medium vessel occlusion, such as anterior cerebral artery A2/3 segment occlusion. Here, we present a case of CHS following endovascular reperfusion therapy for medium vessel occlusion, highlighting the importance of recognizing and managing this potentially life-threatening condition. The patient in this case was a 70-year-old woman with a history of hypertension and dyslipidemia who presented with immobility and slurred speech.

Recanalization

Initial assessment revealed mild right lower extremity paralysis, and she was diagnosed with cerebral infarction in the left frontal lobe. Despite some improvement in symptoms, her neurological status worsened after hospitalization, leading to referral to our department for further management. Endovascular reperfusion therapy was performed to address the left anterior cerebral artery A2 occlusion, achieving recanalization with residual stenosis. However, the patient experienced prolonged disorientation, severe hemiplegia, and aphasia following the procedure. Arterial spin labeling revealed hyperperfusion in the left anterior cerebral artery area, confirming the diagnosis of CHS. Fortunately, the patient's symptoms gradually improved with strict blood pressure control. This case underscores the importance of considering CHS as a potential complication following endovascular treatment for medium vessel occlusion. While CHS is more commonly associated with treatments for large vessel occlusion, clinicians should remain vigilant for its occurrence in other settings, particularly when patients exhibit neurological deterioration post-procedure. Prompt recognition and management of CHS are essential to prevent further complications and optimize patient outcomes. Furthermore, the use of arterial spin labeling proved valuable in detecting hyperperfusion, aiding in the diagnosis and subsequent management of CHS. This non-invasive imaging technique can provide valuable insights into cerebral perfusion patterns, guiding treatment decisions and monitoring response to therapy in patients at risk for CHS.

Pathophysiology

In conclusion, this case highlights the potential for CHS to occur following endovascular treatment for medium vessel occlusion and underscores the importance of vigilance in recognizing and managing this rare complication. Continued research and awareness efforts are needed to further elucidate the risk factors, pathophysiology, and optimal management strategies for CHS in various clinical settings. Additionally, this case emphasizes the importance of individualized patient management and close monitoring following endovascular procedures, particularly in those with pre-existing risk factors such as hypertension and dyslipidemia. Early recognition of CHS and prompt intervention, including strict blood pressure control, are crucial for preventing adverse outcomes and promoting recovery. While CHS remains a relatively rare occurrence, its potential to cause significant morbidity and mortality necessitates continued vigilance and awareness among healthcare providers. Further research into the underlying mechanisms and risk factors contributing to CHS following endovascular therapy for medium vessel occlusion is warranted to optimize patient care and outcomes. By sharing clinical experiences and insights such as this case, healthcare professionals can enhance their understanding of CHS and improve their ability to recognize and manage this challenging complication effectively. This ultimately contributes to the delivery of high-quality care and improved outcomes for patients undergoing endovascular treatment for cerebrovascular diseases.