

Impact of Ebola and Other Emerging Infectious Diseases

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Description

Acute Basilar Artery Dissection (BAD) is a rare but serious condition that can lead to severe neurological deficits and death. The basilar artery, a major blood vessel supplying the brainstem and posterior circulation, is critical for functions such as consciousness, breathing, and motor control. When a dissection occurs, a tear in the artery wall allows blood to enter the vessel layers. This can lead to luminal narrowing, thrombosis, or even rupture, severely compromising blood flow to vital areas of the brain. Thrombectomy, a procedure to remove a blood clot from a blood vessel, has emerged as a life-saving intervention in acute ischemic stroke. Its application in cases of acute basilar artery dissection, however, is less straightforward due to the unique anatomical and pathological characteristics of the basilar artery. This article explores the role of thrombectomy in managing acute BAD, examining current evidence, challenges, and future directions. Basilar artery dissection typically arises from an intimal tear, where the innermost layer of the artery wall is compromised, allowing blood to flow between the layers of the vessel wall. This creates a false lumen that can compress the true lumen, leading to reduced blood flow and subsequent ischemia. In some cases, the false lumen may thrombose, exacerbating the obstruction and increasing the risk of stroke. The basilar artery, located in the posterior circulation, is particularly vulnerable to dissection due to its long, tortuous course and the hemodynamic stress it endures. Additionally, the brainstem, which the basilar artery supplies, is a critical structure responsible for essential functions, making the consequences of basilar artery dissection particularly devastating.

Clinical presentation

Patients with acute BAD may present with a range of neurological symptoms, depending on the extent and location of the dissection. Common symptoms include sudden-onset vertigo, diplopia, dysarthria and ataxia. In more severe cases, patients may develop quadriplegia, locked-in syndrome or coma. Diagnosis is challenging and often requires high-resolution imaging techniques. Magnetic Resonance Imaging (MRI) with Diffusion-Weighted Imaging (DWI) is typically the modality of choice, as it can detect both the dissection and any associated

ischemic changes. Magnetic Resonance Angiography (MRA) or Computed Tomography Angiography (CTA) may also be used to visualize the dissection and assess the extent of vessel involvement. The advent of mechanical thrombectomy has revolutionized the treatment of acute ischemic stroke, particularly in cases involving large vessel occlusions. Thrombectomy involves the use of specialized devices to physically remove a clot from an occluded artery, restoring blood flow to the affected area of the brain. In the context of acute BAD, however, the use of thrombectomy is complex and requires careful consideration. Thrombectomy may be considered in cases of acute BAD where there is evidence of an occlusive thrombus within the basilar artery. The goal of the procedure is to restore perfusion to the brainstem and posterior circulation, potentially reversing the ischemic damage. However, the decision to perform thrombectomy must be weighed against the risks, as the procedure itself can exacerbate the dissection or lead to vessel rupture.

Thrombectomy in acute basilar artery dissection represents a critical intervention with the potential to save lives and prevent devastating neurological deficits. However, the procedure is fraught with challenges, and careful patient selection, technical expertise, and multidisciplinary collaboration are essential to achieving successful outcomes. As research continues to advance our understanding, it is hoped that new strategies and technologies will emerge to enhance the safety and efficacy of this life-saving intervention. In the meantime, clinicians must remain vigilant in identifying patients who may benefit from thrombectomy and be prepared to navigate the complexities of this challenging condition. In cases where thrombectomy is successful, patients may experience dramatic neurological recovery, particularly if perfusion is restored before extensive brainstem damage occurs. Long-term outcomes are influenced by factors such as the extent of initial ischemic damage, the presence of comorbidities, and the patient's age. The management of acute BAD with thrombectomy is an evolving field, with ongoing research aimed at optimizing outcomes and reducing complications. Future studies are needed to better define the indications for thrombectomy in this context, as well as to develop advanced imaging techniques that can more accurately assess the extent of dissection and guide treatment decisions.