

ACUTE BASILAR ARTERY OCCLUSION MANAGEMENT COMPLEXITIES IN A PATIENT WITH CONCURRENT SHINGLES AND LONG COVID

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ABSTRACT

Introduction:

Acute basilar artery occlusion is a neurological emergency that requires timely diagnosis and intervention. It can become a particularly complex situation compounded by coexisting conditions such as shingles and Long COVID.

Case Report:

A 71-year-old gentleman, known to have had hypertension presented with progressive neurological deficit. Complicated further with recent herpes infection and long covid 19 illness both posing to have the prothrombotic and vasculopathic effects. The patient underwent urgent endovascular angioplasty and subsequently maintained with dual antiplatelet.

Discussion:

This case underscores the intricate interplay between COVID-19, herpes zoster, and the patient's underlying hypertension, which together played a synergistic role in promoting endothelial dysfunction and vascular remodeling, thereby increasing cerebrovascular risk. While mechanical thrombectomy has proven to be an effective treatment, the complexity of this case required critical and cautious decision-making. Coordinated multidisciplinary rehabilitation was also essential in optimizing long-term neurological recovery and reducing the risk of subsequent stroke recurrence.

Conclusion:

Coordinating the management of basilar artery occlusion with a complex medical history may require multidisciplinary approach. This case illustrates the compound effect of various pathophysiology which plays a role in cerebrovascular risk with a prolonged neurological impairment and the need of multifaceted and comprehensive care which need to be individualised.

Keywords: Basilar artery occlusion, shingles, COVID-19

INTRODUCTION:

An acute basilar artery occlusion is a very dangerous condition that, if diagnosed early and managed appropriately, has a favorable prognosis for patients. The basilar artery is one of the arterial systems that play a significant role as the blood supplier to the brainstem, cerebellum, and the posterior part of the cerebral cortex. Atherosclerosis or blockage of this vessel produces severe neurological impairments, including paralysis, coma, and sometimes death when treated fleetingly. When a patient presents with these brainstem-related symptoms, rapid evaluation is essential as well as immediate treatment. Rapid reconstitution of blood flow is crucial because the brainstem and other affected regions are highly susceptible to ischemic injury. It is also important to determine whether the mechanism is an embolic clot, in-situ thrombosis, or other causes in managing the occlusion [1].

Immediate consultation with stroke specialists and the endovascular team is needed. This is followed by appropriate imaging studies, including CT angiography and magnetic resonance angiography, which must be obtained to make an accurate diagnosis at the initial stage. Prompt treatment with intra-arterial thrombolytics, such as alteplase or tenecteplase, and transfer to the angiography suite for mechanical thrombectomy can greatly improve outcomes in eligible patients.

The treatment of acute basilar artery occlusion is a combined modality based on medical and interventional procedures. Intravenous thrombolytic therapy with tissue plasminogen activator (tPA) has been used when administered within the stipulated time span of usually 4 to 5 hours after the onset of symptoms. Endovascular treatment, including mechanical thrombectomy, may be used for patients who are not suitable candidates for intravenous thrombolysis or those who have failed the treatment [1,2].

CASE REPORT:

A 71-year-old Chinese male, known for hypertension, woke up in the morning with an unsteady gait. He did not have any other neurological deficits, no headache, and no blurring of vision. However, at KPJ Seremban, a brain CT done on the same day revealed a left cerebellar hemisphere focal hypodensity, and he was allowed to go home on dual antiplatelet therapy (DAPT). His symptoms progressed, and by the next afternoon, he developed worsening unsteady gait and slurred speech. In 2 days, he was unable to ambulate and was brought to Sunway Hospital. An MRI brain showed acute infarcts in the midbrain, pons, and left cerebellum.

His medical history included a Category 2 COVID-19 infection a month ago and the development of shingles 2 weeks prior, which manifested as painful vesicular rashes on his trunk, treated with Acyclovir 800 mg QID (two doses taken). Upon admission to Sunway Hospital 3 days after the event, he was alert and conscious with a blood pressure of 159/73 mmHg, a pulse of 75 bpm, and an NIHSS score of 4 (facial asymmetry 1, limb ataxia 2, and dysarthria 1). His ECG showed sinus rhythm, and a CT brain ruled out acute intracranial bleeding but confirmed the left cerebellar hemisphere focal hypodensity, indicating a recent infarct. MRI findings revealed acute infarcts in the left cerebellum, left cerebellar peduncle, pons, midbrain, and both cerebral peduncles. A repeat MRI showed new acute infarcts in the right thalamus, midbrain, pons, and bilateral cerebellum, with resolved basilar artery occlusion.

The patient underwent angioplasty on the same day and continued DAPT. His medications included Cardiprin, Plavix, Pantoprazole, Atorvastatin, Amlodipine, NeuroAid, Gabapentin, Norgesic, PCM, Celebrex, Bionerve, NAC, Alprazolam, Lactulose, CMC eye ointment, Vismed, Ravin enema, Loratadine, and LMS ointment for symptomatic relief and

supportive care. Other findings included bilateral ptosis, left internuclear ophthalmoplegia (INO), partial Cranial Nerve III palsy, and resolved Cranial Nerve VI palsy, which were being managed by an ophthalmology team. He also developed aspiration pneumonia, which responded well to antibiotics (Augmentin and Azithromycin), and herpes zoster, complicated by post-herpetic neuralgia, which resolved with Acyclovir.

Prior to discharge, the patient was afebrile, but his speech and swallowing remained unsuitable for oral feeding. He is undergoing physiotherapy and is able to sit up, though he is unbalanced while standing and not yet able to ambulate. New symptoms include a runny nose, bilateral eye ptosis, and left INO. His NIHSS score has improved from 6 to 3. The management plan includes continuing DAPT, monitoring vital signs and blood sugar, maintaining systolic blood pressure between 140 and 160 mmHg, regular Glasgow Coma Scale (GCS) and pupil charting, and ongoing rehabilitation with physiotherapy, occupational therapy, speech therapy, and dietitian review.

DISCUSSION:

A particularly notable aspect of this case is the convergence of three distinct yet pathophysiological interlinked conditions: COVID-19, herpes zoster, and acute ischemic stroke. COVID-19 is increasingly recognized for inducing a hypercoagulable state through endothelial dysfunction, cytokine storm, and platelet activation. Similarly, varicella-zoster virus (VZV) is both neurotropic and vasculotropic, capable of causing VZV vasculopathy, which has been associated with small and large vessel strokes. The coexistence of these conditions may exert a synergistic effect on cerebrovascular risk. This triad should prompt clinicians to consider atypical etiologies in patients presenting with posterior circulation syndromes, especially in post-COVID-19 individuals with concurrent dermatological findings [3,4,5].

Initial neuroimaging on Day 1 revealed a focal hypodensity in the left cerebellar hemisphere, indicating an evolving infarct. The patient was discharged on dual antiplatelet therapy (DAPT) following standard stroke guidelines. However, his symptoms progressed the next day, with new-onset slurred speech and worsening gait. He was readmitted to Sunway Hospital following further deterioration, including inability to ambulate. MRI revealed multiple acute infarcts in the midbrain, pons, and left cerebellum—hallmarks of a posterior circulation stroke [6]. His recent COVID-19 infection and shingles likely contributed to a prothrombotic state, compounding stroke severity. Literature increasingly supports the association of COVID-19 and VZV with cerebrovascular complications [7].

He subsequently underwent angioplasty in the first week, followed by continued DAPT to mitigate thromboembolic risk. This case underscores the complex interplay between viral-induced vasculopathy and hypercoagulability. His neurological findings included bilateral ptosis, left internuclear ophthalmoplegia, partial cranial nerve III palsy, and a resolved cranial nerve VI palsy—features consistent with brainstem infarction [8]. A post-stroke complication of aspiration pneumonia was treated with antibiotics. He also developed post-herpetic neuralgia, managed with gabapentin and acyclovir [9]. His NIHSS score improved from 6 to 3 with a multidisciplinary rehabilitation approach involving physiotherapy, speech therapy, and occupational therapy. This highlights the importance of coordinated care among neurologists, ophthalmologists, and rehabilitation specialists.

Basilar artery stenosis is a critical condition with high morbidity if untreated. Two primary strategies are used: best medical therapy and endovascular intervention (angioplasty/stenting). Angioplasty provides rapid recanalization and improved blood flow and is associated with high technical success rates and better vascular

patency [10]. However, risks include vessel dissection, embolization, and hemorrhage. Intravenous thrombolysis using tissue plasminogen activator (tPA) remains standard for eligible patients within the 3–4.5-hour window [11]. Alternatives such as tenecteplase followed by mechanical thrombectomy (MT) within 24 hours from last known normal (LKN) are also viable, especially when tPA is contraindicated. Mechanical thrombectomy allows direct clot removal and has shown high recanalization rates (>80%) with favorable 90-day outcomes, especially when achieved on first pass (First-Pass Effect) [12–15]. Limiting MT to a maximum of three passes is associated with optimal outcomes [16–17]. Patients not eligible for thrombolysis may benefit from antiplatelet therapy. Evidence favors single or dual antiplatelet therapy over anticoagulation in large artery atherosclerotic disease, especially with significant infarct burden. Standard post-stroke management includes 90 days of DAPT followed by aspirin monotherapy [18]. Stroke prevention also incorporates lifestyle modification, use of aspirin, statins, a Mediterranean diet, and smoking cessation, while MT has proven efficacy in trials like DAWN and DEFUSE-3, mixed results in studies such as BEST and BASICS highlight the nuanced response in basilar artery occlusion (BAO) [19,20,21]. Procedural complications remain a concern, with a reported 1-year recurrence rate of ipsilateral ischemic stroke at 7.7% and in-stent restenosis at 32.5% [21]. However, endovascular treatment has shown long-term safety and efficacy with low complication rates [22,23]. Aggressive medical therapy, including cardiovascular risk factor management, remains a cornerstone [24]. Ongoing randomized trials comparing stenting plus medical therapy versus medical therapy alone for high-grade intracranial atherosclerosis will further inform optimal treatment strategies.

CONCLUSION:

This case highlights the challenges of managing acute basilar artery occlusion and the most unique and clinically significant aspect of this presentation was the convergence of a rare triad: recent COVID-19 infection, acute herpes zoster (shingles), and underlying hypertension—each an independent risk factor for cerebrovascular events but together posing a compounded vascular threat. Their combined pathophysiological effect including endothelial dysfunction, hypercoagulability and vasculopathy played a synergistic effect in precipitating posterior circulation stroke in subjects with multiple comorbidities, including hypertension, recent COVID-19 infection, and Shingles. Due to neurological deterioration, angioplasty and dual antiplatelet therapy were needed for the patient. COVID-19 and shingles made the process of stroke management more challenging by increasing the chances of hypercoagulability [25,26].

Thus, the challenge after primary diagnosis is the integrated treatment of the patient, which requires the cooperation of a neurologist, an ophthalmologist, and rehabilitation specialists. Angioplasty, DAPT, and rehabilitation outcomes in this patient led to better neurological functioning, but there is still a need for ongoing functional balance and mobility. It suggests, once again, the need for individual treatment approaches as well as for studies directed at identifying the ideal management plan for complicated stroke situations.

We also have found that both angioplasty and stenting with the best medical therapy have their important roles in treating acute basilar artery stenosis with stroke. The strategy for treatment should be chosen on an individual basis, weighting the specific clinical features of the patient, the severity and location of the stenosis, and the presence of experienced clinicians able to make endovascular procedures in a given clinic. Further research is necessary to

better understand the comparative benefit-risk relationship of these approaches. On the whole, comparing angioplasty and stenting with the best medical therapy for acute basilar artery stenosis with stroke remains actively investigated.

DATA AVAILABILITY:

Further information regarding the data used for this work can be obtained from the corresponding author upon reasonable request.

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CONFLICT OF INTEREST:

The authors have no conflicts of interest to declare and is in agreement with the contents of the manuscript.

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