Basilar artery occlusion

Basilar artery occlusion (BAO) is a serious medical condition characterized by the blockage or occlusion of the basilar artery.

When a blockage occurs in the basilar artery, it can lead to significant neurological consequences due to the restricted blood flow to the affected regions. The most common cause of BAO is the formation of a blood clot or thrombus within the artery, usually as a result of atherosclerosis or the dislodgment of a clot from another location (embolism). Other less common causes include arterial dissection, vasculitis, or compression of the artery.

Symptoms of basilar artery occlusion can vary depending on the extent and location of the blockage but often include:

Sudden and severe neurological deficits: These may include loss of consciousness, coma, or altered mental status. Cranial nerve abnormalities: These can manifest as double vision, difficulty swallowing, facial weakness or numbness, and changes in hearing or balance.

Motor and sensory deficits: Weakness or paralysis of the limbs, numbness or loss of sensation, and coordination difficulties may occur.

Speech and language problems: Difficulty speaking, slurred speech, or an inability to comprehend or express language can be present.

Cerebellar symptoms: These may include imbalance, uncoordinated movements, and difficulty walking. Respiratory difficulties: Breathing problems or abnormal respiratory patterns may occur due to brainstem involvement.

Immediate medical attention is crucial in cases of basilar artery occlusion, as the condition is associated with a high risk of disability or death. Timely diagnosis and treatment are essential to restore blood flow and prevent further brain damage. Treatment options may include intravenous thrombolysis (clot-dissolving medication), mechanical thrombectomy (removal of the clot using specialized devices), or a combination of both. Supportive measures such as respiratory support and management of blood pressure and other vital functions are also provided.

The prognosis for basilar artery occlusion depends on various factors, including the duration of the occlusion, the extent of brain damage, and the effectiveness of treatment. Prompt recognition and intervention are critical to improving outcomes, but even with treatment, the condition can be associated with significant morbidity and mortality. Rehabilitation and supportive care are often necessary to optimize recovery and manage any persistent neurological deficits.

Case series

Hirai et al. aimed to investigate the impact of baseline infarct area and collateral status (CS), which are imaging predictors of clinical stroke outcome, after endovascular treatment (EVT) in MRI-selected patients with acute basilar artery occlusion (BAO).

Patients with acute BAO who underwent EVT within 24 h after stroke from December 2013 to February 2021 were included in this retrospective, multicenter, observational study. The baseline

infarct area was evaluated by the posterior circulation of Acute Stroke Prognosis Early Computed Tomography Score (PC-ASPECTS) using diffuse-weighted imaging (DWI), and CS was assessed by measuring the computed tomography angiography of the basilar artery (BATMAN) score and the posterior circulation collateral score (PC-CS) using magnetic resonance angiography (MRA). A Good outcome was defined as a modified Rankin scale score ≤ 3 at 3 months. For each imaging predictor, a multivariate logistic regression analysis was performed to evaluate its impact on good outcomes.

A total of 86 patients were analyzed, and 37 (43.0%) had a good outcome. The latter showed significantly higher pc-ASPECTS than those without good outcomes. In multivariate analyses, a pc-ASPECTS ≥ 7 was significantly associated with good outcomes (OR, 2.98 [95% CI, 1.10-8.13], P = 0.032), while PC-CS ≥ 4 (OR, 2.49 [95% CI, 0.92-6.74], P = 0.073) and BATMAN score ≥ 5 (OR, 1.51 [95% CI, 0.58-3.98], P = 0.401) were not.

In MRI-selected patients with acute BAO, pc-ASPECTS on DWI was an independent predictor of clinical outcomes after EVT, while the MRA-based CS assessments were not [1].

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149 patients with acute basilar artery occlusion from the Basilar Artery International Cooperation Study were included. They related poor outcome at one month, defined as a modified Rankin scale score of 4 or 5, or death to collateral flow with Poisson regression. They used a 10 points grading system to quantify the potential for collateral flow in the posterior communicating arteries and the cerebellar arteries. Additionally, the relation between the presence and size of posterior communicating arteries and outcome was analyzed.

Thirty-six patients had poor (PC-CS: 0-3), 59 patients intermediate (PC-CS: 4-5), and 54 patients good (PC-CS: 6-10) collaterals. Multivariable analyses showed a statistically significant lower risk of poor outcome in patients with a good PC-CS than in patients with a poor PC-CS (risk ratio (RR): 0.74, 95% confidence interval (CI): 0.58-0.96), but not for patients with an intermediate PC-CS compared with patients with a poor PC-CS (RR: 0.95, 95% CI: 0.78-1.15). Multivariable analyses showed a statistically significant lower risk of poor outcome for the presence of at least one posterior communicating artery and for larger caliber of posterior communicating arteries (RR: 0.79, 95% CI: 0.66-0.95 and 0.76, 95% CI: 0.61-0.96, respectively). CONCLUSIONS: The PC-CS predicted poor outcome at one month. In a separate analysis, both the absence and smaller caliber of posterior communicating arteries predicted poor outcome [2].

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2)
van der Hoeven EJ, McVerry F, Vos JA, Algra A, Puetz V, Kappelle LJ, Schonewille WJ; BASICS registry investigators. Collateral flow predicts outcome after basilar artery occlusion: The posterior circulation collateral score. Int J Stroke. 2016 Mar 25. pii: 1747493016641951. [Epub ahead of print] PubMed PMID: 27016515.