

Resurrection of Endovascular Thrombectomy for Posterior Circulation Stroke

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Endovascular thrombectomy (EVT) has emerged as one of the most important treatment strategies for acute stroke patients with large-vessel occlusion. However, unlike anterior circulation stroke (ACS), there remain unclear issues in EVT for posterior circulation stroke (PCS). Also, there has yet been no definite evidence of EVT benefit in PCS.

In this issue of the *Journal of Stroke*, two papers gave new insights on EVT in PCS. Kwon et al.¹ compared the characteristics and outcomes of EVT between ACS and PCS groups. The onset-to-recanalization time was longer in the PCS group than in the ACS group. This was partly because initial PCS symptoms such as dizziness, diplopia, and visual disturbances are not regarded as serious neurologic symptoms by patients. Interestingly, there were also differences in the characteristics of the patients with cardioembolic occlusion (CE-O). It has been well known that the National Institutes of Health Stroke Scale (NIHSS) score is higher in the CE-O patients than in those with atherosclerotic stroke in the ACS group. However, this was not the case in the PCS group. This was probably due to the different symptom characteristics of CE-O between the two groups. Although CE-O in the ACS group produces abrupt and severe motor dysfunction associated with sudden middle cerebral or internal carotid artery occlusion, CE-O in the PCS group typically occludes the distal basilar or posterior cerebral arteries, thereby less likely resulting in severe motor dysfunction. For this reason, there was a greater delay in the initiation of EVT in CE-O patients in the PCS group. Nevertheless, the proportions of successful recanalization and favorable clinical outcomes were similar between the two groups.

In another paper, Lee et al.² thoroughly reviewed the current status of EVT in PCS. They stated that two previous randomized clinical trials (RCTs), The Basilar Artery Occlusion Endovascular Intervention Versus Standard Medical Treatment (BEST) and

The Basilar Artery International Cooperation Study (BASICS),^{3,4} failed to show the benefits of EVT in PCS. Although this news was pessimistic, we could learn something important by analyzing the reasons why they failed. After the success of EVT in ACS trials, many physicians believe that EVT is effective in PCS as well. In addition, owing to aggressive education and propaganda, the benefits of EVT are now widely recognized not only by physicians but also by lay people. Therefore, when a patient has severe neurological deficits due to stroke, 'not performing EVT' becomes increasingly difficult. Ironically, these were the main reasons for the failure of the EVT trials of PCS; physicians were generally reluctant to allocate patients to the medical arm, especially when patients' neurological conditions fluctuate or progressively worsen. Furthermore, it was difficult to convince patients or their family members who also believe the efficacy of EVT. Thus, excessive crossovers occurred in these RCTs, and there was a progressive drop in recruitment. To overcome this recruitment issue, investigators attempted to modify inclusion criteria in the more generous direction, which unfortunately resulted in the enrolled patients becoming less likely to benefit from EVT in the middle of the trial.

These lessons however were well-taken in the newer trials. At the European Stroke Organization Conference (ESOC) 2022, The Endovascular Treatment for Acute Basilar Artery Occlusion (ATTENTION) and The Basilar Artery Occlusion Chinese Endovascular trial (BAOCHE) results were finally presented. Both studies showed significantly higher rates of favorable outcomes defined by modified Rankin Scale 0–3 at 90 days in the EVT groups than in the medication-only groups. Although the rates of symptomatic intracranial hemorrhage were higher, mortality rates were lower in the EVT groups in both trials. These successful trials had more specific inclusion criteria related with baseline clinical severity and infarct volumes as

compared to the previous trials.

I would congratulate on the resurrection of EVT in PCS, and hope that these positive results are confirmed by further trials. Considering differences in characteristics between PCS and ACS, more studies are needed to find out who would be the best (or worst) candidate for EVT, and who would benefit from EVT in an extended time window. In this regard, the extensive discussion made by Lee et al.² is worth reading.

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