Emergency carotid endarterectomy for stroke in evolution

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COMMENT & ANALYSIS

Stroke in evolution is defined as an acute neurological deficit progressing within hours or days after the initial diagnosis to a greater deficit after waning and waning of signs without disappearance of focal deficits. Acute stroke patients can present with a relatively small, well-defined deficit at presentation that increases over time, either gradually or abruptly, without a return to baseline. The deficit will continue to worsen despite treatment of the underlying cause. This progression can be due to ongoing thrombosis (ischemic core) or the development of collateral flow to areas previously held to be infarcted (penumbra). The natural history of these patients all steps towards a final stroke, indicating that emergency carotid endarterectomy is clinically reasonable.

Based on the rapidly developing surgical expertise and experience gained in the last decades, the ideal indication for emergency carotid endarterectomy is now more clearly defined. The presence of a high instantaneous blood flow to the brain in the territory of the internal carotid artery is key to timely evaluation of such patients. However, recent randomized trials on stent-retriever systems (ESCAPE, EXTEND-AB, MR CLEAN, BEVASCAT, SWIFT PRIME) have demonstrated unanimously that patients with an acute ischemic stroke benefit significantly from systemic thrombolysis plus early endovascular therapy, which allows reperfusion of the ischemic core. Patients with a small ischemic core and surrounding zones of critical hypoperfusion might be proper candidates. Furthermore, the feasibility of performing an emergency endarterectomy has been reported in patients with intracranial bleeding on CT scans and beneath the already-established ischemic core if the brain infarction and the ischemic core are not separated. Cerebral angiography is essential to determine the location of the occlusion, its length, and the presence of collateral arteries. Carotid shunting is necessary to reduce the risk of intracranial bleeding.

The choice of patients for emergency carotid endarterectomy is determined by the intensity of the neurological deficit and the patient's clinical status. The presence of a high instantaneous blood flow to the brain in the territory of the internal carotid artery is key to timely evaluation of such patients. However, recent randomized trials on stent-retriever systems (ESCAPE, EXTEND-AB, MR CLEAN, BEVASCAT, SWIFT PRIME) have demonstrated unanimously that patients with an acute ischemic stroke benefit significantly from systemic thrombolysis plus early endovascular therapy, which allows reperfusion of the ischemic core. Patients with a small ischemic core and surrounding zones of critical hypoperfusion might be proper candidates. Furthermore, the feasibility of performing an emergency endarterectomy has been reported in patients with intracranial bleeding on CT scans and beneath the already-established ischemic core if the brain infarction and the ischemic core are not separated. Cerebral angiography is essential to determine the location of the occlusion, its length, and the presence of collateral arteries. Carotid shunting is necessary to reduce the risk of intracranial bleeding.

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