Are Brain Protection Devices All They Are Cracked Up to Be?

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Over the past years, carotid stenting has become a minimally invasive alternative to carotid endarterectomy. Initially only unprotected carotid stenting was performed, but more recently, protectional devices have become available and are currently widely used. As with every medical device the potential benefits should be weighed against the disadvantages of the device. This implies a careful scrutiny of the safety of devices.

In this article, a review of results as reported in the literature as well as personal experience as obtained with protected versus unprotected internal carotid artery stenting will be presented. Only filter-type devices will be discussed since they have been used longer and more frequently. It has been demonstrated that new lesions on magnetic resonance imaging occur after carotid artery stenting and that symptomatic patients tend to develop more new lesions than asymptomatic patients. New lesions also occur when using embolic protection devices. Limitations of filter-type embolic protection devices are the lack of foolproof capture efficiency and shortcomings to cope with all types of vessel anatomy. Furthermore, protection devices may induce spasms, dissection, et cetera.

Summarizing the data as published in peer-reviewed literature, it can be concluded that results of protected versus unprotected carotid stenting are similar, that part of the adverse events occur postprocedure, and that part of the adverse events are related to the occurrence of hypotension and asystole. Finally, hyperperfusion syndrome will not be prevented using embolic protection devices, nor will cerebral protection prevent contralateral and vertebrobasilar stroke.

In conclusion, there is no level 1 evidence for the beneficial effect of protection devices, and results from randomized trials are needed.

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