

Advances in the management of acute ischemic stroke

Despite the advances achieved in the treatment of acute ischemic stroke, it is still a world-wide leading cause of mortality and disability. Intravenous thrombolysis has been considered the standard care since two clinical trials demonstrated efficacy of r-TPA, the NINDS and ECASS II trials, when administered within the first 3 hours after stroke onset. The time window was extended to 4 and a half hours after the ECASS III trial was completed, and up to six hours in the IST-3 trial, given that the benefit was significant. Two major draw-backs have been claimed: the risk of brain hemorrhage in around 6% of eligible patients and the low rate of recanalization. Mechanical thrombectomy after thrombolysis or thrombectomy alone improve outcomes and increase recanalization rates, with a longer time window in patients with salvageable tissue and large vessel occlusion. Recanalization is quite relevant is because a positive association was found between recanalization and functional improvement. A meta-analysis from five clinical trials and 1287 patients included within 12 hours from stroke onset, there was a clear benefit of endovascular thrombectomy plus medical therapy compared with the control group of medical therapy alone in terms of 90 day-disability. In another meta-analysis from the same trials it was concluded that for every hour delay of thrombectomy was associated with less favorable outcomes (OR: 0.84; 95% CI: 0.76-0.93). In the DEFUSE 3 trial 182 patients with ischemic stroke and large-vessel occlusion, selected by perfusion mismatch, were randomised to receive either thrombectomy plus medical standard treatment or medical treatment alone within 6-12 hours from stroke onset. The trial was stopped prematurely because of the benefit of thrombectomy on functional outcome Furthermore the DAWN trial recruited 206 stroke patients within 24 hour-window, and with mismatch between infarct volume and clinical deficit with significant improvement. No differences were seen in terms of mortality and brain hemorrhage between thrombectomy and medical treatment alone. Telemedicine is of help to hasten the process of patient selection for the appropriate treatment in areas without thrombectomy-capable medical centers. Mobile stroke units may be an option to provide the first care in determined areas.

The advances in the management of acute ischemic stroke should not be a hamper for primary prevention strategies. Early detection and control of risk factors is essential for health purposes and to decrease the burden for health care systems. However, there is a significant proportion of ischemic strokes of undetermined cause (>30% of cases), for which no preventive action can be undertaken.

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