Intracranial arterial stenosis

Stenting is a common endovascular therapy for symptomatic intracranial arterial stenosis (ICAS). Wang et al., sought to update the evaluation of global short-term safety and long-term efficacy outcomes after stenting for symptomatic ICAS and explore their distributional characteristics.

Major databases including Cochrane Library, MEDLINE, EMBASE were systematically searched from January 1st, 2005, for RCTs and observational studies which reported short- and long-term outcomes after stenting for symptomatic ICAS. Each outcome was pooled with meta-analysis and the impacts of study location, publication time, and other population characteristics were further assessed by the univariate and multivariate Poisson regression analyses.

A total of 8408 patients were identified in 92 studies from 16 countries across five WHO regions. The estimated rate of short-term stroke or death was 6.68% (95% CI 5.60-8.36%), and the rate of long-term stroke or death was 4.43% (95% CI 2.61-6.60%). After adjustment of age, sex, study location, preprocedual stenosis, publication period and study design, multivariate regression analysis showed that the rate of short-term stroke or death was different between Western and Eastern countries (10.27% versus 5.52%, p = 0.018). The rates of short-term, stroke, ischemic stroke and long-term death were also significantly higher in Western compared to Eastern countries.

This systematic review provided the worldwide profile of short- and long-term outcomes of stenting for symptomatic ICAS. The generally acceptable outcomes indicate that stenting may still be feasible in selected patients. Regional disparity calls for more cautious decisions and future studies [1)].

Intracranial stenosis is one of the most common etiologies of stroke. To our knowledge, no randomized clinical trials have compared balloon-expandable stent treatment with medical therapy in symptomatic intracranial arterial stenosis. OBJECTIVE: To evaluate the efficacy and safety of the balloon-expandable stent plus medical therapy vs medical therapy alone in patients with symptomatic intracranial stenosis (≥70%). DESIGN, SETTING, AND PATIENTS: VISSIT (the Vitesse Intracranial Stent Study for Ischemic Stroke Therapy) trial is an international, multicenter, 1:1 randomized, parallel group trial that enrolled patients from 27 sites (January 2009-June 2012) with last follow-up in May 2013. INTERVENTIONS: Patients (N = 112) were randomized to receive balloon-expandable stent plus medical therapy (stent group; n = 59) or medical therapy alone (medical group; n = 53). MAIN OUTCOMES AND MEASURES: Primary outcome measure: a composite of stroke in the same territory within 12 months of randomization or hard transient ischemic attack (TIA) in the same territory day 2 through month 12 postrandomization. A hard TIA was defined as a transient episode of neurological dysfunction caused by focal brain or retinal ischemia lasting at least 10 minutes but resolving within 24 hours. Primary safety measure: a composite of any stroke, death, or intracranial hemorrhage within 30 days of randomization and any hard TIA between days 2 and 30 of randomization. Disability was measured with the modified Rankin Scale and general health status with the EuroQol-5D, both through month 12. RESULTS: Enrollment was halted by the sponsor after negative results from another trial prompted an early analysis of outcomes, which suggested futility after 112 patients of a planned sample size of 250 were enrolled. The 30-day primary safety end point occurred in more patients in the stent group (14/58; 24.1% [95% CI, 13.9%-37.2%]) vs the medical group (5/53; 9.4% [95% CI, 3.1%-20.7%]) (P = .05). Intracranial hemorrhage within 30 days occurred in more patients in the stent group (5/58; 8.6% [95% CI, 2.9%-19.0%]) vs none in the medical group (95% CI, 0%-5.5%) (P = .06). The 1-year primary outcome of stroke or hard TIA occurred in more patients in the stent group (21/58; 36.2% [95% CI, 24.0-49.9]) vs the medical group (8/53; 15.1% [95% CI, 6.7-27.6])

(P = .02). Worsening of baseline disability score (modified Rankin Scale) occurred in more patients in the stent group (14/58; 24.1% [95% CI, 13.9%-37.2%]) vs the medical group (6/53; 11.3% [95% CI, 4.3%-23.0%]) (P = .09).The EuroQol-5D showed no difference in any of the 5 dimensions between groups at 12-month follow-up. CONCLUSIONS AND RELEVANCE: Among patients with symptomatic intracranial arterial stenosis, the use of a balloon-expandable stent compared with medical therapy resulted in an increased 12-month risk of added stroke or TIA in the same territory, and increased 30-day risk of any stroke or TIA. These findings do not support the use of a balloon-expandable stent for patients with symptomatic intracranial arterial stenosis [2)].

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Wang T, Yang K, Luo J, Gao P, Ma Y, Wang Y, Li L, Liu Y, Feng Y, Wang X, Jiao L. Outcomes after stenting for symptomatic intracranial arterial stenosis: a systematic review and meta-analysis. J Neurol. 2019 Jan 5. doi: 10.1007/s00415-018-09176-x. [Epub ahead of print] Review. PubMed PMID: 30612142.

2)
Zaidat OO, Fitzsimmons BF, Woodward BK, Wang Z, Killer-Oberpfalzer M, Wakhloo A, Gupta R, Kirshner H, Megerian JT, Lesko J, Pitzer P, Ramos J, Castonguay AC, Barnwell S, Smith WS, Gress DR; VISSIT Trial Investigators. Effect of a Balloon-Expandable Intracranial Stent vs Medical Therapy on Risk of Stroke in Patients With Symptomatic Intracranial Stenosis: The VISSIT Randomized Clinical Trial. JAMA. 2015 Mar 24;313(12):1240-1248. doi: 10.1001/jama.2015.1693. PubMed PMID: 25803346.