Patent Foramen Ovale Closure or Antiplatelet Therapy for Cryptogenic Stroke

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Abstract

BACKGROUND

The efficacy of closure of a patent foramen ovale (PFO) in the prevention of recurrent stroke after cryptogenic stroke is uncertain. We investigated the effect of PFO closure combined with antiplatelet therapy versus antiplatelet therapy alone on the risks of recurrent stroke and new brain infarctions.

METHODS

In this multinational trial involving patients with a PFO who had had a cryptogenic stroke, we randomly assigned patients, in a 2:1 ratio, to undergo PFO closure plus antiplatelet therapy (PFO closure group) or to receive antiplatelet therapy alone (antiplatelet-only group). Imaging of the brain was performed at the baseline screening and at 24 months. The coprimary end points were freedom from clinical evidence of ischemic stroke (reported here as the percentage of patients who had a recurrence of stroke) through at least 24 months after randomization and the 24-month incidence of new brain infarction, which was a composite of clinical ischemic stroke or silent brain infarction detected on imaging.

RESULTS

We enrolled 664 patients (mean age, 45.2 years), of whom 81% had moderate or large interatrial shunts. During a median follow-up of 3.2 years, clinical ischemic stroke occurred in 6 of 441 patients (1.4%) in the PFO closure group and in 12 of 223 patients (5.4%) in the antiplatelet-only group (hazard ratio, 0.23; 95% confidence interval [CI], 0.09 to 0.62; P=0.002). The incidence of new brain infarctions was significantly lower in the PFO closure group than in the antiplatelet-only group (22 patients [5.7%] vs. 20 patients [11.3%]; relative risk, 0.51; 95% CI, 0.29 to 0.91; P=0.04), but the incidence of silent brain infarction did not differ significantly between the study groups (P=0.97). Serious adverse events occurred in 23.1% of the patients in the PFO closure group and in 27.8% of the patients in the antiplatelet-only group (P=0.22). Serious device-related adverse events occurred in 6 patients (1.4%) in the PFO closure group, and atrial fibrillation occurred in 29 patients (6.6%) after PFO closure.

CONCLUSIONS

Among patients with a PFO who had had a cryptogenic stroke, the risk of subsequent ischemic stroke was lower among those assigned to PFO closure combined with antiplatelet therapy than among those assigned to antiplatelet therapy alone; however, PFO closure was associated with higher rates of device complications and atrial fibrillation. (Funded by W.L. Gore and Associates; Gore REDUCE ClinicalTrials.gov number, NCT00738894. opens in new tab.)

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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A complete list of the Gore REDUCE Clinical Study investigators and participating organizations is provided in the Supplementary Appendix, available at NEJM.org.