□ SUPPLEMENTAL □

Supplemental data

Medline through PubMed, Embase, and the Cochrane Central Register of Controlled trials in the Cochrane Library were searched using key words such as "moyamoya disease", "surgical treatment", "STA-MCA anastomosis", "indirect bypass surgery", "combined surgery", "EDAS", "EDAMS", and "secondary stroke"[4]. Our criteria for including this study was as follows : 1) Korean adult MMD patients >18 years old, 2) symptomatic patients who presented with cerebral infarct, hemorrhage, transient ischemic attack (TIA), or seizure, 3) randomized controlled studies, prospective controlled or retrospective case-controlled studies which had quality score over 5 on the Newcastle-Ottawa scale (NOS)[4,5]. The exclusion criteria was as follows : 1) incomplete data, 2) review articles or case reports, 3) the study which was not written by English, 4) asymptomatic MMD patients, 5) secondary ICA stenosis or occlusion due to atherosclerosis, trauma or radiation[4]. Two authors (JPJ and JEK) evaluated the eligibility of the studies and extracted the data independently. The primary outcome was stroke recurrence after intervention according to treatment methods (conservative vs. surgery).

Statistics

Dichotomous variables were presented as Mantel-Haenszel odds ratio with a 95% confidence interval. Heterogeneity was evaluated by using the I^2 test. If I^2 was less than 50%, a fixed effect model was used[4]. Publication bias was determined using Begg's funnel plot, Egger's test of the intercept, and the Begg and Mazumdar rank correlation test[1-3]. Comprehensive Meta-analysis (CMA) software (CMA v2.2.064; Biostat, Englewood, NJ, USA) was used utilized for all the above, setting statistical significance at $p<0.05$.

References

1. Bang CS, Baik GH, Shin IS, Kim JB, Suk KT, Yoon JH, et al. : Effect of intragastric injection of botulinum toxin A for the treatment of obesity : a meta-analysis and meta-regression. **Gastrointest Endosc 81** : 1141-1149. e1141-1147, 2015
2. Begg CB, Mazumdar M : Operating characteristics of a rank correlation test for publication bias. **Biometrics 50** : 1088-1101, 1994
3. Egger M, Davey Smith G, Schneider M, Minder C : Bias in meta-analysis detected by a simple, graphical test. **BMJ 315** : 629-634, 1997
4. Qian C, Yu X, Li J, Chen J, Wang L, Chen G : The efficacy of surgical treatment for the secondary prevention of stroke in symptomatic moyamoya disease : a meta-analysis. **Medicine (Baltimore) 94** : e2218, 2015
5. Stang A : Critical evaluation of the Newcastle-Ottawa scale for the assessment of the quality of nonrandomized studies in meta-analyses. **Eur J Epidemiol 25** : 603-605, 2010