Effect of PCSK9 inhibitors treatment on acute coronary syndrome and stroke incidence: a metanalysis of currently available clinical trials

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Topic(s):
Lipids: Drug therapy

Citation:
Background: Proprotein convertase subtilisin–kexin type 9 (PCSK9) inhibitors have demonstrated to induce large reductions in low-density lipoprotein cholesterol (LDLc) and major cardiovascular events but none of the studies was statistically powered to demonstrate reductions in specific endpoints rather than a combined end-point of major cardiovascular events.

Methods: We performed an intention-to-treat meta-analysis in line with recommendations from the Cochrane Collaboration and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement using currently available studies involving PCSK9 inhibitors. The endpoint assessed were acute coronary syndrome (ACS) and stroke.

Results: We included 81,544 patients, 41,147 treated with a PSCK9 inhibitors: 17,179 with evolocumab; 13,718 with bococizumab and 10,250 with alirocumab (table 1). A total of 1,316 ACS were registered in the treatment group vs. 1,608 in controls, resulting in 18.0% reduction associated with PCSK9 treatment (figure 1). This result was reproduced exactly in the EBCT although a non-significant heterogeneity was detected (p=0.052). Metaregression analyses did not demonstrate the implication of the study (p=0.45), study drugs (p=0.26), age (p=0.89), hypertension (p=0.81) or diabetes (p=0.81) on such result.

Results on stroke incidence are presented in figure 2. PCSK9 inhibitors treatment resulted in a 24% reduction of stroke when all studies were analyzed together; heterogeneity was statistically significant (p=0.021) but it was not observed in the EBCT analysis where PCSK9 inhibitors were associated with 24% stroke incidence reduction.

Conclusions: the meta-analysis of currently available studies demonstrates that PCSK9 inhibitors treatment reduces the incidence of ACS by 18% and stroke by 24%.
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