INPLASY PROTOCOL

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None declared.

Efficacy and safety of PCSK9 inhibitors and statin lipid-lowering therapy in coronary atherosclerosis: A meta-analysis of randomized trials

Niu, XW[1]; Hu, SW[2].

Review question / Objective: **The aim of this meta-analysis is to explore the efficacy and safety of PCSK9 inhibitor in treating coronary heart disease compared with Statins.**
Condition being studied: **According to the World Health Organization, cardiovascular diseases are the leading cause of death and disability. The addition of a PCSK9 inhibitor has been shown to significantly reduce LDL-C levels and gradually reduce ischemic cardiovascular events in patients receiving statins with elevated LDL-C levels. PCSK9 inhibitors not only have better lipid lowering effects than statins, but also have lower incidence of side effects and better safety, but their effects on atherosclerosis are not completely consistent. Therefore, in this study, meta-analysis was used to comprehensively evaluate the existing randomized controlled trials to evaluate the exact efficacy of PCSK9 inhibitors and provide evidence-based basis for clinical application.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 December 2022 and was last updated on 05 December 2022 (registration number INPLASY2022120019).

INTRODUCTION

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METHODS

Participant or population: Diagnosed with atherosclerosis, aged 18 to 80 years, underwent OCT or IVUS imaging measurements.

Intervention: Intervention measures: PCSK9 inhibitor was used as the intervention measure in the test group, and statins were used as the basic drug for regulating lipid.Statins were used as the intervention measure in the control group.

Comparator: Statins were used as the intervention measure in the control group.

Study designs to be included: Randomized controlled trial.

Eligibility criteria: Diagnostic criteria for coronary heart diseasecoronary atherosclerotic heart disease (CHD) refers to abnormal lipid metabolism in which blood lipids deposit on the otherwise smooth lining of the arteries, where some atheromatous lipid substances accumulate into white plaques. This is called an atherosclerotic lesion. These plaques gradually increase and narrow the arterial lumen, blocking blood flow, leading to heart ischemia and angina. The basic pathological change of coronary heart disease is the formation of atherosclerotic plaque.

Information sources: We will search articles in four electronic databases including EMbase, PubMed, The Cochrane Library and Web of Science. All the English publications until 20 November 2022 will be searched without any restriction of countries. Reference list of all selected articles will independently screened to identify additional studies left out in the initial search.

Main outcome(s): 1.Percent atheroma volume (PAV) 2.Normalized total atheroma volume (TAV).

Additional outcome(s): 1.Minimum fibrous cap thickness 2.Mean fibrous cap thickness 3.Maximum lipid arc.

Quality assessment / Risk of bias analysis: Potential risks of bias were evaluated, using the Cochrane tool developed for this study.This tool assesses bias in different domains: random sequence generation (selection bias); allocation concealment (se-lection bias); blinding of participants and study staff (performance bias); blinding of outcome assessors (de-tection bias); incomplete results data (attrition bias); selective reporting of results (reporting bias); and other sources of bias. Each domain was rated as “High”, “Low”or “Unclear” depending on the judgment of each author following the recommendations.

Strategy of data synthesis: Meta-analysis was performed with RevMan 5.3 software and Stata software, and odds ratios (RR) were used for binary data. Consistent assays or units for continuous data were expressed as mean difference (MD), and for inconsistent ones, standardized mode mean difference (SMD) was used, and the above were expressed as effect values and their 95% confidence intervals (CI). Heterogeneity was evaluated in I^2 size pairs: if homogeneity was good ($I^2 \leq 50\%$, $p > 0.1$), a fixed effects model was used; if heterogeneity was large ($I^2 > 50\%$, $P \leq 0.1$), random-effects Meta-analysis was used. Funnel plots were used to identify publication bias.

Subgroup analysis: Subgroup analysis was performed according to types of coronary heart disease,patient age, intervention time and intervention drug dose.

Sensitivity analysis: Sensitivity analysis was carried out in STATA software, and the change of effect size after any study was removed to reflect the sensitivity of the study.

Country(ies) involved: China.

Keywords: Coronary heart disease; coronary atherosclerosis regression; PCSK-9 inhibitor; Meta-analysis; RCT.

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