Can J Cardiol. 2017 Dec;33(12):1624-1632. doi: 10.1016/j.cjca.2017.07.015. Epub 2017 Jul 29.

Association Between Circulating Oxidized LDL and Atherosclerotic Cardiovascular Disease: A Meta-analysis of Observational Studies.

Gao S[1], Zhao D[1], Wang M[1], Zhao F[1], Han X[1], Qi Y[1], Liu J[2].

Author information

1 Department of Epidemiology, Beijing An Zhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases, Beijing, China.

2 Department of Epidemiology, Beijing An Zhen Hospital, Capital Medical University, Beijing Institute of Heart, Lung and Blood Vessel Diseases, Beijing, China. Electronic address: jingliu@ccmu.edu.cn.

Abstract

BACKGROUND: Although basic research has suggested that oxidized low-density lipoprotein (ox-LDL) is involved in the pathogenesis of atherosclerosis, population observational studies have yielded conflicting results about the association between circulating ox-LDL and atherosclerotic cardiovascular disease (ASCVD). Therefore, we performed a systematic review and meta-analysis of currently available observational studies to verify the association between circulating ox-LDL and ASCVD.

METHODS: We systematically searched PubMed and the Cochrane Library from their inception to March 27, 2017, for nested case-control studies, case-cohort studies, and prospective cohort studies on the relationship between ox-LDL and ASCVD. Studies that did not assess the hazard ratio, relative risk, or odds ratio of ox-LDL or did not adjust for other risk factors, or those without examination of ox-LDL before collection of ASCVD occurrences were excluded. The summarized effect size was combined using fixed effect models. Subgroup analyses were performed on the basis of study quality, study design, definition of ASCVD events, effect size types, types of ox-LDL assay, ox-LDL contrast level, and whether low-density lipoprotein cholesterol was adjusted in a multivariate model.

RESULTS: A total of 12 included studies consisted of 3 nested case-control studies, 1 case-cohort study, 5 hospital-based cohort studies, and 3 community-based cohort studies. The summary effect size of increased circulating ox-LDL was 1.79 (95% confidence interval, 1.56-2.05) for ASCVD. Similar associations were shown in all subgroups.

CONCLUSIONS: Our findings indicate that increased levels of circulating ox-LDL are associated with clinical ASCVD events. Further well designed community-based cohort studies or intervention studies are needed to confirm our findings.

PMID: 29173602 DOI: 10.1016/j.cjca.2017.07.015