INPLASY PROTOCOL

Helicobacter pylori infection and atherosclerotic disease progression: a systematic review and meta-analysis

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Review question / Objective: We explored the relationship between the two through a meta-analysis.

Search strategy: This meta-analysis was conducted strictly in accordance with the PRISMA statement report project. We manually searched the Pubmed database, Embase database, and Cochrane experimental database for all relevant articles from its establishment to September 1, 2021. Search for the following terms: "Atherosclerosis", "Helicobacter pylori", "Carotid Intima-Media Thickness", "flow-mediated dilation", "Pulse Wave Velocity", and" arterial stiffness". Language is limited to English articles.Then, we will filter these articles in EndNote software.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 October 2021 and was last updated on 09 October 2021 (registration number INPLASY2021100032).

INTRODUCTION

Review question / Objective: We explored the relationship between the two through a meta-analysis.

Condition being studied: (a) The population was divided into positive and negative groups based on whether they were infected with HP; (b) Complete demographic data; (c) measurement of the CIMT or PWV or FMD.

METHODS

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manually searched the Pubmed database, Embase database, and Cochrane experimental database for all relevant articles from its establishment to September 1, 2021. Search for the following terms: "Atherosclerosis", "Helicobacter pylori", "Carotid Intima-Media Thickness", "flow-mediated dilation", "Pulse Wave Velocity", and" arterial stiffness". Language is limited to English articles.Then, we will filter these articles in EndNote software.

Participant or population: Helicobacter pylori positive and negative people.

Intervention: None.

Comparator: CIMT, FMD or PWV of Helicobacter pylori positive and negative people Helicobacter pylori positive and negative people.

Study designs to be included: Cross-sectional study, Cohort Study, Case-control study.

Eligibility criteria: According to the purpose of this study, all published studies on the relationship between H. pylori and AS will be included in the database.

Information sources: Pubmed database, Embase database, and Cochrane experimental database.

Main outcome(s): CIMT, FMD, PWV.

Quality assessment / Risk of bias analysis: The MINORS scale is used to assess the quality of the literature. It is a clinical intervention research quality evaluation tool developed by French surgeon Slim and others on the basis of a comprehensive review of the literature and expert consensus in 2007. There are a total of 12 evaluation indicators, each of which is divided into 0 to 2 points. The first 8 are studies with no control group, and the highest score is 16; the last 4 and the first 8 are studies with a control group, and the highest score is 24. All projects are related to our research. A score of 0 means not reporting; 1 point means reporting but

insufficient information; 2 points means reporting and providing adequate information. Articles with a score lower than 13 are generally considered low-quality, and low-quality articles will be excluded.

Strategy of data synthesis: We used STATA16.0 software (STATA) to conduct a meta-analysis of the studies we included. The results of each study are the same, but different research areas and different research designs will affect the stability of the results, so we use the weighted mean difference (WMD) to analyze the summary estimates, and use the random-effects model. Due to the different design of the research, before analyzing the extracted data, we carried out corresponding processing: (a) For the studies that divided the population into H.pylori positive and H.pylori negative, the data was not processed; (b) In some studies, the experimental group and the control group are divided into multiple groups based on some factors (whether CagA is positive, gender, data on the left or right side of the sample). We combined people who were HP positive into the experimental group, and people who were HP negative into the control group.

Subgroup analysis: The age of the participants and whether there were cardiovascular risk factors.

Sensitivity analysis: We used Egger's and Begg's test to test the publication bias of 14 CIMT studies. The results showed that the CIMT studies had no publication bias(Begg's test, P = 1.2574; Egger's test, P = 0.0571). At the same time, we observed the funnel chart and also found no publication bias(Figure 5A). In addition, in order to evaluate the robustness of each study, we eliminated each independent study and observed the stability of the results, and then explained its characteristics. According to the heterogeneity test, we did not find any literature that significantly affected the results in CIMT studies(Figure 5B). However, we find that Yun-Feng Yang (2020) deviates far in PWV studies(Figure

5C), so we elimination it and the result becomes (WMD=18.295, 95% CI: 11.040, 25.550. I2 = 96.15%, P = 0.00). This shows that the results are relatively stable.

Language: English.

Country(ies) involved: China.

Keywords: Helicobacter pylori infection, atherosclerosis, meta-analysis.

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