

INPLASY PROTOCOL

To cite: Dong et al. Meta-analysis of the association between adiponectin SNP 45, SNP 276 and type 2 diabetes mellitus. Inplasy protocol 202040013. doi: 10.37766/inplasy2020.4.0013

Meta-analysis of the association between adiponectin SNP 45, SNP 276 and type 2 diabetes mellitus

Received: 03 April 2020

Published: 03 April 2020

Corresponding author:
Yuwei Dong

dongyuwei66@163.com

Author Affiliation:
Xuzhou University of
Technology

Support: Jiangsu Key
Research

**Review Stage at time of this
submission:** Piloting of the
study selection process.

Conflicts of interest:
None.

Dong, Y¹; Huang, G²; Wang, X³; Chu, Z⁴.

Review question / Objective: To examine the hypothesis that ADIPOQ polymorphism is associated with T2DM risk.

Rationale: In some studies rs2241766 and rs1501299 polymorphisms were found to be significantly correlated with T2DM, while in the others were not. The difference between the two loci polymorphisms and T2DM indicated that the size of a single study is small, and the background or ethnic differences of random samples may lead to a decline in statistical ability. Therefore, meta-analysis is essential for the comprehensive analysis of similar studies.

Condition being studied: Type 2 diabetes mellitus.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 April 2020 and was last updated on 03 April 2020 (registration number INPLASY202040013).

INTRODUCTION

Review question / Objectives: To examine the hypothesis that ADIPOQ polymorphism is associated with T2DM risk.

Condition being studied: Type 2 diabetes mellitus.

Rationale: In some studies rs2241766 and rs1501299 polymorphisms were found to be significantly correlated with T2DM, while in the others were not. The difference between the two loci polymorphisms and T2DM indicated that the size of a single study is small, and the background or ethnic differences of random samples may lead to a decline in statistical ability. Therefore, meta-analysis is essential for

the comprehensive analysis of similar studies.

METHODS

Participant or population: Observational studies (case-control) that compared one or both of the ADIPOQ polymorphisms in question between a known number of type 2 diabetic patients and non-diabetic subjects. Studies were excluded from the analysis if the genotype distributions in the control group deviated from those predicted by the Hardy-Weinberg equilibrium, if they did not have sufficient data to estimate an OR with 95% CI, or if they did not employ validated genotyping methods. If data were duplicated and had been published more than once, the most complete study was chosen.

Intervention: Genetic polymorphism.

Comparator: Nondiabetic subjects.

Study designs to be included: Case-control.

Eligibility criteria: Observational studies (case-control) that compared one or both of the ADIPOQ polymorphisms in question between a known number of type 2 diabetic patients and non-diabetic subjects. Studies were excluded from the analysis if the genotype distributions in the control group deviated from those predicted by the Hardy-Weinberg equilibrium, if they did not have sufficient data to estimate an OR with 95% CI, or if they did not employ validated genotyping methods. If data were duplicated and had been published more than once, the most complete study was chosen.

Information sources: We searched CNKI, VIP, Chinese WanFang databases, PubMed, EMBASE, Cochrane and EBSCO to identify the existing genetic studies related to type 2 diabetes and ADIPOQ gene polymorphism. Search keywords such as: "Type 2 Diabetes Mellitus", "adiponectin", "Polymorphism", etc.

Main outcome(s): Association between ADIPOQ rs2241766 polymorphism and T2DM, ADIPOQ rs1501299 polymorph.

Additional outcomes: None.

Data management: Two investigators (Gongping Huang and Xin Wang) independently extract all data from each article, including: first author's name, publication year, country, ethnicity, SNPs, diagnosis, and Genotyping Method. The adjusted OR with the corresponding 95% confidence interval (CI) was directly extracted (if available). Any disagreements on data collection will be resolved via discussion with the senior investigator (Yuwei Dong).

Quality assessment / Risk of bias analysis: Two investigators will independently assess the quality of each eligible study using the Newcastle-Ottawa Scale (NOS) for assessing quality of case-control studies in meta-analysis. The NOS contains eight items, categorized into three dimensions including selection, comparability, and exposure. For each item a series of response options is provided. A star system is used to allow a semi-quantitative assessment of study quality, such that the highest quality studies are awarded a maximum of one star for each item, with the exception of the item related to comparability, which allows two stars to be assigned. The total NOS score therefore ranges from zero to nine stars.

Strategy of data synthesis: We analyzed the relationship between rs1501299, rs2241766 and T2DM with dominant model, recessive model, additive model, additive model, and allele model, respectively. Heterogeneity test: The odds ratio and 95% confidence interval (CIs) were calculated to evaluate the correlation between rs1501299, rs2241766 and T2DM. Cochran's Q and I were used to evaluate the heterogeneity of different ethnic groups. Sensitivity analysis: The effect of single study on the combined effect size. Find out the source of heterogeneity for analysis.

Search strategy: We searched CNKI, VIP, Chinese WanFang databases, Pubmed, EMBASE, Cochrane and EBSCO to identify the existing genetic studies related to type 2 diabetes and ADIPOQ gene polymorphism. Search keywords such as: "Type 2 Diabetes Mellitus", "adiponectin", "Polymorphism", etc.

Subgroup analysis: Sensitivity analyses will be carried out to identify key studies with a substantial impact on inter-study heterogeneity. Sensitivity analyses will be carried out to identify key studies with a substantial impact on inter-study heterogeneity.

Sensibility analysis: The included studies were eliminated one by one, and the observational statistics were recombined to evaluate the stability of the conclusions. Sensitivity analyses will be carried out to identify key studies with a substantial impact on inter-study heterogeneity.

Language: English.

Countries involved: China.

Keywords: ADIPOQ; type 2 diabetes mellitus (T2DM); meta-analysis; polymorphisms.

Contributions of each author:

Author 1 - Conceived and designed the study.

Author 2 - Performed the search, extraction of data and methodological assessment.

Author 3 - Performed the search, extraction of data and methodological assessment.

Author 4 - Analysed the data.