INPLASY PROTOCOL

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None declared.

The association between the XRCC1 Arg399Gln polymorphism and the risk of head and neck cancer: an updated meta-analysis including 14586 subjects

Xia, S[1]; Wu, S[2]; Wang, M[3].

Review question / Objective: **In order to more accurately estimate and integrate the association between XRCC1 Arg399Gln polymorphism and HNC risk, we conducted a meta-analysis including 14586 subjects.**
Condition being studied: **(1) The study should evaluate the association between XRCC1 Arg399Gln polymorphisms and HNC risk. (2) The studies were published in English. (3) Case-control studies or cohort studies. (4) The studies described sufficient genotype frequencies, which could estimate odds ratios (ORs) and 95% confidence intervals (CIs).**
Information sources: Two authors worked for completely searching in electronic databases including PubMed, Cochrane Library, EMBASE, Medline, Web of Science and China National Knowledge Internet(CNKI). The following combinations of search terms were used for literature search: "head and neck", "oral", "oropharyngeal", "laryngeal ", "pharyngeal", "cancer", "tumor", "carcinoma", "x-ray repair cross complementing group 1", "XRCC1", "Arg399Gln" and "polymorphism".

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 May 2021 and was last updated on 29 May 2021 (registration number INPLASY202150104).

INTRODUCTION

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METHODS

Participant or population: A total of 14586 participants.

Intervention: Inapplicability.

Comparator: Inapplicability.

Study designs to be included: RCT.

Eligibility criteria: (1) The study should evaluate the association between XRCC1 Arg399Gln polymorphisms and HNC risk. (2) The studies were published in English. (3) Case-control studies or cohort studies. (4) The studies described sufficient genotype frequencies, which could estimate odds ratios (ORs) and 95% confidence intervals (CIs)

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Main outcome(s): The results from this meta-analysis suggest that the XRCC1 Arg399Gln variants (Arg/Gln and Arg/Arg+Arg/Gln) may contribute to high HNC risk among Caucasians. Further well-designed studies and larger sample sizes are needed to validate our findings.

Quality assessment / Risk of bias analysis: The hardy-Weinberg balance (HWE) test in the control group using the goodness-of-fit test (Chi-square test or Fisher exact test) was performed to assess the genetic balance of each study. P>0.05 indicated no significant imbalance. In order to avoid the inclusion of unknown heterogeneity, subsequent analysis excluded studies that the genotype distribution of XRCC1 gene polymorphism was inconsistent with HWE.

Strategy of data synthesis: Review Manager (RevMan) 5.3 software and STATA 14 software were used to combine odds ratio and 95%CI for this meta-analysis. Publication bias was assessed using Begg's funnel plot visual inspection or Egger's inspection in meta-analysis. The heterogeneity of results was estimated by Q test and I2 statistics. The fixed-effects model and the random effects model were respectively selected for data analysis when I2< 50% and I2> 50%.

Subgroup analysis: The subgroup analyses respectively based on ethnicity and tumor site were performed to further refine the analysis association between XRCC1 Arg399Gln polymorphisms and HNC risk.

Sensitivity analysis: Sensitivity analysis was performed to assess the robustness of the results of the meta-analysis. We found that the study of Hakan seemed to influence the merged results, however, the lower CI limit did not cross the middle line and the circle of estimate did not beyond the upper CI limit, indicating Hakan's study had less influences on merged results. The final results indicated that there was no substantial change in merged ORs, suggesting that no single study significantly influenced the outcome of the merged results.

Country(ies) involved: China.

Keywords: XRCC1; Arg399Gln; polymorphism; head and neck cancer.

Contributions of each author:
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Author 3 - Minghao Wang.