

INPLASY PROTOCOL

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None declared.

DNA repair pathway's mutation of rs25487 decreased the survival rate of lung cancer patients: a meta-analysis based on Caucasian population

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Review question / Objective: It remains controversial whether rs25487 is associated with the survival rate of lung cancer or not. Thus, we performed this meta-analysis to identify the prognostic effect of it among lung cancer patients. Lung cancer has been one of the most common cancer, only second to breast cancer in the year of 2020. It accounts for about 11.4% of all cancer cases. The mortality of the cancer has decreased rapidly in recent years, partly because of new therapies and new drugs. During 2014 to 2018, the mortality of lung cancer has a pace of declining about 5% every year, compared with the previous declining rate of 2.4%. For non-small cell lung cancer, the survival rate has increased about 8% in a year, which gives great aspiration to clinicians. The mutation test helps clinicians to carry out personalized therapy, and the SNP has widely been investigated for several decades. However, the predictive role of the variant to platinum-based chemotherapy was still undetermined, as the results were different and always controversy. For decades of years, this issue has been in debate among the scholars and experts in the field. As a result, this study was designed aiming to discuss the problem by pooling all the previous studies together. We also made subgroup analysis according to the study nature adopted in the included studies.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 September 2021 and was last updated on 19 September 2021 (registration number INPLASY202190060).

INTRODUCTION

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meta-analysis to identify the prognostic effect of it among lung cancer patients. Lung cancer has been one of the most common cancer, only second to breast cancer in the year of 2020. It accounts for about 11.4% of all cancer cases. The

mortality of the cancer has decreased rapidly in recent years, partly because of new therapies and new drugs. During 2014 to 2018, the mortality of lung cancer has a pace of declining about 5% every year, compared with the previous declining rate of 2.4%. For non-small cell lung cancer, the survival rate has increased about 8% in a year, which gives great aspiration to clinicians. The mutation test helps clinicians to carry out personalized therapy, and the SNP has widely been investigated for several decades. However, the predictive role of the variant to platinum-based chemotherapy was still undetermined, as the results were different and always controversy. For decades of years, this issue has been in debate among the scholars and experts in the field. As a result, this study was designed aiming to discuss the problem by pooling all the previous studies together. We also made subgroup analysis according to the study nature adopted in the included studies.

Condition being studied: Lung cancer has been one of the most common cancer, only second to breast cancer in the year of 2020. It accounts for about 11.4% of all cancer cases. The mortality of the cancer has decreased rapidly in recent years, partly because of new therapies and new drugs. During 2014 to 2018, the mortality of lung cancer has a pace of declining about 5% every year, compared with the previous declining rate of 2.4%. For non-small cell lung cancer, the survival rate has increased about 8% in a year, which gives great aspiration to clinicians. The mutation test helps clinicians to carry out personalized therapy, and the SNP has widely been investigated for several decades. However, the predictive role of the variant to platinum-based chemotherapy was still undetermined, as the results were different and always controversy. For decades of years, this issue has been in debate among the scholars and experts in the field. As a result, this study was designed aiming to discuss the problem by pooling all the previous studies together. We also made subgroup analysis according to the study nature adopted in the included studies.

METHODS

Participant or population: Participants included Caucasian population. Three databases, Embase, pubmed and the Cochrane Library were searched out to identify the articles concerning our topic. All studies that investigated the association between SNP and response were reviewed.

Intervention: Platinum or non-platinum-based chemotherapy.

Comparator: Mutation genotype vs Wild genotype.

Study designs to be included: Retrospective and prospective.

Eligibility criteria: All included articles must follow the disciplines below: (1) published original articles obeying peer-reviewed rules; (2) articles were published in English; (3) articles reporting the relationship between response and XRCC1 variant; (4) studies with follow-up period that was at least more than 1 years.

Information sources: Three databases, Embase, pubmed and the Cochrane Library were searched out to identify the articles concerning our topic. All studies that investigated the association between the SNP and response were reviewed. The response included both long-term survival and short-term response. The following items were employed for literature searching: “non-small cell lung cancer patients” or “NSCLC” or “lung carcinoma” or “lung cancer”, plus “survival” or “overall survival” or “prognostic” or “long-term outcome” or “long-term result” or “death” or “remission” or “response” or “responding” or “responder” or “responsiveness”, plus “chemotherapy” or “cisplatin” or “platinum” or “carboplatin”.

Main outcome(s): Overall survival.

Quality assessment / Risk of bias analysis: Newcastle-Ottawa Scale (NOS) was employed to assess the quality of the included studies; the scale was widely used in meta-analysis. The NOS scale with nine-

point integrated points from three aspects: the studies' selecting process (≤ 4 points), the identification of the exposure and the patients' outcome in the study (≤ 3 points), and the studies' comparability (≤ 2 points). The quality assessment was carried out by two reviewers. When they occurred, the discrepancies would be resolved by discussing with a third reviewer or senior investigators. At the same time, selection bias, measurement error, statistical rationality were also evaluated by our investigators as well as the representativeness of the studies included finally. Funnel plot was used to assess the publication bias that may exist across the studies with Begg's and Egger's test.

Contributions of each author:

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Author 4 - Meng Jia.
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Strategy of data synthesis: Hazard ratio (HR) was employed to evaluate the relationship between responding and survival, when non-responders were compared with responders. If Cox proportional hazard regression model was used in the study and the value of HR with its corresponding 95% confidential interval (95% CI) can directly be read from the main text, HR and 95% CI will be extracted from the study. Forest plot was employed to illustrate the HR and 95% CI of each study, and the diamond of the bottom of the forest plot showed the combined result of all the studies.

Subgroup analysis: As both prospective studies and retrospective studies were currently used to evaluate the clinical response, sub-analysis according to the study type were performed in order to avoid the mistakes caused by the heterogeneity.

Sensitivity analysis: Sensitivity analysis was employed to assess the robust of the pooled studies and to detect the origin of the heterogeneity that may exist in the final result.

Language: English.

Country(ies) involved: China.

Keywords: Lung cancer; Chemotherapy; Polymorphism; Survival; Meta-analysis.