INPLASY PROTOCOL

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None declared.

Association between genetic polymorphism of GSTP1 and toxicities in patients receiving platinum-based chemotherapy: A systematic review and meta-analysis

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Review question / Objective: **Platinum-based chemotherapy regimens have been proven to be effective in various cancers; however, considerable toxicities may develop and can even lead to treatment discontinuation. Diverse factors may influence adverse treatment events, with pharmacogenetic variations being one prime example. Especially, polymorphisms within the glutathione S-transferase pi 1 (GSTP1) gene may alter enzyme activity and, consequently, various toxicities in patients receiving platinum-based chemotherapy. Due to a lack of consistency in the degree of elevated complication risk, we performed a systematic literature review and meta-analysis to determine the level of platinum-associated toxicity in patients with the GSTP1 rs1695 polymorphism.**
Condition being studied: **Cancer patients receiving platinum-based chemotherapy regimens**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 March 2022 and was last updated on 06 March 2022 (registration number INPLASY202230025).

INTRODUCTION

Review question / Objective: **Platinum-based chemotherapy regimens have been proven to be effective in various cancers; however, considerable toxicities may develop and can even lead to treatment discontinuation. Diverse factors may influence adverse treatment events, with pharmacogenetic variations being one prime example. Especially, polymorphisms within the glutathione S-transferase pi 1**

(GSTP1) gene may alter enzyme activity and, consequently, various toxicities in patients receiving platinum-based chemotherapy. Due to a lack of consistency in the degree of elevated complication risk, we performed a systematic literature review and meta-analysis to determine the level of platinum-associated toxicity in patients with the GSTP1 rs1695 polymorphism.

Condition being studied: Cancer patients receiving platinum-based chemotherapy regimens.

METHODS

Participant or population: Cancer patients receiving platinum-based chemotherapy regimens.

Intervention: GSTP1 gene polymorphism.

Comparator: GSTP1 gene wild-type.

Study designs to be included: RCT or cohort studies.

Eligibility criteria: Studies were included if they (1) were randomized controlled trials (RCT) or cohort studies; (2) included adult patients receiving platinum-based regimen; (3) evaluated the association of rs1695 SNP with toxicity; (4) included applicable data on genotype in both cases and controls; or (5) published in English. Studies were excluded if they were (1) not involving toxicity outcomes; (2) not involving rs1695; (3) pharmacokinetic studies; (4) reviews, meeting abstracts, case reports, or case series, comments, letters, updates, news, editorials, or conference; or (5) unable to provide appropriate data.

Information sources: Electronic databases.

Main outcome(s): Platinum-related toxicities.

Quality assessment / Risk of bias analysis: Newcastle-Ottawa Scale (NOS).

Strategy of data synthesis: The odds ratio (OR) with 95% confidence intervals (CIs) was calculated to evaluate the association between outcomes and polymorphism. Heterogeneity evaluation among selected studies was carried out using I2. If I2 was higher than 50%, it indicated high heterogeneity; the random-effect model was applied. When I2 was less or equal to 50%, the fixed-effects model was applied for analysis. A p-value less than 0.05 was considered statistically significant.

Subgroup analysis: Not applicable.

Sensitivity analysis: Not applicable.

Country(ies) involved: Republic of Korea.

Keywords: platinum; Glutathione S-transferase pi 1; GSTP1; toxicity; meta-analysis.

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