INPLASY PROTOCOL

To cite: Liang et al. A systematic review and meta-analysis: Clinical outcomes of recurrent pregnancy failure resulting from preimplantation genetic testing for aneuploidy. Inplasy protocol 202320118. doi: 10.37766/inplasy2023.2.0118

Received: 27 February 2023

Published: 27 February 2023

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Review Stage at time of this submission: **Completed but not published.**

Conflicts of interest:
None declared.

A systematic review and meta-analysis: Clinical outcomes of recurrent pregnancy failure resulting from preimplantation genetic testing for aneuploidy

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Review question / Objective: **This meta-analysis's purpose was to investigate whether RPF patients screened using PGT-A could obtain better clinical outcomes than those screened without PGT-A to ascertain the value of PGT-A's clinical application.**
Condition being studied: **Recurrent spontaneous abortion and recurrent implantation failure are common recurrent pregnancy failure diseases. RSA is defined as two or more spontaneous abortions in a female with the same sexual partner. RIF is defined as implantation of four to six high-quality cleavage embryos or three or more high-quality blastocyst embryos without pregnancy in one female. Notably, the most common cause of early miscarriages is embryonic chromosomal abnormalities, and aneuploidy is the most common chromosomal abnormality. Preimplantation genetic testing for aneuploidy (PGT-A) can screen out euploid embryos for transfer and reduce the risks of implantation failure and pregnancy loss due to embryonic chromosomal abnormalities, and it is a clinical screening method that is recommended for females of advanced age, as well as those with RSA or RIF. However, it cannot be ignored that PGT-A is characterized by some risks and ethical challenges, such as high prices, the difficulty of cultivating advanced-age patients' embryos to standard blastocyst biopsy period, no embryos can be used or embryos will be damaged after screening, and the waste of embryos. Whether PGT-A can improve clinical outcomes of RPF patients remains controversial. Based on this background, we aimed to explore PGT-A's value in RPF patients to provide a reference for its clinical application.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 February 2023 and was last updated on 27 February 2023 (registration number INPLASY202320118).

INTRODUCTION

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ascertain the value of PGT-A's clinical application.

Condition being studied: Recurrent spontaneous abortion and recurrent implantation failure are common recurrent pregnancy failure diseases. RSA is defined as two or more spontaneous abortions in a female with the same sexual partner. RIF is defined as implantation of four to six high-quality cleavage embryos or three or more high-quality blastocyst embryos without pregnancy in one female. Notably, the most common cause of early miscarriages is embryonic chromosomal abnormalities, and aneuploidy is the most common chromosomal abnormality. Preimplantation genetic testing for aneuploidy (PGT-A) can screen out euploid embryos for transfer and reduce the risks of implantation failure and pregnancy loss due to embryonic chromosomal abnormalities, and it is a clinical screening method that is recommended for females of advanced age, as well as those with RSA or RIF. However, it cannot be ignored that PGT-A is characterized by some risks and ethical challenges, such as high prices, the difficulty of cultivating advanced-age patients' embryos to standard blastocyst biopsy period, no embryos can be used or embryos will be damaged after screening, and the waste of embryos. Whether PGT-A can improve clinical outcomes of RPF patients remains controversial. Based on this background, we aimed to explore PGT-A's value in RPF patients to provide a reference for its clinical application.

METHODS

Participant or population: The patients had each experienced two or more spontaneous abortions, (2) 4–6 high-quality cleavage embryos or three or more high-quality blastocyst embryos had been implanted into each patient without pregnancy, and (3) neither the patients nor their husbands had chromosomal abnormalities.

Intervention: PGT-A group.

Comparator: PGT-A.

Study designs to be included: The studies about PGT-A's use in RPF patients that published from 2002 to 2022.

Eligibility criteria: No addition.

Information sources: The PubMed, the Cochrane Library, China National Knowledge Infrastructure, Wangfang Data, and VIP Database foe Chinese Technical Periodicals.

Main outcome(s): The clinical outcomes: implantation rate , clinical pregnancy rate, clinical miscarriage rate , ongoing pregnancy rate and live birth rate.

Quality assessment / Risk of bias analysis: The Cochrane Handbook was used to evaluate the quality of randomized controlled trials. We used the Risk of Bias in Non-randomised Studies of Interventions tool to evaluate the quality of cohort studies.

Strategy of data synthesis: We conducted this meta-analysis using R version 4.2.1 for statistical analysis. The combined results are shown as relative ratios with corresponding 95% confidence intervals.

Subgroup analysis: To explore PGT-A's value in different age groups, we divided the patients into two subgroups according to their age: patients under 35 years of age and patients 35 years of age or older.

Sensitivity analysis: We measured heterogeneity using the Q test and I2 statistics, and we calculated H-statistics using Q-statistics.

Country(ies) involved: China.

Keywords: preimplantation genetic testing for aneuploidy; recurrent pregnancy failure; meta-analysis; next genetic screening; blastocyst biopsy; aneuploidy.

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Support: **This work was supported by National Natural Science Foundation of China (82160296 to Huang, P.X.), Liuzhou Science and Technology Plan Project (2022CAC0115 to Huang, P.X.), Guangxi Natural Science Foundation Project (2019JJB140179 to Huang, P.X.), and National Natural Science Foundation, Youth Science Foundation Project (82001553 to Huang, P.X.), Guangxi Clinical Research Center for Obstetrics and Gynecology (GuiKe AD22035223 to Zeng D.Y.).**