INPLASY PROTOCOL

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None declared.

Relationship between platelet to lymphocyte ratio (PLR) and lymphocyte to monocyte ratio (LMR) with spontaneous preterm birth: a systematic review and meta-analysis

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Review question / Objective: **To systematically evaluate the relationship between platelet to lymphocyte ratio (PLR) and lymphocyte to monocyte ratio (LMR) and patients with spontaneous preterm birth.**
Eligibility criteria: **(1) Included patients were clinically diagnosed with spontaneous preterm delivery. (2) LMR and PLR were tested at admission or during patients with spontaneous preterm delivery hospitalization. (3) Studies presented the account of cases and controls, the mean, standard deviation , or median and interquartile range of LMR and/or PLR. (4) Studies were observational study design. (5) Full-text articles published were included, with grey literature excluded.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 March 2022 and was last updated on 19 March 2022 (registration number INPLASY202230092).

INTRODUCTION

Review question / Objective: **To systematically evaluate the relationship between platelet to lymphocyte ratio (PLR) and lymphocyte to monocyte ratio (LMR) and patients with spontaneous preterm birth.**

Condition being studied: **Preterm labor, defined as pregnancy terminated before 37 weeks of gestation, is one of the common**

complications of obstetrics.The worldwide incidence of preterm birth exceeds 10%, affecting more than 15 million births each year. A recent study analyzing data from 107 countries estimated the global preterm birth rate to be 10.6% in 2014. Complications from preterm birth were the leading cause of death in children under five years of age. After preterm birth, problems include chronic respiratory disease, neurodevelopmental disorders, and long-term cognitive impairment, whose effects can last a lifetime, burdening families, society, and medical institutions. According to etiology, preterm labor is divided into spontaneous and therapeutic preterm labor, with spontaneous preterm labor accounting for most preterm births. Spontaneous preterm birth is the unexpected occurrence of threatened preterm birth, preterm labor, and then preterm delivery before 37 weeks of pregnancy, including premature delivery and preterm premature rupture of membranes. The lack of specificity of preterm birth makes it difficult to distinguish actual preterm birth from false preterm birth, which can easily lead to over-diagnosis and over-treatment. In addition, some preterm births occur without noticeable clinical symptoms, easy to miss a diagnosis. Therefore, it is essential to fully understand the mechanism of spontaneous preterm birth and to predict the occurrence of preterm birth as soon as possible so that clinicians can timely and effectively intervene and the occurrence of preterm birth and the morbidity and mortality of fetus and newborn can be diminished. To our knowledge, several clinical studies have been performed to explore the potential relationship between PLR, LMR, and spontaneous preterm birth. However, given the limited number of cases in a single study and the seemingly contradictory results, a meta-analysis is necessary to aggregate published studies to provide more objective evidence of the association between NLR, PLR, and spontaneous preterm birth. Therefore, we conducted a systematic review and meta-analysis to evaluate the association and application value of PLR and LMR more objectively and systematically with spontaneous preterm birth.

METHODS

Participant or population: Patients were clinically diagnosed with spontaneous preterm delivery.

Intervention: Spontaneous preterm birth.

Comparator: Healthy full-term pregnant women.

Study designs to be included: Prospective case-control and Retrospective case-control.

Eligibility criteria: (1) Included patients were clinically diagnosed with spontaneous preterm delivery. (2) LMR and PLR were tested at admission or during patients with spontaneous preterm delivery hospitalization. (3) Studies presented the account of cases and controls, the mean, standard deviation , or median and interquartile range of LMR and/or PLR. (4) Studies were observational study design. (5) Full-text articles published were included, with grey literature excluded.

Information sources: PubMed, EMBASE, Cochrane Library, China National Knowledge Infrastructure databases.

Main outcome(s): The level of PLR and LMR.

Quality assessment / Risk of bias analysis: The NOS scale consists of three dimensions with eight entries: four entries for study subject selection, one entry for between-group comparability, and three entries for outcome measures; except for the comparability entry, which received a maximum of 2 stars, the other entries received a maximum of 1 star, with a score range of 0 to 9 stars. The higher the total score, the higher the quality of the study. Studies with a score ≥7 were considered high-quality studies.

Strategy of data synthesis: All statistical analyses were completed using STATA12.0

software. Because there were studies with inconsistent LMR and/or PLR units, the standardized mean difference (SMD) was chosen to be the effect size, and 95% confidence intervals were selected. Cochrane's Q test and I2 test were used to assessing the heterogeneity between studies. When P was less than 0.1 or I2 was greater than 50%, heterogeneity between studies was considered significant, and a random-effects model would be applied. Conversely, a fixed-effects model was used. Subgroup analysis was leveraged for identifying potential sources of heterogeneity.

Subgroup analysis: According to country, case number, CBC test, study design, further subgroup analysis were also conducted.

Sensitivity analysis: For sensitivity analysis, we removed included studies one after another and observed the change in the combined effect size after excluding a study.

Country(ies) involved: China.

Keywords: Preterm birth; platelet to lymphocyte ratio (PLR); lymphocyte to monocyte ratio (LMR); prognosis; Meta-analysis.

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