INPLASY PROTOCOL

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Support: None.

Review Stage at time of this submission: Preliminary searches.

Conflicts of interest:
None declared.

Efficacy evaluation of pulmonary hypertension specific therapy in patients with portal pulmonary hypertension: systematic review and meta-analysis

Zhang, RH[1]; Wen, XY[2].

Review question / Objective: The aim is to determine the effect of specific treatment of pulmonary hypertension on cardiopulmonary hemodynamics and cardiac function in patients with portal pulmonary hypertension.
Condition being studied: Efficacy of pulmonary hypertension specific therapy in patients with portal pulmonary hypertension.
Eligibility criteria: According to international POPH diagnostic standards：Patients with portal pulmonary hypertension (POPH) determined by right cardiac catheterization, where POPH is defined as (I) Mean pulmonary artery pressure (mPAP）≥ 25 mmHg; (II) pulmonary vascular resistance (PVR) > 240 dynes·sec·cm-5; (III) pulmonary wedge pressure (PAWP) ≤ 15 mmHg or cross pulmonary pressure difference (mPAP-PAWP) > 12 mmHg.

INTRODUCTION

Review question / Objective: The aim is to determine the effect of specific treatment of pulmonary hypertension on cardiopulmonary hemodynamics and cardiac function in patients with portal pulmonary hypertension.

Rationale: As the first group of PAH, at present, the targeted treatment of pulmonary hypertension is used clinically to enable patients with POPH to obtain good hemodynamics and right heart function, so as to successfully complete liver transplantation and reduce

intraoperative and postoperative risks. However, there is no standard guide for the treatment of PAH in patients with POPH. The purpose of this study was to investigate the effects of specific treatment of pulmonary hypertension on cardiopulmonary hemodynamics and cardiac function in patients with portal pulmonary hypertension (POPH).

Condition being studied: Efficacy of pulmonary hypertension specific therapy in patients with portal pulmonary hypertension.

METHODS

Search strategy: We will search the clinical studies related to the treatment of pulmonary hypertension in patients with portal pulmonary hypertension in PubMed, EMBASE, web of science and Cochrane libraries. The search time is from the establishment of the database to May 5, 2022. The search applies the following terms: "portopulmonary hypertension" or "porto pulmonary hypertension" or "POPH" or "PPHTN" for full-text search.

Participant or population: Patients with portal pulmonary hypertension (POPH) determined by right cardiac catheterization, where POPH is defined as (I) Mean pulmonary artery pressure (mPAP) ≥ 25 mmHg; (II) pulmonary vascular resistance (PVR) > 240 dynes·sec·cm-5; (III) pulmonary wedge pressure (PAWP) ≤ 15 mmHg or cross pulmonary pressure difference (mPAP-PAWP) > 12 mmHg.

Intervention: Specific treatment of pulmonary hypertension (including prostacyclin and its analogues, endothelin receptor antagonists, phosphodiesterase 5 inhibitors, soluble guanylate cyclase stimulants, etc.) will be used, regardless of whether liver transplantation will be performed after drug treatment.

Comparator: Specific treatment of pulmonary hypertension (including prostacyclin and its analogues, endothelin receptor antagonists, phosphodiesterase 5 inhibitors, soluble guanylate cyclase stimulants, etc.) will be used, regardless of whether liver transplantation will be performed after drug treatment.

Study designs to be included: Including randomized controlled trials, prospective studies and retrospective studies.

Eligibility criteria: According to international POPH diagnostic standards：Patients with portal pulmonary hypertension (POPH) determined by right cardiac catheterization, where POPH is defined as (I) Mean pulmonary artery pressure（mPAP）≥ 25 mmHg; (II) pulmonary vascular resistance (PVR) > 240 dynes·sec·cm-5; (III) pulmonary wedge pressure (PAWP) ≤ 15 mmHg or cross pulmonary pressure difference (mPAP-PAWP) > 12 mmHg.

Information sources: We will search the clinical studies related to the treatment of pulmonary hypertension in patients with portal pulmonary hypertension in PubMed, EMBASE, web of science and Cochrane libraries.

Main outcome(s): The Changes of hemodynamics （mPAP, PVR, PCWP, TPG, SVO2, CO, CI, RAP）and cardiac function (6-minute walking distance, NYHA grade,WHO FC grade , etc).

Additional outcome(s): Survival rate, adverse events, etc.

Data management: Meta-analysis will be performed using meta package (version 5.1-0) in R program (version 4.1.1). Mean and standard deviation (SD) will be used to calculated the pooled results using random effects model, and for studies with median and interquartile range, they will be transformed to mean and SD to combine data.

Quality assessment / Risk of bias analysis: Quality assessment: the NIH quality assessment tool will be used to assess the quality of case series studies or control

intervention studies. Publication bias will be evaluated by funnels plots and the Egger's test.

Strategy of data synthesis: Meta-analysis will be performed using meta package (version 5.1-0) in R program (version 4.1.1). Mean and standard deviation (SD) will be used to calculated the pooled results using random effects model, and for studies with median and interquartile range, they will be transformed to mean and SD to combine data. Study heterogeneity will be evaluated using I2 with a value of over 50% indicating high heterogeneity. Subgroup and meta-regression analyses will be conducted to explore potential sources of heterogeneity.

Subgroup analysis: Subgroup analyses will be conducted based on the following categorical variables: Types of randomized controlled trials and non randomized controlled trials;Sample size, etc. Meta-regression analyses will be conducted for continuous variables: Effects of female proportion, baseline mPAP and baseline PVR on hemodynamics.

Sensitivity analysis: Sensitivity analyses will be performed to examine the reliability of results after excluding each study one by one. A statistically significant level will be set as P<0.05 (two-tailed) for all tests.

Language: English.

Country(ies) involved: China.

Keywords: Treatment of pulmonary hypertension; Portal pulmonary hypertension; Hemodynamics; Cardiac function.

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