INPLASY

Effect of Xuebijing injection combined with hemoperfusion on the survival rate of Chinese patients with paraquat poisoning: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2024 and was last updated on 23 March 2024.

INTRODUCTION

Review question / Objective Currently, specific antidotes for paraquat(PQ) are unavailable, and definitive evidence-based medicine is lacking.In this study, we investigated the near-term survival rate of Chinese patients with PQ poisoning treated with Xuebijing injection combined with hemoperfusion (XBJ-HP) in a meta-analysis, thereby providing support for evidence-based medicine.

Rationale It is widely used in agricultural production owing to its rapid action and superior effects. In humans, PQ can be absorbed through the digestive tract, respiratory tract, skin, and mucous membranes, with oral intake being the predominant route of PQ poisoning. Therefore, oral PQ poisoning is the primary cause of poisoning.1The primary factor that eventually affects the prognosis of patients is the level of PQ ingested. However, despite the gradual ban on the production and sale of PQ in several countries,PQ poisoning is still widely reported. In addition, potent drug treatments are unavailable. In clinical practice, PQ poisoning is treated by reducing the absorption of the poison, removing the absorbed poison (hemopurification), inhibiting the production of anti-inflammatory factors (glucocorticoid-based anti-inflammatory), and symptomatic and supportive treatment.

Condition being studied Paraquat (PQ) is a non-selective herbicide that is highly toxic to humans. It is widely used in agricultural production owing to its rapid action and superior effects. In humans, PQ can be absorbed through the digestive tract, respiratory tract, skin, and mucous membranes, with oral intake being the predominant route of PQ poisoning. Therefore, oral PQ poisoning is the primary cause of poisoning.The primary factor that eventually affects the prognosis of patients is the level of PQ ingested. However, despite the gradual ban on the production and sale of PQ in several

countries,3-5 PQ poisoning is still widely reported. In addition, potent drug treatments are unavailable.

METHODS

Participant or population Seventy-nine studies were initially screened according to the search strategy. The final number of papers included in the meta-analysis after layer-by-layer screening was 21 , including 13 randomized controlled trials (RCTs) and nine non-randomized controlled trials (NRCTs) involving 1361 participants (706 and 655 patients in the experimental and control groups, respectively).

Intervention In this study, patients in the control group received conventional basic treatment, including hemoperfusion, correction of water-electrolyte disturbances, and active prevention of local or systemic complications.13 Patients in the experimental group received XBJ-HP based on conventional treatment.

Comparator In this study, patients in the control group received conventional basic treatment, including hemoperfusion, correction of water-electrolyte disturbances, and active prevention of local or systemic complications.13 Patients in the experimental group received XBJ-HP based on conventional treatment.

Study designs to be included The inclusion criteria were as follows: (1) a clear history of PQ exposure; (2) acute PQ poisoning, determined based on clinical symptoms and signs and auxiliary examination results; (3) administration of XBJ-HP; and (4) exclusion of patients with previous underlying diseases, such as cardiovascular, cerebrovascular, and diabetic diseases.

Eligibility criteria How should treatment strategies be organized to face Chinese patients with paraquat poisoningpatients with severe novel coronavirus pneumonia?P - Treatment strategiesI - Adaptations in the organization of work processes;C - Not applicable;O - Facilitated access and morbidity and mortality reduction;T -Chinese patients with paraquat poisoning.

Information sources In this study, patients in the control group received conventional basic treatment, including hemoperfusion, correction of water-electrolyte disturbances, and active prevention of local or systemic complications. Patients in the experimental group received XBJ-HP based on conventional treatment. The Chinese search terms "血必净" and "百草枯" and the English search terms "Xuebijing" and "PQ" were used for the searches in PubMed, Cochrane, CQVIP, CNKI, CBM, and Wanfang Database.

Main outcome(s) In this study, a meta-analysis was conducted on the near-term survival rate of patients with PQ treated with XBJ-HP in recent years to obtain evidence-based information on the efficacy of XBJ-HP.

Quality assessment / Risk of bias analysis The literature included in this study was evaluated by two independent evaluators for data extraction and quality, followed by crosschecking. Disagreements between the two evaluators were resolved through discussion or with the assistance of a third investigator. According to previous research, the quality of the literature was evaluated using the modified Jadad scale, with a total score of 0-3 suggesting low quality and that of 4-7 suggesting high quality.

Strategy of data synthesis The retrieved literature was initially screened by reading the titles and abstracts, and those that clearly did not meet the inclusion criteria were excluded. To assess the results of the literature screening, the complete text of the literature was read to determine whether the inclusion criteria were met. The literature data, including the title, author, date of publication, source of literature, number, age, sex, toxic dose, duration of drug administration in the experimental and control groups, criteria for determining efficacy, and outcome indicators, were extracted and checked. The outcome indicator was the patient survival rate.

Subgroup analysis A priori we believe there will be various subgroups that will emerge among the included studies such as at Different time(≤ 7 days, 8-14 days, 15-28 days, and ≥ 29 days).

Sensitivity analysis Heterogeneity analysis was conducted prior to the meta-analysis. Heterogeneity tests were performed using STATA software.The chi-square test was used to test the heterogeneity of clinical trials; $P > 0.1$ and $I2 < 50\%$ indicated a small heterogeneity among the studies, and the fixed-effect model was applied in such cases. $P \leq 0.1$ or $I2 \geq 50\%$ indicated heterogeneity among the studies, and the random-effect model was applied in such cases, followed by an analysis of heterogeneity sources and a subgroup analysis of the factors that may contribute to heterogeneity.

Country(ies) involved China - Department of Emergency, People's Hospital of Dali Bai Autonomous Prefecture, Dali, Yunnan, 671000.

Keywords Xuebijing injection, paraquat poisoning, Meta-analysis, hemoperfusion, hemopurification.

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