INPLASY PROTOCOL

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

Conflicts of interest:
None declared.

Efficacy and safety of vitamin D supplementation in childhood asthma: a protocol for systematic review and meta-analysis

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Review question / Objective: This systematic review and meta-analysis is conducted to determine the effect of vitamin D supplementation on the acute asthma attacks requiring rescue systemic corticosteroids, and potential adverse reactions to vitamin D in childhood asthma.

Information sources: A comprehensive online literature search will be conducted in following common databases: Web of Science, Embase, PubMed, Wanfang Data, Scopus, Science Direct, and Cochrane Library from. The literature search keywords are as follows: ("asthma") AND ("vitamin D" OR "vitamin D supplement" OR "vitamin D deficiency") AND ("infant" OR "pediatric" OR "child" OR "children").

INTRODUCTION

Review question / Objective: This systematic review and meta-analysis is conducted to determine the effect of vitamin D supplementation on the acute asthma attacks requiring rescue systemic corticosteroids, and potential adverse reactions to vitamin D in childhood asthma.

Condition being studied: Childhood asthma.

METHODS

Participant or population: Infant or children patients with asthma.

Intervention: Treatment with vitamin D supplementation.

Comparator: Treatment without vitamin Dsupplementation.

Study designs to be included: Randomized controlled trials.

Eligibility criteria: Eligibility criteriaAll retrieved studies will be independently evaluated by scanning the titles and abstracts to identify potentially eligible studies using the preset eligibility criteria. A third reviewer will serve as the arbiter if there is a disagreement. Inclusion criteria Participations: infant or children patients with asthma;Interventions: treatment with vitamin D supplementation (vitamin D group);Comparators: treatment without vitamin D supplementation (control group);Outcomes: (1) incidence of acute asthma attacks requiring rescue systemic corticosteroids, and duration time from first dose of vitamin D supplementation to first asthma exacerbation requiring rescue systemic corticosteroids; (2) incidence of potential adverse reactions to vitamin D;Study design: RCTs. Exclusion criteria Studies irrelevant to this topic;Reviews, comments, or letters; Duplications; Studies without efficient data.

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Main outcome(s): (1) incidence of acute asthma attacks requiring rescue systemic corticosteroids, and duration time from first dose of vitamin D supplementation to first asthma exacerbation requiring rescue

systemic corticosteroids; (2) incidence of potential adverse reactions to vitamin D.

Quality assessment / Risk of bias analysis: Cochrane risk of bias tool will be applied to evaluate the risk of bias of included studies by two reviewers independently. The quality of each included study will be assessed in following seven items: (1) random sequence generation; (2) allocation concealment; (3) blinding of participants and personnel; (4) blinding of outcome assessment, (5) incomplete outcome data; (6) selective reporting; (7) other biases. All studies will be classified as low risk, high risk, and unclear risk. Inconsistencies will be resolved by the discussion with the third researchers.

Strategy of data synthesis: The Stata 12.0 (Stata Corp, College Station, TX) will be used to analyze the data in the current study. The relative risk (RR) and 95% confidence interval (CI) are used to evaluate dichotomous variables between vitamin D group and control group, including incidence of acute asthma attacks requiring rescue systemic corticosteroids and incidence of potential adverse reactions to vitamin D. For continuous variables, mean difference (MD) and 95%CI are used to assess the difference of duration time from first dose of vitamin D supplementation to first asthma exacerbation requiring rescue systemic corticosteroids between vitamin D group and control group. The heterogeneity among included RCTs will be evaluated by I2 tests. If no statistical heterogeneity is observed (P ≥ 0.10 and I2 < 50%), the pooled analysis will be conducted with a fixed-effect model. Otherwise, a random effect model will be used.

Subgroup analysis: If there is a significant heterogeneity among included RCTs, a subgroup analysis will be performed based on the dosage of vitamin D supplementation, treatment duration, and outcome measures.

Sensitivity analysis: The sensitivity analysis will be conducted to investigate the

robustness of results. The sensitivity analysis will be performed to check the alteration of results by removal of one study one time.

Country(ies) involved: China.

Keywords: vitamin D supplementation; childhood asthma; efficacy; safety.

Contributions of each author:
Author 1 - Haiying Niu.
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Author 3 - Zilong Zhao.
Author 4 - Xuemei Lu.
Author 5 - Gang Zhao.