INPLASY

Risk Factors for Small Airway Dysfunction in Asthma: a meta-analysis and systematic review

INPLASY202380088
doi: 10.37766/inplasy2023.8.0088
Received: 20 August 2023
Published: 20 August 2023

Li, SL[1]; Zhou, X[2]; Li, YX[3].

Corresponding author:
Li Suling

lisuling_pediatrics@outlook.com

Author Affiliation:
Yan'an University Affiliated Hospital.

ADMINISTRATIVE INFORMATION

Support - Graduate Education Program Project（YCX2023121）.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202380088

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 August 2023 and was last updated on 20 August 2023.

INTRODUCTION

Review question / Objective To estimate the risk factors of small airway dysfunction in asthma.

Rationale Numerous new epidemiological data on small airway dysfunction in asthma have emerged, enabling us to assess its risk factors.

Condition being studied We performed a systematic review and meta-analysis to determine the risk factors of small airway dysfunction in asthma, including both children and adults.

METHODS

Search strategy (Asthma*[Title]) AND (Airway Remodeling[Title/Abstract]) and (risk[Title/Abstract]).

Participant or population Both children and adults.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Original case control studies or cohort studies.

Eligibility criteria (1) Review articles, conference abstracts, critical articles, and animal experiments; (2) Duplicate publications; (3) Literature with incomplete, unusable, or missing original data; (4) Studies lacking clear sample sources, inclusion and exclusion criteria; (5) Studies with a Newcastle-Ottawa Scale (NOS) score of less than 6 points.

Information sources CNKI (China National Knowledge Infrastructure), Wanfang, VIP (Chongqing VIP Information Co., Ltd.), Web of Science, PubMed, Cochrane, and Embase."PubMed, Embase, and Cochrane Library databases.

Main outcome(s) Risk factors for small airway dysfunction in asthma.

Quality assessment / Risk of bias analysis The methodological quality of the included studies

were assessed using the Newcastle-Ottawa Scale (NOS). The NOS scale contains items based on selection (4 items), comparability (1 item), and outcome (3 items), and the “staring system” ranged from to 0-9.

Strategy of data synthesis Using Excel 2010 and Note Express software, a database is established to classify, integrate, and verify the literature data. The statistical methods described in the Cochrane Handbook for Systematic Reviews are employed, and the Meta-analysis is conducted using the official RevMan 5.3 software provided by Cochrane. When the literature provides only the odds ratio (OR) and 95% confidence interval (CI) or beta (β) value and 95% CI, the effect size (ES) is calculated as lnOR=β, and the standard error of the effect size (Sx) is determined as (lnORu - lnORl)/3.92. If the literature only provides the OR value or β value or an exact p-value, the corresponding Z-value is obtained from the standard normal distribution table, and Sx is calculated as lnOR/Zp=β/Zp [9]. The heterogeneity of the included literature is assessed at a significance level of α = 0.05, and the I2 statistic is used to quantify the heterogeneity among multiple study results. If P≥0.10, it is considered that there is homogeneity among the studies, and a fixed-effects model is used to calculate the pooled effect estimate. If P<0.10, it is considered that there is heterogeneity among the studies, and a random-effects model is used to calculate the pooled effect estimate. The consistency between the results obtained from the fixed-effects model and the random-effects model reflects the reliability of the combined results to some extent. Egger's linear regression is applied to assess publication bias.

Subgroup analysis Subgroup analysis was performed to determine the prevalence of small airway dysfunction in asthma by age.

Sensitivity analysis Sensitivity analysis was performed to determine the risk factors for small airway dysfunction in asthma by sequentially removing individual studies.

Country(ies) involved China.

Keywords Risk factors; asthma; small airway dysfunction; systematic review; meta-analysis.

Contributions of each author

Author 1 - Li Suling.
Email: lisuling_pediatrics@outlook.com
Author 2 - Zhou Xue.
Author 3 - Li Yuanxia.