



Patients with asthma have a higher risk of systemic lupus erythematosus: a systematic review and meta-analysis

Nipith Charoenngam¹ · Ben Ponvilawan² · Wasit Wongtrakul³ · Patompong Ungprasert⁴

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Abstract

Objective This study aimed to investigate the association between asthma and risk of systemic lupus erythematosus (SLE) using systematic review and meta-analysis technique.

Methods Potentially eligible studies were identified from Medline and EMBASE databases from inception to March 2020 using search strategy that comprised of terms for “asthma” and “systemic lupus erythematosus.” Qualified cohort study must consist of one cohort of patients with asthma and another cohort of individuals without asthma. Then, the study must report relative risk (RR) with 95% confidence intervals (95% CIs) of incident SLE between the two groups. Qualified case–control studies must consist of cases with SLE and controls without SLE. Then, the study must explore their history of asthma. Odds ratio (OR) with 95% CIs of the association between asthma status and SLE must be reported. Point estimates and standard errors were extracted from each study and were combined using the generic inverse variance method.

Results A total of 21,486 articles were identified. After two rounds of independent review by three investigators, three cohort studies and seven case–control studies met the eligibility criteria and were included into the meta-analysis. Patients with asthma had a significantly higher risk of SLE compared with individuals without asthma with the pooled odds ratio of 1.37 (95% CI 1.14–1.65; I^2 67%). Funnel plot was symmetric and did not suggest the presence of publication bias.

Conclusions The current study found a significant association between asthma and increased risk of SLE.

Key Points

- Studies have suggested an elevated risk of systemic lupus erythematosus among patients with asthma; however, the results from existing studies are inconsistent.
- This meta-analysis included data from three cohort studies and seven case–control studies.
- A significant association between asthma and elevated risk of systemic lupus erythematosus was observed, with the pooled odds ratio of 1.37 (95% CI 1.14–1.65; I^2 67%).

Keywords Asthma · Meta-analysis · Systemic lupus erythematosus

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✉ Nipith Charoenngam
nipith.charoenngam@gmail.com

¹ Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, 2 Prannok Road, Bangkoknoi, Bangkok 10700, Thailand

² Department of Pharmacology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

³ Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

⁴ Department of Rheumatic and Immunologic Diseases, Cleveland Clinic Foundation, Cleveland, OH, USA

Introduction

Systemic lupus erythematosus (SLE) is an autoimmune disease with a broad variety of clinical manifestations [1]. The reported incidence varies across different regions of the world, ranging from 0.3/100,000 person-years in Africa to 23.2/100,000 person-years in North America [2]. Women are at approximately nine times higher risk of SLE than men [3] with the peak incidence at 20 to 30 years old in women and 45 to 60 years old in men [3]. The pathogenesis of SLE is not fully understood; however, it is thought to involve both genetic predisposition and environmental factors. Several possible environmental predisposing factors of SLE have been reported in the literature, such as cigarette smoking, silica exposure, Epstein–Barr virus infection, and vitamin D deficiency [4].