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Corresponding author:
Lu Guo

guoluhx@126.com

Author Affiliation:
Sichuan Provincial People's Hospital, School of Medicine, University of Electronic Science and Technology of China, Chengdu, China.

Serum surfactant protein D as a significant biomarker for predicting occurrence, progression, acute exacerbation and mortality in patients with interstitial lung disease

He, X; Ji, JQ; Zheng, D; Luo, ZL; Luo, LJ; Guo, L.

ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202450050

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 May 2024 and was last updated on 11 May 2024.

INTRODUCTION

Review question / Objective This meta-analysis provides reliable evidence for increasing serum SP-D level in ILD status.

Condition being studied ILD patients, Disease status of ILD, Research Database, STATA16.0 software.

METHODS

Participant or population 3561 ILD patients.

Intervention Serum SP-D levels in the occurrence, progression, acute exacerbation, and mortality of ILD.

Comparator Serum SP-D levels in the occurrence, progression, acute exacerbation, and mortality of control group(non-ILD, stable, non-acute exacerbation, survival).

Study designs to be included Including prospective, retrospective and cross-sectional studies.

Eligibility criteria The inclusion criteria were as follows: (1)cohort(prospective or retrospective)、cross-sectional studies; (2) ILD was diagnosed mainly according to published clinical guidelines[10-13] and basing on clinical features and high-resolution computed tomography (HRCT), a pathological confirmation is required when necessary; acute exacerbation(AE) was defined as a deterioration of respiratory symptoms accompanied by new bilateral ground-glass opacification or consolidation, which could not explained by infection、heart failure and other identifiable causes[14-16]; progression was

defined as a decline in forced vital capacity (FVC) ≥ 5% predicted and/or diffusing lung capacity for carbon monoxide (DLCO) ≥ 10% predicted within 1 year of follow-up; (3) availability of quantitative continuous variable data or to be converted by algorithms; (4) hazard ratio (HR) was calculated by Cox proportional hazard model and odds ratio (OR) was calculated by logistic regression model; (5) serum SP-D was included as the study parameter; (6) English literature.
The exclusion criteria were as follows: (1) review/ meta-analysis, case report, letter, comment, conference abstract and animal(cell); (2) ILD patients with lung cancer; (3) laboratory test result for SP-D was not from serum samples; (4) unextracted of effect sizes for pooled analysis.

Information sources PubMed, Embase, web of science, Scopus, Ovid and Cochrane Library.

Main outcome(s) Occurrence, progression, acute exacerbation and mortality in patients with interstitial lung disease.

Quality assessment / Risk of bias analysis Quality assessment: Newcastle-Ottawa Quality Assessment Scale . Risk of bias analysis: Publication bias was judged by Egger's test, and if $p<0.05$, the trim-and-fill method would be chosen for bias correction.

Strategy of data synthesis Calculating weighted mean difference (WMD) from extraction data (mean ± SD) for pooled analysis, while extraction data (OR(95%CI) or HR(95%CI)) were pooled for analysis after performing log transformation. All studies that performed pooled analysis were initially tested for heterogeneity which was assessed by Cochran's Q statistic and inconsistency value (I2). If $p< 0.05$ or $I2\geq 50\%$, it means remarkable heterogeneity, the random effect model and DerSimonian-Laird(DL) method should be applied to the data. otherwise, the fixed effect model and Inverse-Variance(IV) method would be used.

Subgroup analysis Subgroup analysis was performed in ILD occurrence part according to the type of control group.

Sensitivity analysis Excluding one category of literature at a time method was applying for sensitivity analysis. If the exclusion of a category had no significant affect the results, it indicated that our results were stable and reliable.

Country(ies) involved China.

Keywords Surfactant protein D; interstitial lung disease; occurrence; progression; acute exacerbation; mortality.

Contributions of each author
Author 1 - Xing He.
Email: hexinggh1993@163.com
Author 2 - Jiaqi Ji.
Email: jjq323@qq.com
Author 3 - Dan Zheng.
Author 4 - Zeli Luo.
Author 5 - Linjie Luo.
Author 6 - Lu Guo.
Email: guoluhx@126.com