INPLASY

The relevance between oral lichen planus and Candida albicans infection: A systematic review and meta-analysis

INPLASY202460006
doi: 10.37766/inplasy2024.6.0006
Received: 03 June 2024
Published: 03 June 2024

Corresponding author:
Min Wang

wangmin6751@163.com

Author Affiliation:
Ningbo No.2 Hospital.

Ma, DH; Yang, X; Wang, M.

ADMINISTRATIVE INFORMATION

Support - N/A.

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

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202460006

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 June 2024 and was last updated on 03 June 2024.

INTRODUCTION

Review question / Objective This study investigates the correlation between Oral Lichen Planus (OLP) and Candida albicans infection, examining the possible influence of Candida albicans infection on the onset of OLP. We carried out a meta-analysis of individual case-control studies, computing odds ratios (OR) and their corresponding 95% confidence intervals (CI). A quality appraisal of the literature was conducted utilizing the Newcastle-Ottawa Scale (NOS). The study notes considerable heterogeneity among the selected studies, leading to additional subgroup analyses based on geographical location and recruitment methods. No significant publication bias was detected during the assessment. A sensitivity analysis confirmed the robustness of the findings when employing the random effects model. The findings suggest a complex relationship between OLP and Candida albicans, emphasizing the need for further research to understand the differences in susceptibility among various clinical types of OLP. This study provides novel insights for future research and clinical treatment strategies in this field.

Condition being studied Despite extensive research indicating potential links between factors such as infection, compromised immunity, and systemic conditions with the development of OLP, the precise underlying causes and mechanisms of the disease remain elusive[8]. Furthermore, there needs to be more effective treatment strategies in clinical practice. Therefore, further investigation into the etiology of OLP iscrucial.

METHODS

Search strategy The combination of free text and subject headings has been made, and the search terms included: “Candida albicans," “Monilia albicans," "Dematium albicans," “Oral Lichen Planus," "Mucosal Lichen Planus," "Lichen planopilaris," and “Lichen Planus." The search formulas were (((Candida albicans [MeSH Terms])

OR ((Dematium albicans [MeSH Terms]) OR (Monilia albicans [MeSH Terms])) AND ((Lichen Planus, Oral [MeSH Terms])) OR (Oral Lichen Planus [All Fields]) OR (Lichen Planus [MeSH Terms]) OR (Mucosal Lichen Planus [MeSH Terms]) OR (Lichen planopilaris [All Fields]))).

Participant or population Adult patients who had been diagnosed with OLP. The control group consisted of a healthy population that was matched for age and gender, and they should not have OLP or systemic diseases.

Intervention N/A.

Comparator 1,124 patients with OLP and 1,063 healthy controls.

Study designs to be included Case-control studies published in English that investigated the potential association between OLP and Candida albicans infection.

Eligibility criteria The criteria for selection were as follows: ① Study design: Case-control studies published in English that investigated the potential association between OLP and Candida albicans infection. ② Study population: Adult patients who had been diagnosed with OLP. The control group consisted of a healthy population that was matched for age and gender, and they should not have OLP or systemic diseases. ③ Outcome indicators: The detection rate of Candida albicans in the oral lesions of OLP, as well as the detection rate in oral rinse solutions, and the identification methods, should all adhere to internationally recognized standards.

Information sources PubMed, Embase, Medline, Cochrane Library, and Web of Science, from their inception to Jan 31, 2024, were searched to recognize applicable case-control studies evaluating the relevance of OLP and Candida albicans infection.

Main outcome(s) The findings suggest a complex relationship between OLP and Candida albicans, emphasizing the need for further research to understand the differences in susceptibility among various clinical types of OLP.

Additional outcome(s) This study provides novel insights for future research and clinical treatment strategies in this field.

Quality assessment / Risk of bias analysis According to the Cochrane bias risk assessment, all the studies included were assessed to have a high-quality level.

Strategy of data synthesis Odds ratios (OR) and their 95% confidence intervals (CI) were calculated for each case-control study using Review Manager 5.3 software. Heterogeneity among the included studies was assessed using the Cochrane Q test and I2 statistic. Studies with an I^2 statistic between 25% and 50% were deemed to have low heterogeneity, those between 50% and 75% were considered to have moderate heterogeneity, and those with an I^2 statistic greater than 75% were considered to have high heterogeneity. Meta-analyses were performed using a random effects model, resulting in pooled OR and 95% CI, which were presented in a forest plot. Subgroup analyses were conducted based on clinical types, regional distribution, and detection methods of OLP patients to investigate potential sources of heterogeneity within these subgroups. Sensitivity analysis was performed by excluding each included study sequentially to gauge the impact of individual studies on the overarching results. Publication bias was assessed via a funnel plot.

Subgroup analysis Due to the high heterogeneity observed between studies (P=0.02, 12=53%), a subgroup analysis was conducted to determine the cause of this heterogeneity. The subgroup analysis based on the geographical distribution of the studied population showed that the risk of Candida albicans infection in OLP patients is significantly higher in both Asian and non-Asian regions, with a clear association. Additionally, the subgroup analysis results based on the sample collection methods indicated that the risk of Candida albicans infection in OLP patients was significantly increased through different sample collection methods (including concentrated oral rinse method or mucosal swab culture), indicating a significant correlation.

Sensitivity analysis Our analysis was stable in selecting random effect models. The sensitivity analysis indicated that the meta-analysis exhibited low sensitivity and robust stability. The data from all publications consistently showed a scattered distribution away from the center line, indicating no significant deviation. As a result, it seems that no single publication is driving the collective findings.

Country(ies) involved China.

Keywords Oral Lichen Planus; Candida albicans; odds ratio; confidence interval.

Contributions of each author

Author 1 - Danhua Ma - Investigation, Data curation, original draft.
Email: mdh7639@163.com
Author 2 - Xi Yang - Writing, review & editing.
Email: xx497544274@sina.com
Author 3 - Min Wang - Idea, Supervision, review & editing.
Email: wangmin6751@163.com