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Predictive role of HALP score for clinical outcomes in lung cancer: a meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 12 June 2025 and was last updated on 12 June 2025.

INTRODUCTION

Review question / Objective To identity the predictive role of pretreatment hemoglobin, albumin, lymphocyte, and platelet (HALP) score for clinical outcomes among lung cancer patients based on available studies.

Condition being studied Lung cancer remains the most prevalent and deadly malignancies worldwide [1]. Despite advances in diagnostic and therapeutic strategies, the overall prognosis for lung cancer patients remains poor, with the 5-year survival rate lingering below 20% in many populations [2, 3]. Accurate prognostic assessment is crucial for guiding treatment decisions, stratifying patient risk, and improving personalized management. However, identifying reliable prognostic indicators remains a major clinical challenge because of the biological heterogeneity of lung cancer and the influence of various patient- and disease-related factors. As a result, there is a pressing need to discover and validate novel, easily accessible, and cost-effective biomarkers to predict clinical outcomes more precisely.

Recent studies have highlighted the prognostic relevance of several hematologic parameters, such as serum albumin, lymphocyte count, hemoglobin level, and platelet count, in patients with lung cancer [4, 5]. These biomarkers reflect the patient's nutritional and inflammatory status and are associated with cancer progression and survival. Nevertheless, individual indicators are often susceptible to external influences and may not consistently provide accurate prognostic information. Consequently, the development of composite scoring systems that integrate multiple parameters has emerged as a promising approach. One such scoring system is the HALP score, which is calculated based on hemoglobin (Hb), albumin (Alb), lymphocyte count (Lym), and platelet count (Plt), using the formula: HALP = Hb (g/L) × Alb (g/L) × Lym (/L) ÷ Plt (/L) [6]. This score has been shown to hold prognostic value in some malignancies by reflecting both nutritional and systemic inflammatory conditions [6, 7]. However, its predictive role in lung cancer outcomes remains unclear, particularly across different subtypes and clinical settings. Therefore, a systematic evaluation

of the HALP score's prognostic significance in lung cancer is warranted.
The study aimed to identity predictive role of pretreatment HALP score for clinical outcomes such as the survival and therapeutic effect among lung cancer patients based on available studies.

METHODS

Search strategy PubMed, EMbase and Web of Science databases were searched up to April 7, 2025 with the terms: hemoglobin, albumin, lymphocyte, and platelet, HALP, lung, pulmonary, tumor, cancer, neoplasm and carcinoma. Detailed search strategy was as follows: (hemoglobin, albumin, lymphocyte, and platelet OR HALP) AND (lung OR pulmonary) AND (tumor OR cancer OR neoplasm OR carcinoma). MeSH terms and free texts were also applied.

Participant or population Patients were diagnosed with lung cancer.

Intervention The HALP score was assessed before anti-tumor treatment according to previously reported formula.

Comparator The association between pretreatment HALP score and clinical outcomes such as the survival and therapeutic effect were explored.

Study designs to be included Retrospective or prospective cohort studies.

Eligibility criteria a. patients were diagnosed with lung cancer; b. the HALP score was assessed before anti-tumor treatment according to previously reported formula [9]; c. the association between pretreatment HALP score and clinical outcomes such as the survival and therapeutic effect were explored; d. full texts were available and studies published in English.

Information sources Following information was collected: the author, publication year, sample size, country, tumor type (SCLC or NSCLC), tumor stage, treatment, threshold of HALP, endpoint, HR, OR and 95% CI.
Primary outcomes were overall survival (OS) and progression-free survival (PFS). Secondary outcomes were disease control rate (DCR), objective response rate (ORR), post-treatment 90-day mortality and cachexia.

Main outcome(s) Primary outcomes were overall survival (OS) and progression-free survival (PFS).

Additional outcome(s) Secondary outcomes were disease control rate (DCR), objective response rate (ORR), post-treatment 90-day mortality and cachexia.

Quality assessment / Risk of bias analysis Methodological quality was assessed by Newcastle-Ottawa Scale (NOS) score and studies with NOS score >5 were defined as high-quality studies [10].

Strategy of data synthesis Methodological quality was assessed by Newcastle-Ottawa Scale (NOS) score and studies with NOS score >5 were defined as high-quality studies [10].

Subgroup analysis Subgroup analysis based on the tumor type and treatment was performed.

Sensitivity analysis Sensitivity analysis was conducted to assess the stability of pooled results.

Language restriction No.

Country(ies) involved China - Affiliated Hospital of Chengdu University.

Keywords HALP; lung cancer; clinical outcome; predictive; meta-analysis.

Contributions of each author
Author 1 - Yifan Wang.

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