INPLASY

Clinical significance of the controlling nutritional status (CONUT) score in lung cancer patients: Protocol for a systematic review and Meta-analysis

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Corresponding author:
Dong ZW

dongzhiweigzutcm@126.com

Author Affiliation:
Guangdong Provincial Hospital of Integrated Traditional Chinese and Western Medicine.

Dong, ZW; Xie, T; Wu, CL; Tian, N.

ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Preliminary searches.

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 22 August 2024 and was last updated on 22 August 2024.

INTRODUCTION

Review question / Objective Background: The clinical value of the controlling nutritional status (CONUT) score has been widely reported in multiple malignancies. The aim of this study is to investigate the association between the CONUT score and clinical outcomes in patients with lung cancer.

With the aging of the population and the change of diet structure, the incidence and mortality of lung cancer in China are increasing.Epidemiological data show that lung cancer is the most common malignant tumor of the respiratory system, and the morbidity and mortality rate in the world are far higher than other cancer types. It is the malignant tumor with the highest number of new cases and the highest mortality in China, accounting for about 42% of the global lung cancer deaths.Among lung cancer patients, non-small cell lung cancer (NSCLC) is the main type of clinical lung cancer patients, accounting for 80%-85% of all lung cancer cases. The incidence and mortality of lung cancer often confirm each other, and studies show that patients with lung cancer tend to die from lung cancer eventually, and only a small part of them die from related complications or other underlying diseases.Despite certain progress in surgery, chemotherapy, radiotherapy, immunotherapy and other therapies, the 5-year survival rate of patients with lung cancer is only 20%. At present, the combination regimen based on platinum-based drugs is still the first-line treatment for NSCLC. Platinum-based chemotherapy induces apoptosis of tumor cells by inhibiting DNA replication. However, the killing effect of chemotherapy lacks specificity and can cause many toxic and side effects (such as myelosuppression and leukopenia, etc.), affecting patients' quality of life and tumor cell damage.Therefore, it is essential to explore novel prognostic index to guide treatment of NSCLC.

Rationale There is growing evidence that inflammatory response and nutritional status play an important role in tumor progression. Serum albumin itself is a major indicator of nutritional status and an inflammation-related marker. As a

biomarker, serum albumin not only reflects the nutritional status of the body, but also removes pro-inflammatory stimulating factors in the body, relieves inflammatory response, and indicates the level of systemic inflammatory status to a certain extent, which is valuable for assessing the prognosis of NSCLC patients. Prospective studies by some researchers have shown that serum albumin levels are negatively correlated with lung cancer risk.

In conclusion, it is necessary to conduct the present study and urgent to conduct a multicenter prospective cohort study with a large sample size to investigate the long-term prognostic role of CONUT score in NSCLC patients, to provide an effective assessment of the nutritional status of high-risk patients prior to treatment, and to enable high-risk patients to benefit from interventions to improve their physical functioning prior to treatment, thereby improving treatment outcomes. We therefore will performe a meta-analysis based on available evidence to further investigate the association between the CONUT score and outcomes in patients with NSCLC.

Condition being studied Malnutrition is common in cancer patients and is further exacerbated in gastric cancer patients by other factors such as malabsorption and obstructive syndromes. There is much evidence that malnutrition can lead to prolonged hospitalization and worsen the prognosis of cancer patients. Therefore, early screening and appropriate treatment of malnourished patients are extremely important in clinical practice. Currently, although several tumor-related nutritional assessment tools have been developed, such as the NRS2002 and the PG-SGA, the use of these tools is controversial due to their complexity and subjectivity. Ideally, screening tools should be simple, accessible, sensitive and objective. We therefore will performe a meta-analysis based on available evidence to further investigate the association between the CONUT score and outcomes in patients with NSCLC.

METHODS

Search strategy Literatures will be obtained from the following public databases: MEDLINE, Embase, Cochrane Library, and Web of Science, and the search period was from the establishment of the database to July 1, 2024, and the study was conducted in the Asian population, with English as the language of the study, and with no restriction on the authors' nationalities or places of publication. Non-Small-Cell Lung", and 'Outcome Assessment', in addition to free-word searches in each database using terms derived from the MeSH Database. The use of Boolean logic operators ("AND" as well as "OR") to rank and combine the various possible free words and keywords was supplemented by manual retrieval of references from the original literature studies that met the criteria in case any literature was omitted. The search was done independently by two researchers of this study. The detailed search strategy for the databases will be shown in Supplement Table.

Participant or population (1) The topic of the literature concerned the correlation between CONUT score and clinical outcomes in patients with non-small cell lung cancer (NSCLC). (2) The study population was an Asian population with a confirmed diagnosis of NSCLC after pathological histological biopsy, with no restriction on age or gender.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Prognostic study or study associated with clinicopathological outcome significance.

Eligibility criteria Inclusion and exclusion criteria of the original literature Inclusion criteria:(1) The topic of the literature was related to the correlation between CONUT scores and clinical outcomes in patients with non-small cell lung cancer (NSCLC). (2) The study population was an Asian population with a confirmed diagnosis of NSCLC after pathological histological biopsy, with no restriction on age or gender. (3) Clinical information including survival outcomes and/or complications were reported. (4) Explicitly reported the collection of total lymphocyte count, serum albumin concentration and total cholesterol level to calculate the CONUT score. Exclusion Criteria: (1) Study subjects with a disease diagnosis other than non-small cell lung cancer (NSCLC) or no specific clinical data reported for patients with NSCLC. (2) Studies or grey literature not published in official journals, in the form of conference proceedings. (3) Types of case reports, literature reviews, and basic experiments. (4) Low-quality studies that were assessed to have high methodological risk. (5) Full-text resources of the original studies were not available.

Information sources Relevant literature was obtained from the following public electronic databases: PubMed,MEDLINE, Embase, Cochrane Library, Web of Science.

Main outcome(s) Controlling nutritional status score (CONUT).

Additional outcome(s) Serum albumin concentration and total cholesterol level,body mass index (BMI), tumour stage, T-stage, N-stage, tumour type (adenocarcinoma or squamous carcinoma), pleural infiltration, lymphatic invasion, vascular infiltration, cytokeratin 19 fragment antigen 21-1 (CYFRA21-1), serum carcinoembryonic antigen (CEA).

Data management The initial retrieved documents will be imported into Endnote X9 software, and after reweighting, two researchers independently will screen the documents, extracted information, and cross-checked it according to the pre-determined screening criteria.

Quality assessment / Risk of bias analysis During literature screening, the title and full text will be read to identify eligible literature, and the information extracted included: title, author(s), year, number of cases, source of study, survival outcome, method of analysis, treatment, age, gender, CONUT threshold, smoking status, body mass index (BMI), tumour stage and type (adenocarcinoma or squamous carcinoma), pleural infiltration, lymphoid invasion, vascular infiltration, cytokeratin 19 fragment antigen 21-1 (CYFRA21-1), serum carcinoembryonic antigen (CEA), and other information. status, lymphatic invasion, vascular infiltration, cytokeratin 19 fragment antigen 21-1 (CYFRA21-1), and serum carcinoembryonic antigen (CEA). Survival outcomes will be all directly expressed as HR/OR and corresponding 95% confidence intervals (95% CI). Data from multivariate analyses will be extracted when both univariate and multivariate analyses will be performed in the original literature. The quality of the literature will be evaluated using the New Castle-OttawaScale (NOS), which consists of 3 aspects of study subject selection, comparability, and outcome measures, with a total of 8 entries, and the evaluation will be based on a scoring system. Except for Comparability (between-group comparability), which can be scored up to 2 points, all the other entries can be scored up to 1 point out of a total of 9 points, with higher scores indicating higher study quality. A NOS quality score of greater than 6 for the original study will be used as an inclusion criterion. Disagreements between the two researchers during the extraction of information and evaluation will be resolved through negotiation, and when agreement could not be reached, they will referr to an independent third-party expert for adjudication.

Strategy of data synthesis Strategy of data synthesis Statistical analysis will be performed by Review Manager 5.3 software. I2 will be used to measure the heterogeneity among the studies. When I2 50%).

Subgroup analysis The subgroup analysis will be conducted according to the type of information and the course of treatment to identify the source of heterogeneity.

Sensitivity analysis The sensitivity analysis was carried out to assess the stability of the findings by gradually deleting each study. In terms of effect size, relative risk (RR) was used for binary variables, mean difference (MD) or standardized mean difference (SMD) for continuous variables, and with 95% confidence interval (CI) was calculated accordingly. For any outcome with more than 10 trials included in analysis, Stata15.1 was adopted for Egger test to analyze the publication bias.

Language restriction Articles whose full text can be obtained will be included. Considering thelanguage restriction of researchers,the includedstudies will be limited to the literature written inEnglish or Chinese.

Country(ies) involved The People's Republic of China.

Other relevant information Two investigators will accomplish independently literature screening and data extraction, which is then cross-checked. Any disagreement will be solved by the discussion or consulting with the third investigator.(1) Literature screening: The articles were managed with EndNote software and screened in compliance with the inclusion and exclusion criteria. After reading titles and abstracts, the irrelevant articles will be excluded. The eligible articles will be determined after reading the full texts of the remaining articles.(2) Data extraction: Two investigators will extract the data independently according to the data collection form (Excel) designed in advance.If the above data are not reported in the original manuscripts, the authors will be contacted to obtain the original data.

Keywords Evidence -Based Medicine; CONUT; Lung Cancer; Meta-analysis; Protocol.

Dissemination plans This systematic review and meta-analysis will not need ethical approval, because it doesn't involve human beings. We will publish this systematic review and meta-analysis electronically in a peer-reviewed journal. This

systematic review andnetwork meta-analysis will give healthcare practitioners important practical guide and information for treating NSCLC cancer.

Contributions of each author

Author 1 - Dong ZW - Developed the search methods, performed data analysis registered this protocol and drafted the original manuscript.
Email: dongzhiweigzutcm@126.com
Author 2 - Xie T - The author developed the search methods, performed data analysis, registered this protocol and drafted the original manuscript. FuSL and Dong ZhiWei contributed equally to this work and should be considered as co-first authors.
Email: zhangyinping_1987@126.com
Author 3 - Wu CL - The author contributed to thedevelopment of the selection criteria, and the riskof bias assessment strategy.
Email: huchaying_198610@163.com
Author 4 - N Tian - The author is the guarantorof funding acquisition, corresponding author in thisarticle, and will act as an arbitrator in the event of adisagreement. All authors have read and approvedthe final manuscript.
Email: acurfrong@126.com