

INPLASY PROTOCOL

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None declared.

Protocol for systematic review and meta-analysis of prognostic value of sarcopenia in advanced HCC patients treating with systemic therapy.

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Review question / Objective: P: Advanced HCC patients under systemic therapy; I: low skeletal muscle mass (LSMM); C: Non-LSMM; O: overall survival or mortality.

Eligibility criteria: (1) cohort studies or cross sectional studies investigations with HCC patients treated with systemic therapy; (2) the articles estimated pretreatment skeletal muscle mass measured by CT-images; (3) studies provided statistical data about the prevalence pretreatment LSMM or influence of LSMM on OS or PFS.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 February 2023 and was last updated on 03 February 2023 (registration number INPLASY202320011).

INTRODUCTION

Review question / Objective: P: Advanced HCC patients under systemic therapy; I: low skeletal muscle mass (LSMM); C: Non-LSMM; O: overall survival or mortality.

Rationale: To assess the prevalence and impact of LSMM in patients undergoing

systemic therapy for hepatocellular carcinoma.

Condition being studied: LSMM is a predictor of poor prognosis in patients with HCC. Several new studies, particularly on the use of immunotherapy, have been published in 2022, highlighting the need for an updated review of this topic.

METHODS

Search strategy: PubMed and Embase database were screened for studies related to the association of pre-treatment sarcopenia and survival in HCC patients under systemic therapy.

Participant or population: Advanced HCC patients under systemic therapy.

Intervention: LSMM.

Comparator: Non-LSMM.

Study designs to be included: Cohort study or cross section study.

Eligibility criteria: (1) cohort studies or cross sectional studies investigations with HCC patients treated with systemic therapy; (2) the articles estimated pretreatment skeletal muscle mass measured by CT-images; (3) studies provided statistical data about the prevalence pretreatment LSMM or influence of LSMM on OS orPFS.

Information sources: Additional articles were identified via hand searches of the reference lists of pertinent original studies and relevant reviews

Main outcome(s): Overall survival or mortality.

Data management: The OS and PFS were evaluated by the pooled crude unadjusted HR or adjusted HR and 95% CIs using random effects model with heterogeneity across studies assessed by the I² and the Cochran's Q statistic.

Quality assessment / Risk of bias analysis: Protocol will define the method of literature critique/ appraisal use, and will use Newcastle-Ottawa Scale for relevant content and methodology used in the each of the papers to be reviewed.

Strategy of data synthesis: Data extraction form in Excel document Reviewer number 1 (MH) will review first, followed by reviewer number 2 (CW), which will be done

independently. If necessary reviewer number 3 will review if there are any disparities between the two initial reviews.

Subgroup analysis: Subgroup data were provided according to treatment regimen (lenvatinib, sorafenib, and immunotherapy), study region (Asian and non-Asian area) and method estimated muscle mass (skeletal muscle index [SMI] and psoas muscle index [PMI]).

Sensitivity analysis: Funnel plots and sensitivity analyses were performed to identify the sources of heterogeneity and ensure the stability of obtained results.

Language restriction: No language restriction.

Country(ies) involved: Taiwan.

Keywords: Hepatocellular carcinoma; systemic therapy; sarcopenia; LSMM.

Contributions of each author:

Author 1 - Meng-Hsuan Kuo - drafting of the article; acquisition of patients and clinical data, analysis, and interpretation of the data; and critical revision for important intellectual.

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