

**Risk factors for liver metastasis of gastric cancer :
a systematic review and meta-analysis**

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chinese medicine.**ADMINISTRATIVE INFORMATION****Support** - YXH2022ZX02120.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202590017**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 September 2025 and was last updated on 6 September 2025.**INTRODUCTION**

Review question / Objective The purpose of this study is to investigate the risk factors of liver metastasis of gastric cancer. Participants : patients with gastric cancer diagnosed by histopathology (including all histological types such as adenocarcinoma and signet ring cell carcinoma) ; control group : gastric cancer patients without liver metastasis ; outcome : liver metastasis ; study type : prospective cohort study, retrospective cohort study, case-control study.

Condition being studied The published observational studies (cohort studies or case-control studies) of gastric cancer patients (subjects) confirmed by pathology were included. These studies need to explore their clinicopathological features (such as TNM stage, Lauren classification, vascular invasion) or molecular markers (exposure factors), and clearly report the correlation between these factors and the occurrence of liver metastasis (outcome

indicators) (such as OR and its 95 % confidence interval). At the same time, types of studies such as incomplete data, inability to extract valid data, case reports and reviews were excluded to ensure that data could be combined quantitatively and independent risk factors for liver metastasis of gastric cancer were comprehensively analyzed.

METHODS

Participant or population Participants : patients with gastric cancer diagnosed by histopathology.

Intervention This study is an observational study and does not involve intervention measures.

Comparator The type of this study was observational study. Control group : gastric cancer patients without liver metastasis. Outcome index : liver metastasis.

Study designs to be included Observational studies.

Eligibility criteria According to the CSCO guidelines, patients with histopathologically confirmed gastric cancer (including all histological types such as adenocarcinoma, signet ring cell carcinoma, etc.)

Diagnostic criteria for liver metastasis : confirmed by clinical imaging or liver biopsy.

Information sources PubMed、MEDLINE、Embase、Web of Science、The Cochrane Library、Scopus、ovid.

Main outcome(s) Risk factors for liver metastasis: Clinicopathological features (such as TNM stage, Lauren classification, vascular invasion) or molecular markers.

Quality assessment / Risk of bias analysis Newcastle-Ottawa Scale.

Strategy of data synthesis Review Manager 5.3 software and Stata 14.0 software were selected for meta-analysis. P50 % considered heterogeneity, and the random effect model was selected to combine the effect size, and the fixed effect was selected to combine the effect size without heterogeneity.

Subgroup analysis Subgroup analysis was performed on the incidence of liver metastasis in patients with gastric cancer according to different regions and study types (case-control study, cohort study).

Sensitivity analysis Sensitivity analysis was performed using Review Manager 5.3 software, and the sensitivity of the article was reflected by deleting the change of the effect size after one of the studies.

Country(ies) involved CHINA.

Keywords Gastric Cancer, Liver Metastasis, Risk Factors, Influencing Factors, Systematic Review.

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