INPLASY PROTOCOL

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Corresponding author:
Xiang Yan

1204633259@qq.com

Author Affiliation:
The First Hospital of Lanzhou University

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None.

MEP1A in diagnosis of different cancers: A protocol of systematic review and meta-analysis

Chen, Y[1]; Wu, FF[2]; Zhang, L[3]; Yan, X[4].

Review question / Objective: **What is the predictive value of MEP1A in the diagnosis of different cancers?**

Condition being studied: **Cancer is the second leading cause of death in the world after cardiovascular disease, mainly due to the lack of early symptoms and early diagnosis, as well as the high recurrence rate after radical surgery and conventional treatment. But in fact, early cancer without metastasis can be cured as long as it is detected early. Nowadays, cancer is becoming the main cause of death. The detection of biomarkers can know the current biological process of the body, which may play a helping role in disease identification, early diagnosis and prevention, and monitoring in the treatment process. Therefore, the discovery and selection of valuable biomarkers have become an important hotspot of current research.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 June 2020 and was last updated on 22 June 2020 (registration number INPLASY202060081).

INTRODUCTION

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METHODS

Participant or population: Patients with common tumors including gastric cancer, lung cancer, colorectal cancer, esophageal cancer, liver cancer, breast cancer, cervical cancer, prostate cancer, ovarian cancer and some other tumors with a higher incidence or mortality. There are no limitations in age, race or nationality.

Intervention: MEP1A were used for cancer diagnosis.

Comparator: Healthy people served as the controls.

Study designs to be included: Randomized controlled trials, cohort studies, case-control studies, or cross-sectional studies.

Eligibility criteria: Patients with common tumors including gastric cancer, lung cancer, colorectal cancer, esophageal cancer, liver cancer, breast cancer, cervical cancer, prostate cancer, ovarian cancer and some other tumors with a higher incidence or mortality. There are no limitations in age, race or nationality; MEP1A were used for cancer diagnosis; Healthy people served as the controls; Randomized controlled trials, cohort studies, case-control studies, or cross-sectional studies. The following studies will be excluded, such as review, comments, case reports, non-human study, uncontrolled study, or studies were not in English/Chinese.

Information sources: All the studies were obtained by searching Chinese and English databases: PubMed, Cochrane Library, China National Knowledge Infrastructure and Chinese Biomedical Literature Database. The combination of subject words and free words were used for retrieval. The language is limited to Chinese and English. The search terms mainly included "MEP1A, meprin-α, meprin alpha, Meprin A Subunit Alpha" AND "cancer, tumour, tumor, neoplasm, carcinoma".

Main outcome(s): Sensitivity, specificity, positive predictive value, negative predictive value, positive likelihood ratio, negative likelihood ratio, diagnostic odds ratio, area under the curve and their respective 95% confidence intervals.

Quality assessment / Risk of bias analysis: Quality assessment will be performed using the QUADAS-2 tool. This is an appropriate tool for the quality assessment of internal and external validity of diagnostic test accuracy studies. Studies who have a very low score and therefore have a very high risk of bias will be excluded from further analysis. 2 reviewers will be involved in the quality assessment. Disagreements will be resolved by discussion between the 2 reviewers after their initial assessment.

Strategy of data synthesis: The data of the two-by-two tables will be used to calculate sensitivity and specificity for each study. We will present individual study results graphically by plotting the estimates of sensitivity and specificity (and their 95% confidence intervals (CI)) in both forest plots and on the summary receiver operating characteristic (sROC) curve plots. Pooled estimates of the sensitivity and specificity were obtained by the DerSimonian-Laird method (random effect model) to incorporate variation among studies, in case of data heterogeneity. The heterogeneity between studies was estimated using the I^2 statistic, and $I^2 \leq 50\%$, indicating negligible statistical heterogeneity, $I^2 > 50\%$, indicating significant statistical heterogeneity. Sensitivity analysis was performed to test

whether the low-quality study could influence the stability of the results. Egger's test was utilized to assess publication bias.

Subgroup analysis: Subgroup analyses based on different cancers.

Sensibility analysis: This study will perform a sensitivity analysis to examine the stability of study findings by excluding low-quality study.

Country(ies) involved: China.

Keywords: MEP1A; cancer; diagnosis; systematic review.

Contributions of each author:
Author 1 - Yong Chen - Author 1 drafted the manuscript.
Author 2 - Fangfang Wu - Author 1 and author 2 are the co-first authors, who jointly drafted the manuscript.
Author 3 - Li Zhang - The author contributed to the development of the selection criteria and the risk of bias assessment strategy.
Author 4 - Xiang Yan - The author read, provided feedback and approved the final manuscript.