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Characterization and Treatment of Brain Metastases from Pancreatic Cancer: A Systematic Review

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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 8 January 2025 and was last updated on 1 February 2025.

INTRODUCTION

Review question / Objective
R Characterization and treatment of brain metastases from pancreatic cancer.

Condition being studied The prognosis for pancreatic cancer is extremely poor and many nearly half of all pancreatic cancer patients have metastases by the time they are diagnosed. Pancreatic cancer can metastasize to any organ, such as the liver, lungs, and so on. Brain metastases are very rare among metastatic sites, and patient characteristics and treatment deserve more in-depth and comprehensive study.

METHODS

Participant or population Inclusion: Patients with brain metastases from pancreatic cancer.
 Exclusion: Brain metastases of non-pancreatic origin.

Intervention Surgical resection: synchronous/ isochronous resection of primary and metastatic sites.

Adjuvant therapy: radiotherapy, chemotherapy, combined radiotherapy and gamma knife radiosurgery, etc.

Comparator Different treatment modalities, different brain metastasis sites.

Study designs to be included Randomized controlled trials (RCTs), controlled or uncontrolled, prospective or retrospective cohort studies, and case reports will be included. Patents, conference proceedings, posters, book chapters, reviews without original data, animal studies, non-English-language articles, abstract-only articles, and articles lacking prognostic and treatment information will be excluded.

Eligibility criteria Inclusion: (1) Brain metastases originating from pancreatic cancer (2) reported the treatment modality and prognosis used by the patient (3) patient age ≥ 18 .

Information sources The review authors will search the following electronic literature databases: PubMed, EMBASE, Scopus, Web of Science. The search also includes manual retrieval of reference lists of relevant articles or related systematic reviews, as well as citation of references in Web of Science.

Main outcome(s) Overall survival: time from diagnosis of pancreatic cancer to death and time from diagnosis of brain metastases to death.
Progression-free survival: Time to disease progression after resection of brain metastases.

Quality assessment / Risk of bias analysis For cohort and case-control studies, the Newcastle-Ottawa scale (in its relevant version) will be employed to evaluate the risk of bias. In the context of randomized controlled trials, the tools provided by the Cochrane Collaboration will be utilized for the assessment of risk of bias.

Strategy of data synthesis All graphical presentations will be created using GraphPad Prism. All statistical analyses in this study will be performed using R software. P values of < 0.05 will be considered statistically significant. Data will be combined using meta analysis if data and heterozygosity allow.

Subgroup analysis If sufficient data are available from the primary study, the following subgroups will be analyzed: 1) The impact of whether or not surgery is performed on the primary site on the treatment of brain metastasis lesions. 2) different sites of brain metastasis.

Sensitivity analysis Sensitivity analyses will be performed using R software.

Country(ies) involved China.

Keywords Pancreatic cancer, brain metastases, treatment, systematic review.

Contributions of each author

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