

INPLASY PROTOCOL

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Stereotactic biopsy for brainstem lesions: A meta-analysis with non-comparative binary data

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Review question / Objective: To evaluate the diagnostic yield and safety of brainstem stereotactic biopsy for brainstem lesions.

Condition being studied: We herein conducted a meta-analysis to explore the diagnostic yield and safety of brainstem stereotactic biopsy for brainstem lesions; also, the subgroup analysis of the procedure with different guided techniques (i.e., CT and MRI) and in diverse populations (i.e., adults and children) was performed to gauge the more pragmatic clinical utility.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 September 2021 and was last updated on 13 September 2021 (registration number INPLASY202190034).

INTRODUCTION

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procedure with different guided techniques (i.e., CT and MRI) and in diverse populations (i.e., adults and children) was performed to gauge the more pragmatic clinical utility.

METHODS

Search strategy: We conducted a computerized search in the PubMed, Web of Science, Cochrane Library, and APA

psyInfo databases to identify English-language articles up to May 12th, 2021. The following terms were used: (“brainstem lesion[MeSH]” or ((brainstem or (brain stem) or pons or pontine or mesencephalon or midbrain or (medulla oblongata)) AND (tumor or tumour or cancer or neoplasm or glioma or carcinoma)) AND (biopsy or biopsies) AND (diagnosis or diagnostic or diagnose).

Participant or population: Patients with brainstem mass lesion, regardless of ages.

Intervention: Brainstem stereotactic biopsy brainstem mass lesion.

Comparator: Not applicable.

Study designs to be included: Clinical studies.

Eligibility criteria: Clinical articles evaluating the diagnostic yield and/or safety of brainstem stereotactic biopsy were considered eligible for our purposes. Additionally, potential studies required to meet the following inclusion criteria: (1) populations—patients with brainstem mass lesion, regardless of ages; and (2) reference standards—the ultimate diagnosis was compared with histopathologic results plus clinical assessments. Retrieved citations that emerged any of the following criteria were removed: (1) article type—reviews, case reports, case series that involved less than 10 patients, editorials, letters, comments, and conference papers; (2) diagnostic methods—only radiological images but without pathological examinations; and (3) overlapping study populations.

Information sources: PubMed, Web of Science, Cochrane Library, and APA psyInfo databases to identify English-language articles up to May 12th, 2021.

Main outcome(s): The primary outcome was the weighted average diagnostic yield of stereotactic biopsy for brainstem lesions, and the secondary outcomes were the weighted average proportions of

temporary complications, permanent deficits, and deaths.

Quality assessment / Risk of bias analysis: Quality assessment of the analyzed studies was not judged because the non-comparative data were impossible to present any risk of publication bias.

Strategy of data synthesis: The crude proportions with 95% confidence intervals (CIs) in all analyzed studies were independently calculated and then pooled together to the weighted average values. The number of events, if were not provided by the publication, was calculated in light of the endpoint percentage or other relevant information.

Subgroup analysis: N/A.

Sensitivity analysis: N/A.

Language: English.

Country(ies) involved: China.

Other relevant information: Study characteristics—family name of the first author, publication year, study duration, original country or area, study type, number of patients, and tumor/total ratio; (2) demographic characteristics—mean age, patient cohort (i.e., pediatric patient population and adult patient population) and male/female ratio; (3) examination characteristics—guided techniques or assistant methods; and (4) outcome characteristics—diagnostic yield and the safety, wherein comprised of temporary complications, permanent deficits, and deaths.

Keywords: stereotactic biopsy; brainstem lesion; diagnostic yield; safety; meta-analysis; stereotacticbiopsy.

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