International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

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INTRODUCTION

Review question / Objective The aim of this systematic review is to synthesize existing evidence on the involvement of the choroid plexus in the mechanisms underlying the pathophysiology and progression of multiple sclerosis. Specifically, it will address the following question: What role does the choroid plexus play in the pathophysiology and progression of multiple sclerosis as evidenced by preclinical studies on human samples and animal research?

Condition being studied Multiple sclerosis is a chronic inflammatory and neurodegenerative disease of the central nervous system, leading to progressive disability. Emerging evidence suggests that dysfunction of the choroid plexus – a critical regulator of CNS homeostasis influences multiple sclerosis progression through various mechanisms.

METHODS

Search strategy Queries were tailored for each of the bibliographic databases.

The role of the choroid plexus in the pathophysiology and progression of multiple sclerosis: a systematic review of preclinical studies in human samples and animal research

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202550053

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 May 2025 and was last updated on 19 May 2025.

Hence, the query for MEDLINE (via PubMed) is: ("Multiple Sclerosis" [MeSH Terms] OR "Multiple Sclerosis"[Title/Abstract] OR "MS"[Title/Abstract]) AND ("Choroid Plexus" [MeSH Terms] OR "Choroid Plexus"[Title/Abstract] OR "Blood CSF barrier"[Title/Abstract] OR "B-CSF barrier"[Title/ Abstract] OR "Blood-CSF barrier"[Title/Abstract] OR "BCSFB"[Title/Abstract] OR "Blood Cerebrospinal Fluid Barrier"[Title/Abstract]) AND ("Experimental Autoimmune Encephalomyelitis"[Title/Abstract] OR "EAE"[Title/ Abstract] OR "cuprizone"[Title/Abstract] OR "animal*"[Title/Abstract] OR "human*"[Title/ Abstract] OR "patient*"[Title/Abstract] OR "people"[Title/Abstract] OR "person*"[Title/ Abstract] OR "serum"[Title/Abstract] OR "plasma"[Title/Abstract] OR "CSF"[Title/Abstract] OR "cerebrospinal fluid"[Title/Abstract] OR "donor*"[Title/Abstract] OR "tissue"[Title/Abstract] OR "in vitro"[Title/Abstract] OR "ex vivo"[Title/ Abstract] OR "model*"[Title/Abstract]).

The query for Scopus (searching within Article title, Abstract, Keywords) is: ("Multiple Sclerosis" OR "MS") AND ("Choroid Plexus" OR "Blood CSF barrier" OR "B-CSF barrier" OR "Blood-CSF barrier" OR "BCSFB" OR "Blood Cerebrospinal Fluid Barrier") AND ("Experimental Autoimmune Encephalomyelitis" OR "EAE" OR "cuprizone" OR "animal*" OR "human*" OR "patient*" OR "people" OR "person*" OR "serum" OR "plasma" OR "CSF" OR "cerebrospinal fluid" OR "donor*" OR "tissue" OR "in vitro" OR "ex vivo" OR "model*").

Lastly, the query for Web of Science Core Collection is:

TS=("Multiple Sclerosis" OR "MS") AND TS=("Choroid Plexus" OR "Blood CSF barrier" OR "B-CSF barrier" OR "Blood-CSF barrier" OR "BCSFB" OR "Blood Cerebrospinal Fluid Barrier") AND TS=("Experimental Autoimmune Encephalomyelitis" OR "EAE" OR "cuprizone" OR "animal*" OR "human*" OR "patient*" OR "people" OR "person*" OR "serum" OR "plasma" OR "CSF" OR "cerebrospinal fluid" OR "donor*" OR "tissue" OR "in vitro" OR "ex vivo" OR "model*").

Participant or population Human samples from multiple sclerosis patients and controls; in vivo, in vitro, and ex-vivo animal research modeling multiple sclerosis.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Preclinical studies assessing the role of choroid plexus in the pathophysiology and progression of multiple sclerosis.

Eligibility criteria The review will exclude studies focusing exclusively on choroid plexus imaging in humans and its relevance on multiple sclerosis.

Information sources The bibliographic databases MEDLINE (via PubMed), Scopus and Web of Science will be searched for relevant material for inclusion in the review. The Boolean operators AND and OR will be used to refine the search.

Main outcome(s) Impact on development and progression of multiple sclerosis.

Quality assessment / Risk of bias analysis Two reviewers will assess the risk of bias for individual studies. A third investigator will help solve eventual disagreements.

Strategy of data synthesis Given the qualitative nature of the review, the synthesis will focus on examining qualitative data regarding choroid plexus dysfunction and its role in multiple sclerosis. No formal statistical analysis will be conducted.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Country(ies) involved Portugal.

Other relevant information There are two organisational affiliations involved in this study: Faculdade de Medicina da Universidade do Porto, Porto, Portugal and Instituto de Investigação em Ciências da Vida e da Saúde, Universidade do Minho, Braga, Portugal.

Keywords Multiple Sclerosis; Choroid Plexus; MS models; blood-CSF barrier.

Contributions of each author

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