INPLASY PROTOCOL

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Review Stage at time of this submission: Piloting of the study selection process.

Conflicts of interest:
None.

Inflammatory cytokine levels in multiple system atrophy: a protocol for systematic review and meta-analysis

Wang, HZ[1]; Wang, WH[2]; Yi, ZQ[3]; Zhao, PW[4]; Zhang, H[5]; Pan, PL[6].

Review question / Objective: The main question to address in the study is to determine whether the concentrations of inflammatory cytokine differ quantitatively between patients diagnosed with multiple system atrophy and control subjects as measured from peripheral blood and cerebrospinal fluid.

Condition being studied: Multiple system atrophy (MSA) is a rare, rapidly progressing and fatal neurodegenerative disease. Clinically, MSA is characterized by parkinsonism, cerebellar impairment and autonomic dysfunction. Studies have shown that elevated levels of some inflammatory cytokines deserve to be used as a potential diagnostic or severity biomarker for MSA. Inflammatory marker performances in individual studies vary greatly and need comprehensive analyses.

INTRODUCTION

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shown that elevated levels of some inflammatory cytokines deserve to be used as a potential diagnostic or severity biomarker for MSA. Inflammatory marker performances in individual studies vary greatly and need comprehensive analyses.

METHODS

Search strategy: The databases PubMed, EMBASE, and Web of Science were searched, using the keywords: ((Atrophy, Multiple System) OR (Multiple System Atrophies) OR (Multisystemic Atrophy) OR (Atrophies, Multisystemic) OR (Atrophy, Multisystemic) OR (Multisystemic Atrophies) OR (Multiple System Atrophy Syndrome) OR (Multisystem Atrophy) OR (Atrophies, Multisystem) OR (Atrophy, Multisystem) OR (Multisystem Atrophies) OR (Multiple System Atrophy) OR MSA) AND ((inflammation) OR cytokine OR chemokine OR interferon OR interleukin OR (transforming growth factor) OR (tumor necrosis factor) OR (C-reactive protein)).

Participant or population: Inclusion criteria: Patient diagnosed with multiple system atrophy Exclusion criteria: (1) the population is younger than 18 years (2) with other serious neurodegenerative disease (3) People caused by serious complications (4) People who had brain surgery in the past.

Intervention: Studies investigate inflammatory cytokine concentrations in peripheral blood and cerebrospinal fluid (CSF) differences between patients with MSA and healthy controls.

Comparator: Healthy controls.

Study designs to be included: Case-control studies on the levels of inflammatory cytokine in multiple system atrophy.

Eligibility criteria: Inclusion criteria consisted of: (1) study design limited to case-control studies; (2) studies measuring peripheral blood or CSF inflammatory factor concentrations; (3) the inclusion of healthy subjects as controls. Exclusion criteria included:(1) non-human studies, commentaries, reviews, meetings, and editorials or manuscripts unrelated to the research topic; (2) case reports and case series; (3) without HCs; (4) without necessary data; (5) total number of studies for a level of cytokine was less than two; (6) the samples were collected before patients were diagnosed with MSA.

Information sources: The databases PubMed, EMBASE, and Web of Science were searched limitations from the database inception to March 17, 2020.

Main outcome(s): Inflammatory cytokine concentrations in peripheral blood or cerebrospinal fluid differences between patients with MSA and healthy controls.

Quality assessment / Risk of bias analysis: To assess the quality of the study, two independent authors will use the Newcastle-Ottawa scale.

Strategy of data synthesis: Data synthesis will be conducted using Stata 15.0 software to analyze the data. In order to evaluate the robustness of the results, we will conduct some supplementary analysis such as subgroup analyses, meta-regressions, publication bias, and sensitivity analyses.

Subgroup analysis: Based on the dominant symptoms, MSA can be classified into two categories: (1) MSA with predominant parkinsonism featuring extrapyramidal symptoms (MSA-P) and (2) MSA with predominant cerebellar ataxia featuring cerebellar ataxia (MSA-C). We will analyze inflammatory cytokine concentrations in MSA-P and MSA-C peripheral blood or cerebrospinal fluid. We will also study the influence of race, nationality and other factors on the results.

Sensibility analysis: In order to ensure the robustness and reliability of the results, sensitivity analysis will be conducted by excluding highly biased studies.

Country(ies) involved: China.

Keywords: Multiple system atrophy; Inflammation; Cytokine; biological marker; Meta-analysis.

Contributions of each author:

Author 1 - HongZhou Wang - The author drafted the manuscript.

Author 2 - WanHua Wang - The author provided statistical expertise.

Author 3 - ZhongQuan Yi - The author contributed to the development of the selection criteria, the risk of bias assessment strategy, and data extraction.

Author 4 - PanWen Zhao - The author contributed to the development of the selection criteria, the risk of bias assessment strategy, and data extraction.

Author 5 - Hui Zhang - The author read, provided feedback and approved the final manuscript.

Author 6 - PingLei Pan - The author read, provided feedback and approved the final manuscript.