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LABORATORY DIAGNOSIS OF MULTIPLE SCLEROSIS – AN AUTOIMMUNE DISEASE

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Introduction

Multiple sclerosis is an autoimmune and inflammatory demyelinating disease of the central nervous system in young adults. It affects 0.25-6 % of general population and have a major socioeconomic impact. The exact aetiology and pathogenesis are still unclear despite recent advances in understanding this mysterious disease. The complexity of the clinical picture of multiple sclerosis can lead to delayed diagnosis. In this sense, the results of laboratory tests are useful in establishing the final diagnosis, choosing the right treatment and preventing long-term disability.

Keywords

Multiple sclerosis, autoimmune disease, laboratory diagnosis

Purpose

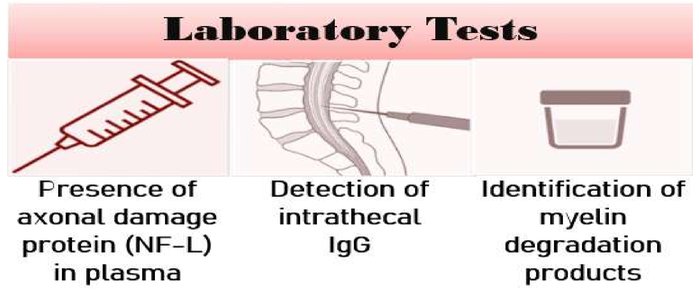
Evaluation of the recent literature on the laboratory diagnosis of multiple sclerosis.

Material and methods

In order to assess the need for laboratory tests in establishing the diagnosis of multiple sclerosis, a series of clinical protocols, scientific articles and recent experimental studies, both national and international, were evaluated and submitted to the study.

Review

There are no laboratory tests or markers specific for multiple sclerosis diagnosis. However, a few tests, are helpful in diagnosing or excluding this disease as the cause of a person's signs and symptoms. The most commune used laboratory tests are the biochemical testing of cerebral spinal fluid and the tests for quantitative and qualitative detection of intrathecal immunoglobulin G.



A patient's CSF and serum are evaluated by electrophoresis and isoelectric focusing. The presence of two or more IgG bands in CSF that are not present in serum is a positive test for oligoclonal banding. At the same time, calculation of CSF immunoglobulin G index can help differentiate excess production of IgG within the central nervous system and several other diseases that conduct to leakage of plasma proteins into the CSF. Recent studies have shown an increase in the concentration of IgG in the cerebral spinal fluid in over 90% of patients.

IgG index = [IgG (CSF) / IgG (serum)] / [Albumin (CSF) /Albumin (serum)]

Increased concentrations of myelin basic protein in CSF indicate that demyelination is taking place and it may be used to assess disease activity.

An innovative approach is to perform blood tests related to the presence of axonal damage protein (NF-L) in plasma. Neurofilament light chain (NFL) provide an indication of axonal damage and neuronal death. Some studies show that there is a general increase in NF-L levels in patients with multiple sclerosis, and a positive correlation with relapses.

At the same time, new research in the field has proposed tests for the quantitative identification of myelin degradation products in the excreted urine of patients but which have not yet been subjected to clinical practice.

Conclusions

There are currently no specific laboratory tests that would confirm the diagnosis of multiple sclerosis. Therefore, before establishing the diagnosis of multiple sclerosis it is necessary to exclude the possibility of other diseases.