# Software for the morphometric analysis of oligoclonal bands for the diagnosis of multiple sclerosis

A research group of the Andalusian Public Health System, in collaboration with the University of Seville, has developed algorithms which allow extract quantitative information helpful in computer-aided diagnostic tools for classification of clinically isolated syndromes in multiple sclerosis.

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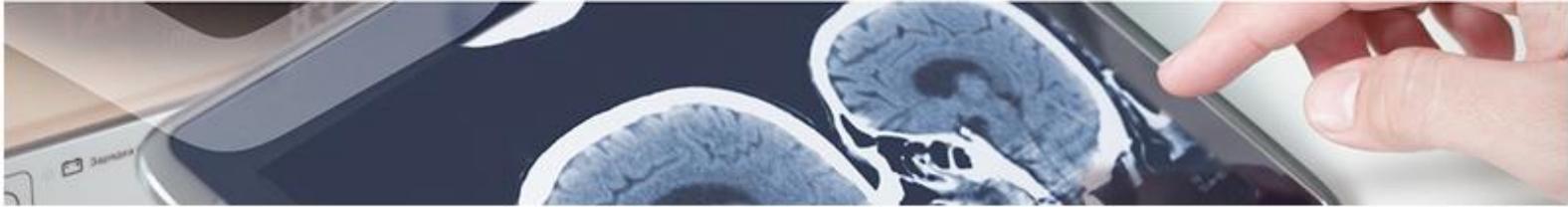
Description

Currently, determination of immunoglobulin-G oligoclonal bands (OCBs) in cerebrospinal fluid (CSF) is one of the most important tests supporting diagnosis of multiple sclerosis (MS), showing high levels of sensitivity and specificity. Bands are obtained by a standard electrophoretic procedure and evaluated by visual inspection. An expert observer is required to compare samples of CSF and serum of the patient. Correct identification and counting of lines corresponding to proteins in bands may be difficult due to their subtle differences in optical density. Thus, computer-aided tools are of great interest to systematize the process and to assist in the classification of cases showing clinically isolated syndromes who may or not develop MS.

Final program was developed as a Visual Basic graphical user interface. Thresholds for filtering and detection can be interactively modified by user. Since there is no "gold standard" defining number or position of OCBs in any particular case, adjustments were selected so that the program detected all stripes identified as such by an expert senior researcher in the training set. An optimal combination of values was obtained as robust enough against changes in illumination conditions and image quality.

This software has been specifically designed to allow for a user independent detection of stripes following a systematic, reproducible procedure. Numerical values of obtained OCBs position and intensity data may then be processed to extract further information of potentially useful clinical meaning.

1. Application of OCB-classifying algorithms to clinically isolated syndromes may be very helpful for early detection of patients who will develop multiple sclerosis.
2. Automated evaluation of bands is a user-independent, reproducible and systematic procedure yielding data bases useful for different research areas.
3. The program to extract bands from images of electrophoretic membrane has been extensively validated and is being used routinely at the institution of the clinicians who have developed the present technology.

Intellectual Property

This technology is protected by intellectual property rights.

Aims

We are looking for a partner interested in a license or/and collaboration agreement to further validate and exploit this innovative technology.

Classification

Area: ICT
Pathology: Central Nervous System

Advantages