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ORIGINAL COMMUNICATION

Assessing the value of spinal cord lesions in predicting development of multiple sclerosis in patients with clinically isolated syndromes

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Abstract The purpose of this study was to determine the value of spinal cord lesions as a predictive factor for conversion in clinically isolated syndrome (CIS) patients. Patients with CIS and without immunomodulatory treatment were prospectively included. Age at onset, sex, clinical syndrome at onset, oligoclonal bands, and presence, number and location of lesions on brain and spinal MRI were analyzed. Conversion to multiple sclerosis (MS) was the primary endpoint. Cox regression was used to compare outcomes between groups. A total of 75 patients were included: 53 (71%) women, mean age at onset 32.7 years (SD ± 7.5), mean follow-up time 72.5 months (SD + 9; range 17–104 months). There were 11 (14.6%) patients with one focal spinal cord lesion, while 13 (17%) patients had two or more spinal cord lesions at the first scan during the onset of the disease. Of the 23 patients (30.6%) who converted to clinically definite MS (CDMS), 2 had a normal spinal cord MRI, 8 patients had one spinal cord lesion, and 13 had more than one lesion on MRI ($p < 0.001$). In multivariable analyses, one focal spinal cord lesion was significantly associated with increased risk of conversion to MS ($p = 0.01$, HR 3.5, CI 95% 2.1–6.9), while the presence of two or more focal spinal cord lesions was independently associated with a higher risk of conversion to MS ($p < 0.001$, HR 5.9, CI 95% 3.2–10.8). CIS patients with an abnormal baseline spinal cord MRI have a higher risk for developing clinically definite MS, independent of brain lesions as well as the presence of cerebrospinal fluid oligoclonal banding (OSF-OB) .

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Introduction

Approximately 90% of patients with multiple sclerosis (MS) initially present a clinically isolated syndrome (CIS) but convert to clinically definite MS (CDMS) when a second attack occurs [4, 7, 11].

MRI is a helpful tool used in CIS patients, for two main reasons: other diseases can be excluded and the risk and probability for developing MS can be established [5, 13]. CIS patients with an abnormal brain MRI at onset have a substantially higher risk of conversion to CDMS than those with a normal MRI. However, little is known about the likelihood of developing MS based on the presence or absence of spinal cord lesions after a single episode.

The aim of the present study was to determine the value of spinal cord lesions as a predictive factor for conversion to MS in CIS patients, adjusted for other risk factors.

Methods

Patients included in the study were prospectively recruited from the MS Center of the Italian Hospital of Buenos Aires, Argentina from 1998–2010. Inclusion criteria were the following: (1) CIS suggestive of central nervous system demyelination involving the optic nerve, brainstem, cerebellum, or spinal cord not attributable to other diseases; (2) no previous history of a possible demyelinating event including MS defined by McDonald 2005 or Poser criteria [9, 10]. Any neurologic symptoms suggestive of MS lasting

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