(S20) DECREASE IN NUMBER OF T2/FLAIR LESIONS AFTER STARTING TREATMENT WITH NATALIZUMAB MAY NOT REPRESENT BRAIN TISSUE RECOVERY: A CASE REPORT
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Background: Magnetic resonance imaging (MRI) is used extensively to help in diagnosis, monitoring, and characterization of multiple sclerosis (MS). However, conventional MRI has limitations and cannot differentiate between an inflammatory, demyelinating process and ischemia and is insensitive to changes in normal-appearing white or gray matter. Several advanced (nonconventional) MRI techniques have been applied to detect and understand disease progression and possible neuroprotective effects of treatment. Few studies have been performed using nonconventional MRI to assess the effect of natalizumab treatment.

Objectives: To prospectively characterize the evolution of white matter lesions after treatment with natalizumab by using dynamic susceptibility contrast perfusion MRI and diffusion tensor imaging (DTI).

Methods: A 47-year-old woman with MS was started on natalizumab after other disease-modifying agents failed, while continuing to have multiple exacerbations. Brain MRI measurements of fractional anisotropy (FA), standard deviation DTI (SD), cerebral blood volume (CBV), and cerebral blood flow (CBF) were obtained before natalizumab treatment and a year after. Conventional MR images showed a slight decrease in the number of visible lesions on T2 views and no enhancement. White matter lesions in eight consecutive brain slices were isolated, marked as regions of interest (ROIs), followed, and analyzed using dynamic susceptibility contrast perfusion MRI and DTI.

Results: A number of T2/Flair hyperintense lesions seen on initial MRI disappeared on T2/Flair images a year later, but others remained visible. Compared with initial measurements, FA and SD decreased in all ROIs. CBV and CBF decreased further in T2/Flair lesions seen on follow-up MRI but increased in ROIs corresponding to T2/Flair lesions that disappeared. These changes did not reach statistical significance.

Conclusions: These results indicate that reduction in lesion size or disappearance on conventional MRI does not indicate decrease in disease progression or burden in a short follow-up study.

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