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# Optimized automated lesion segmentation method for Multiple Sclerosis: validation and comparison with state-of-the-art methods on a 3D-FLAIR public dataset with multi-rater consensus.

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## Résumé

Magnetic resonance imaging has become crucial for diagnosis and disease monitoring in multiple sclerosis (MS), and White Matter Hyperintensities (WMH) on FLAIR are considered a marker of MS. The White matter Hyperintensities Automatic Segmentation Algorithm (WHASA) (Samaille et al., 2012) has been developed for age-related WMH on 2D images, but needs to be optimized for 3D-FLAIR and MS patients. 3D-FLAIR acquisitions can yield differences in grey and white matter contrast compared to 2D images. Furthermore, MS lesions show differences in intensity levels compared to age-related WMH. This study focuses on the improvements resulting from optimization and the comparison with three automated lesion segmentation tools: one optimized for MS (LST - Schmidt et al., 2012), and two validated on a mixed cohort, with MS and age-related WMH (LesionBrain - Manjon et al., 2016 and Lesion-TOADS - Shiee et al., 2010)

**Mots-Clés:** multiple sclerosis, white, matter, lesions, segmentation

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