

ASSOCIATION OF BRAIN MRI VOLUMETRY RESULTS WITH CHANGES IN EDSS AMONG PATIENTS WITH MULTIPLE SCLEROSIS DURING A 5-YEAR FOLLOW-UP

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Objectives. To investigate the relation between brain volumetry results and EDSS among patients with multiple sclerosis in relation to provided treatment during a 5-year period.

Materials and Methods. In total, 66 consecutive patients with confirmed MS were enrolled in a retrospective cohort study, predominantly females, 62.1% (n = 41); 92.4% (n = 61) relapsing-remitting MS, 7.6% (n = 5) secondary-progressive (SP) MS patients. The median age was 45 (interquartile range (IQR) 37–49). All patients were evaluated clinically using EDSS and radiologically using FreeSurfer© 7.2.0 during a 5-year follow-up.

Results. Baseline EDSS ranged between 1 and 6 with a median of 1.5 (IQR 1.5–2.0), after 5 years EDSS went between 1 and 7, median of 3.0 (IQR 2.4–3.6), $p < 0.05$. During a 5-year period, EDSS increased in 86.4% (n = 47) patients with a significant increase among SPMS patients (median 7.0; IQR 5.0–7.0), compared with RRMS patients (median 2.5; IQR 2.0–3.3), $p < 0.001$. Significantly lower volumetry results were obtained in different brain areas including cortical and total grey and white matter, $p < 0.05$, with the most significant decrease in the left thalamus ($p = 0.001$) and right thalamus, $p < 0.001$. Most patients received specific therapy 9.7.0% (n = 64). All patient EDSS increased, the most significant rise noted in patients receiving 1st and 2nd line therapy, $p < 0.001$. In our study population, provided treatment did not influence volumetry results during a 5-year follow-up, $p > 0.05$.

Conclusions. Brain magnetic resonance volumetry results are significantly associated with disability progression. In our study, the most significant decrease was noted in the left and right thalamus. Therapy did not influence volumetry changes. Further studies with larger patient groups are warranted to determine the association between brain volume changes and MS patient disability progression in relation to the provided treatment.