

## Preventing brain volume loss

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Disease modifying drugs for relapsing-remitting MS are known to help prevent relapses and slow other signs of disease activity such as MS lesions, however, until recently it has been unclear whether these medications are also beneficial for slowing brain shrinkage (atrophy) in MS.

In a study published recently in the journal *PLOS One*, researchers from France and Italy set out to determine the effects of currently available disease modifying medications on brain atrophy in people with relapsing-remitting MS (RRMS). By combining the results of 35 clinical trials looking at a range of MS medications, including a total of 18,140 patients, the researchers aimed to determine whether existing medications are beneficial for preventing a reduction in total brain volume in people with RRMS.

They compared three groups: people treated with a 'first-line' disease modifying medication (such as glatiramer acetate, interferons, teriflunomide, BG-12, or laquinimod); people treated with a 'second-line' disease modifying medication (such as fingolimod, natalizumab, or alemtuzumab); and people who received a placebo in the clinical trials.

The researchers found that after 1 year of treatment, there was no difference between any of the groups in the total brain volume of people in each group. Each of the three groups showed a similar level of decrease in brain volume compared to a baseline measurement.

However, after 2 years of treatment, the first-line medications, while having benefits for preventing relapses, were not as beneficial as the second-line medications in preserving brain volume. The researchers found that the second-line medications had a larger effect on preventing brain volume loss over time, compared to either first-line medications or placebo. The authors suggest that this may result from the stronger anti-inflammatory effects of the second-line medications generally.

Being able to reliably predict the effect of a medication on brain volume is an important issue and one that is currently under much scrutiny, as MRI methods improve. Previously, there has been little correlation between brain volume and clinical outcomes such as relapses. However as MRI methods improve and more medications become available, reducing brain shrinkage may become an important measure of medication effectiveness.

It is important to note that, as this study pooled the results of many separate clinical trials of different medications, the results must be interpreted with caution as each of the different medications has a different mechanism of action and may affect the brain differently.

These results do not provide support for any one class of medication over another and it is important to speak with your neurologist about your individual circumstances and the treatment option best suited to you.