Supplementary Materials

Baseline predictive capabilities: those who relapsed versus those who did not (untreated group)

During clinical follow-up (5 years), 10/15 untreated patients relapsed (all within the first 3 years). No difference was found in the baseline periventricular MTR gradient between those who relapsed compared to those who did not (0.462 ± 0.084pu/band versus 0.590 ± 0.120pu/band respectively, p=0.551), including after adjustment for baseline whole-brain lesion number (p=0.847), baseline periventricular lesion number (p=0.607) or baseline mean whole brain NAWM MTR (p=0.438). While a significant difference was found in baseline whole-brain lesion number (14.6 ± 2.8 versus 20 ± 6.9 respectively, p=0.043), and a trend was seen in baseline periventricular lesion number (10.2 ± 2.4 versus 13.2 ± 4.7 respectively, p=0.052), no differences were found in baseline brain parenchymal fraction (0.713 ± 0.008 versus 0.712 ± 0.007 respectively, p=0.978) or baseline mean whole brain NAWM MTR (37.183 ± 0.216pu versus 37.036 ± 0.275pu respectively, p=0.898) between those that relapsed versus those who did not.

Evolution over time: those who relapsed versus those who did not (untreated group)

The rate of change in MTR gradient was significantly different between those who relapsed and those who did not (0.071 ± 0.026pu/band/year versus -0.052 ± 0.036pu/band/year respectively, p=0.001), and remained significant when change in whole brain lesion number (p=0.006), change in periventricular lesion number (p=0.005) or change in whole brain NAWM MTR (p=0.003) were added to the model. The rate of change in mean whole brain NAWM MTR was not significantly different between those who relapsed and those who did not (-0.185 ± 0.038pu/year versus -0.181 ± 0.053pu/year respectively, p=0.850), nor were the rates of change in whole-brain lesion number (1 ± 0.7/year versus 0.7 ± 0.6/year respectively, p=0.415), periventricular lesion number (1.8 ± 0.8/year versus 1.4 ± 0.8/year respectively, p=0.561) nor brain parenchymal fraction (-0.002 ± 0.001/year versus -0.005 ± 0.001/year respectively, p=0.273).