Objectives In Australian MSBase clinics, we describe baseline characteristics of relapsing-remitting MS (RRMS) patients treated with OCR, treatment pathways and early clinical outcomes.

Methods Secondary analysis using MSBase Registry data for RRMS patients with OCR initiation within 3 months of MSBase recorded visit. Descriptive statistics included demographics, disease course/duration, prior disease modifying therapies (DMT) and EDSS. Relapse data was described in patients with ≥6 months follow-up.

Results As of 4 June 2020, MSBase included 624 eligible Australian RRMS patients newly treated with OCR. Median age at OCR initiation was 42.5 years. OCR was first line therapy in 18.9% of patients. Most frequent DMTs in the 12 months prior to OCR were natalizumab (32.1%) and fingolimod (24.8%). Of 434 RRMS patients with ≥6 months follow-up, 392 remained relapse free (90.3%; 95% CI 81.6, 99.7) over a mean OCR exposure of 1.35 years. In this group, the annualized relapse rate (ARR) was 0.10 (95% CI 0.08–0.13), compared to an ARR of 0.83 in the 24 months pre-OCR start. Treatment discontinuation was recorded for 20 of these 434 patients in the overall RRMS cohort, treatment persistence at 12 and 24 months was 94.3% (95% CI: 90.9–96.1%) and 88.7% (95%CI 77.2–94.0%), respectively.

Conclusion Almost 20% of RRMS patients treated with OCR in Australian MSBase centres received OCR as a first line treatment. During OCR treatment, relapses and OCR discontinuations were rare.

VOLUMETRIC AND CONNECTIVITY PROFILE OF REGIONAL THALAMIC ABNORMALITY IN AMYOTROPHIC LATERAL SCLEROSIS

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Objectives Neurodegeneration in ALS follows a diffuse pattern of cortical involvement.1 We have previously highlighted that thalamic abnormality is a robust disease signature in ALS,2 but the integrity of thalamic nuclei and their clinical association remains unclear. We employed a novel segmentation technique for thalamic nuclei and track-weighted functional connectivity (TW-sFC) to characterize volumetric and connectivity profiles of regional thalamic abnormality.

Methods Forty ALS patients and 27 age-and-education matched controls were recruited. All patients underwent comprehensive clinical examination and 3T MRI scan (T1; DWI; rs-fMRI). Thalamic nuclei were robustly segmented from T1 images using the THOMAS pipeline.3 Whole-brain white matter fibre tracking was performed using MRtrix and combined with resting-state fMRI to generate combined structural and functional connectivity maps (TW-sFC).4

Results Reduced thalamus volume was observed bilaterally in ALS compared to control (p values < 0.036). Bilateral volumetric reduction was consistently observed across all regions except for the anterior thalamus in ALS (p values < 0.05). Significant increased TW-sFC was observed in ALS in the right anterior thalamus (p = 0.03) and right anterior ventral nuclei (p < 0.01). TW-sFC of the mediodorsal nuclei correlated with disease duration (p < 0.02) and disease progression rate (p < 0.03).

Conclusions Regional thalamic abnormalities are present in ALS and hold a significant association with clinical features. Variability in thalamic connectivity demonstrated significant clinical associations with disease duration, progression rate, and upper motor dysfunction. The findings reinforce that diffusion and functional MR imaging modalities are promising markers of disease burden in ALS.

REFERENCES