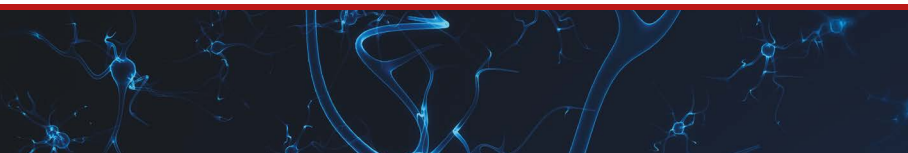
Parallel Session 3:
Multiple Sclerosis/Inflammatory

Thu 7 May, 17:15 - 18:15

Hall 1

1. Digital tools enable early identification of secondary progressive multiple sclerosis and readiness for emerging therapies: **Ryan Smith**
2. Central Vein Sign Guided Pathways: Fewer LPs, Faster MS Diagnosis: **Christopher Gilmartin**
3. Association between genetic ancestry and Multiple Sclerosis severity: **Ben Jacobs**
4. Disease modifying treatment decision-making in a multiple sclerosis randomised and observational clinical trial (DELIVER-MS): **Emma Tallantyre**
5. Temporal evolution of T1-dark rims, a proposed marker of smouldering lesion activity in MS: **Steven Aldridge**
6. Final Analyses of MINORE/SOPRANINO: Infant Humoral Response and One-Year Follow-up After Prenatal Ocrelizumab Exposure: **Ruth Dobson**



Digital tools enable early identification of secondary progressive multiple sclerosis and readiness for emerging therapies.

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Background: Recognition of secondary progressive multiple sclerosis (SPMS) in routine care is challenging, reflecting reliance on subjective assessment and unstructured longitudinal data. Digital transformation programmes enable objective criteria application, and therefore access to upcoming drugs (BTK inhibitors) for patients currently misdiagnosed with RRMS.

Methods: We analysed harmonised routine clinical data from five UK multiple sclerosis centres participating in a digital transformation programme. Clinician-recorded SPMS was compared with objectively defined SPMS using disability-based criteria. We examined proportions classified, timing of SPMS conversion, subsequent confirmed disability progression, and fulfilment of recent non-relapsing SPMS (nrSPMS) trial (HERCULES) eligibility criteria.

Results: Among 5,731 patients, 552 had clinician-diagnosed SPMS while 951 met objective criteria (372 met both). Objectively-defined SPMS was diagnosed 6.1 years earlier than by clinicians. Disability progression within five years was more common following objectively-defined (30.1%) than clinician-defined (21.4%) SPMS. Potential eligibility for tolebrutinib was met in 79 patients (when using clinician-defined nrSPMS), and in 308 patients using objective nrSPMS. Among current eligible patients, fewer than 5% were currently receiving infusion-based treatments.

Conclusions: Digital tools enable objective, scalable identification of SPMS and operationalisation of nrSPMS eligibility using routine clinical data, supporting earlier detection, equitable access, and informed service planning as new therapies emerge.

Central Vein Sign Guided Pathways: Fewer LPs, Faster MS Diagnosis

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Background: The 2024 McDonald Criteria introduced the central vein sign (CVS) and ≥4 topographies as alternatives to lumbar punctures (LPs) for MS diagnosis. We hypothesised that MRI markers could replace LPs, for most patients. We evaluated how many LPs remain necessary, alongside whether our service improvements shortened time to diagnosis.

Methods: Nottingham implemented a fast-track pathway to triage suspected MS referrals with suggestive imaging, requested CVS analysis when needed and applied the 2024 criteria. We assessed LP requirements in two cohorts: consecutive fast-track referrals (Sep 2024–Sep 2025) and the DECISIve trial, a prospective clinically-isolated syndrome cohort where all participants received CVS analysis and LP. We compared time to diagnosis and per-patient cost between our fast-track pathway and our standard outpatient pathway.

Results: In DECISIve (n=99), MRI biomarkers could have avoided 75% of LPs. In the Nottingham cohort (n=66), 89% with symptomatic referrals and 91% with incidental findings could be diagnosed without LP. Retrospective review (n=59) showed shorter median time to diagnosis in the fast-track pathway (2.9 vs 5.6 months, student-t test p=0.003) and lower mean cost (£707 vs £900).

Conclusions: CVS assessment substantially reduces the need for LPs. Implementation of a fast-track pathway improved diagnostic speed and reduced costs.

Association between genetic ancestry and Multiple Sclerosis severity

Jacobs B, Dobson R, Banner Authorship

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Background: Understanding the determinants of Multiple Sclerosis (MS) severity is important for developing treatments and prognostic models. It remains unclear whether genetic ancestry is a risk factor for severe MS.

Aim: To determine whether genetic ancestry is associated with differences in the clinical course of MS.

Methods: People with MS (pwMS) living in the United Kingdom over 18 years old were recruited between 2021 and 2025. Proxies of Multiple Sclerosis severity were ascertained at study enrolment. Genetic ancestry was inferred using PCA from genotyping array data obtained from saliva samples.

Results: Among 816 pwMS (31.9% South Asian ancestry, 20.0% African ancestry), South Asian ancestry was associated with earlier age at diagnosis compared with European-ancestry cases (median 29.2 years [23.7 – 37.0] vs 34.0 years [IQR 28.0 – 43.0], α = -5.7 years, P =7.8x10-10). Neither South Asian nor African ancestry was consistently associated with higher Multiple Sclerosis severity across the range of severity proxies examined (Expanded Disability Status Scale, MS Impact Score, and EQ5D quality of life scale).

Conclusion: South Asian ancestry is associated with earlier age at MS diagnosis, but neither South Asian nor African ancestry is associated with greater MS-related disability in this cross-sectional, diverse, UK cohort.

Disease modifying treatment decision-making in a multiple sclerosis randomised and observational clinical trial (DELIVER-MS)

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Background: There is growing support for high-efficacy disease modifying therapy (DMT) in multiple sclerosis (MS), but escalation (ESC) approaches remain common.

Objective: To describe decision-making in a pragmatic trial of early high-efficacy treatment (EHT) versus ESC.

Methods: DELIVER-MS (NCT03535298) is a multi-centre, pragmatic, randomised controlled trial (RCT) with a parallel observational study (OBS), which enrolled treatment-naïve people with RRMS in 31 UK/US sites. Primary outcome: 36-month brain volume loss according to initial treatment approach (EHT versus ESC). Stepwise multivariable logistic regression was used to predict participation in RCT vs. OBS, and choice of EHT vs. ESC within the OBS cohort.

Results: 816 people with MS were enrolled. Participants declined randomisation due to preference for a particular DMT (85%), efficacy concerns (20%), safety concerns (9%). RCT vs. OBS participation was associated with lower relapse rate ($p=0.043$) and greater brain parenchymal fraction ($p=0.002$). Among 374 in the OBS cohort, 125 (33%) chose ESC and 249 (67%) chose EHT. People commencing EHT had higher education attainment ($p <0.001$) and relapse rate ($p=0.025$).

Conclusion: Baseline DELIVER-MS data demonstrate that participants with milder disease are more likely to participate in RCT. The choice of EHT vs. ESC was associated with demographic factors and disease activity.

Temporal evolution of T1-dark rims, a proposed marker of smouldering lesion activity in MS

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Background: T1-dark rims on 3D T1-weighted MRI have been proposed as markers of chronic inflammatory activity in MS, but their temporal evolution is unknown.

Objective: To characterise the temporal evolution (≤3 years) of T1-dark rims in new and established MS lesions.

Methods: Patients with MS underwent 3–6 MRI scans over up to 36 months using 3T/7T MRI with 3D T1-weighted and FLAIR sequences. T1-dark rims were defined as hypointense ring-like signal at lesion borders. New and pre-established lesions were longitudinally assessed for rim presence and persistence.

Results: A total of 106 new lesions were identified, of which 33 (31%) demonstrated a T1-dark rim at first appearance; 55% of large (>100 mm^3) new lesions had a T1-dark rim. Both new and pre-established lesions showed progressive rim loss. Approximately 80% of new rim-positive lesions retained a rim at 6 months after appearance, declining to ~65% at 12 months and ~45% by 18–24 months. Among 74 T1-dark rims present at baseline, 40 resolved during follow-up, with 46% persisting at 36 months (mean rim lifespan 21.3 months).

Conclusion: T1-dark rims demonstrate dynamic temporal behaviour. Their reported correspondence with paramagnetic rims, alongside differing persistence, suggests related but distinct manifestations of smouldering inflammatory activity.

Final Analyses of MINORE/SOPRANINO: Infant Humoral Response and One-Year Follow-up After Prenatal Ocrelizumab Exposure.

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Introduction: Primary analyses of the prospective, Phase IV studies MINORE and SOPRANINO showed minimal placental or breastmilk transfer and normal infant B-cell levels early in life. This updated analysis evaluates 1-year data on B cell evolution, humoral vaccine response and growth and development in infants potentially exposed during pregnancy (MINORE, N=35) or breastfeeding (SOPRANINO, N=13).

Methods: Final analysis includes 24 complete MINORE and 13 SOPRANINO pairs. Infant B-cell levels and vaccine-specific humoral responses were measured at ~13 months, with growth/development assessed via WHO standards and ASQ-3.

Results: Seroprotective humoral responses were detected in most infants in MINORE and SOPRANINO: measles, 96% and 100%; mumps, 90% and 78%; rubella, 96% and 100%; hepatitis B, 95% and 100%; H. influenzae, 83% and 89%; pneumococcus (≥7 strains), 85% and 100%; diphtheria and tetanus, 100% and 100%. Adverse events were those typically observed during pregnancy, delivery, postpartum and infancy.

Conclusions: The data shows that the majority of infants with potential ocrelizumab exposure during pregnancy or breastfeeding exhibited humoral responses to childhood vaccines despite variability in vaccine-specific response rates. This expands knowledge on ocrelizumab in relation to family planning, providing an evidence basis for clinical management of women with MS.