Age <20 years was associated with NMDA-R-IgG and MOG-IgG1 (OR=8.11 and 7.73 respectively, p<0.001). Age >65 years was associated with GABAB-R-IgG, LGI1-IgG, CASPR2-IgG and ANNA1-IgG (OR=7.33, 14.98, 3.67, 14.53, p<0.001). Women accounted for 60% of NMDA-R-IgG (CSF) and 78% of GAD65-IgG (CSF/serum) cohorts (OR=1.32, p=0.002, OR=2.78, p<0.001, respectively). Men accounted for 62% of the LGI1-IgG cohort (OR=1.87, p <0.001). Age and sex interacted for NMDA-R-IgG, particularly in females <20 years (OR=7.72, p <0.001).

Conclusion The most frequently detected were NMDA-R-IgG, LGI1-IgG, GAD65-IgG and MOG-IgG1. Age and sex associations may suggest paraneoplastic, endocrinological or aging influences on neurological autoimmunity.

004 PREGNANCY-RELATED RELAPSE IN NATALIZUMAB, FINGOLIMOD AND DIMETHYL FUMARATE-TREATED WOMEN WITH MULTIPLE SCLEROSIS

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Objective To investigate pregnancy-related disease activity in a contemporary multiple sclerosis (MS) cohort.

Methods Data were obtained from the MSBase Registry. Term/preterm pregnancies conceived from 2011-2019 were included (modern cohort). Annualised relapse rates (ARR) were calculated before, during and after pregnancy. Predictors of intrapartum and early postpartum (1st3 months) relapse were determined by clustered logistic and Cox regression analyses, respectively.

Results We included 1640 pregnancies from 1452 women. Disease-modifying therapy (DMT) used in the one-year preconception included natalizumab (n=219), fingolimod (n=147), dimethyl fumarate (DMF; n=57) and low-efficacy therapies (n=845). Preconception ARR by DMT class used before conception were: natalizumab, 0.29 (95% CI 0.22-0.37); fingolimod, 0.37 (0.28-0.49); DMF, 0.24 (0.13-0.41); low-efficacy, 0.29 (0.25-0.33); and none, 0.24 (0.19-0.31). Among women who used fingolimod or natalizumab, ARR increased during pregnancy. Intrapartum ARR decreased in preconception DMF, low-efficacy or no DMT groups. ARR spiked after delivery across all DMT groups. Natalizumab continuation into pregnancy reduced the odds of relapse during pregnancy (OR 0.76 per month [0.60-0.95], p=0.017). DMT re-initiation with natalizumab protected against postpartum relapse (HR 0.11 [0.04-0.32], p<0.0001). Breastfeeding women were less likely to relapse (HR 0.61 [0.41-0.91], p=0.016).

Conclusion Women with MS prescribed natalizumab or fingolimod preconception had higher rates of intrapartum and postpartum relapse. In women considered to be at high relapse risk, use of natalizumab before pregnancy and continued up to 32-34 weeks gestation, with early re-initiation after delivery is an effective option to minimise relapse risks. Strategies of DMT use have to be balanced against potential foetal/neonatal complications.

005 PSORIASIS IN MULTIPLE SCLEROSIS: AN AUSTRALIAN PREVALENCE STUDY

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Background Multiple Sclerosis (MS) is an immune-mediated, demyelinating disease of the central nervous system.[1] Although severe psoriasis and psoriasiform dermatitis have been noted in MS patients, the prevalence of psoriasis in these populations is uncertain and has not been explored in the Australian population.

Objectives A pilot study to estimate the prevalence of psoriasis in MS cohorts in the Australian population.

Methods A survey was conducted on 82 MS patients aged 18 and above who attended MS clinics in 2018.

Results Data was recorded for 82 patients. The mean age was 48 years for the entire cohort and 48.0 years (SD ±11.30)

for patients diagnosed with psoriasis. The observed prevalence of psoriasis in MS patients was 12.19% however, the true prevalence is likely to be much higher as various symptoms of psoriasis were reported by a much larger proportion of MS patients. Of the 72 cases without psoriasis, various skin symptoms that were reported were intermittent irritation (for at least 6 months) or erythematous rash (35.4%), seasonal skin changes (39.0%) and thickened scaly skin behind ears and scalps (18.3%). Moreover, 18.3% had flaky, peeling or scaly skin while 24.4% experienced dandruff; 17.1% reported nail changes, and 13.4% reported a family history of psoriasis. The study also showed that combined psoriasis and eczema was relatively common at 3.7%.

Conclusions In this pilot study there is a high prevalence of psoriasis in patients with MS suggesting an immunopathological association between the two diseases and indicates that further studies should be done to elucidate common mechanisms, and the nature of this phenotype.

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006 COMPARISON OF MULTIPLE DISEASE MODIFYING THERAPIES IN MULTIPLE SCLEROSIS WITH MARGINAL STRUCTURAL MODELS

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Background Because of methodological challenges comparisons of multiple treatments in multiple sclerosis cohorts have been limited to pairwise and triple comparisons.

Objectives Extend marginal structural models (MSM) to allow simultaneous comparisons of multiple MS treatments.

Methods We selected patients from the MSBase registry with Clinically Isolated Syndrome and Relapsing-Remitting MS followed for ≥1 year, with ≥3 visits, ≥1 visit per year and exposed to a MS therapy. MSMs were used to compare cumulative hazards of 6-month confirmed worsening and improvement of disability, and the incidence of relapses between treatments. MSMs were continuously re-adjusted for patient age, sex, pregnancy, date from first symptom, prior relapse history and MRI activity. We used MSMs to compare the Average Treatment Effect (ATE), the effect a treatment would have had if the entire study population had been treated with this treatment vs. another treatment. We also estimated the Average Treatment Effect Among the Treated (ATT): comparison an observed effect of a treatment with a counterfactual (not observed) effect of another treatment in the same study population.

Results Among 23687 patients, we compared ATE of glatiramer acetate (reference), interferon b, natalizumab, fingolimod, dimethyl fumarate, and teriflunomide. In ATE, a reduction of relapse frequency was more prominent on natalizumab, followed by fingolimod (47% and 24% respectively, reference: glatiramer acetate) when compared with the other treatments. The ATT models confirmed these observations.

Conclusions Compared to other DMTs natalizumab and fingolimod were associated with superior reduction in relapse frequency than glatiramer acetate, interferon beta, teriflunomide and dimethyl fumarate.

007 IMMUNOTHERAPY RESPONSIVE NEUROPATHIC PAIN ASSOCIATED WITH LGI1 AND CASPR2 ANTIBODIES

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Objective We evaluated pain in leucine-rich glioma inactivated1(LGI1) and contactin-associated protein2(CASPR2)-antibody positive(Ab+) patients, to evaluate clinical associations and pathophysiology of treatable pain syndromes.

Methods 108 LGI-Ab+, 33 CASPR2-Ab+, and 6 LGI1/CASPR-Ab+patients were phenotyped. Pain questionnaires were undertaken to identify neuropathic pain using the Douleur Neuropathique(DN4), patient reported outcome measurement information system(PROMIS), and quality of life(EQ5D). Skin biopsies, and serum binding to cell-based assays, sensory neuronal cocultures, and dorsal root ganglion(DRG) cultures were undertaken.

Results 39/147 patients described pain, including 17/33 CASPR2-Ab+(52%), 20/108 LGI1-Ab+(19%), and 2 LGI/CASPR2-Ab+patients. Questionnaires completed in 23/39 (59%) revealed comparable DN4 scores(p=0.319) with 58% of LGI1-Ab+ and 67% of CASPR2-Ab+patients having neuropathic pain. Patients rated >50% response in 8/30(27%) analgesia trials, versus 20/40(55%) immunotherapy trials (p=0.045). PROMIS ratings were similar between LGI1-Ab+ and CASPR2-Ab+patients at nadir(p=0.662), but showed more improvement following immunotherapy in LGI1-Ab+(p=0.008) than CASPR2-Ab+patients(p=0.125). At follow-up(median 57 months) CASPR2-Ab+patients showed more impairment in mobility(p=0.014), daily activities (p=0.019), and anxiety/depression(p=0.043); and lower overall health(p=0.019) on the EQ5D compared to LGI1-Ab+patients. Intraepidermal nerve fibre density was reduced in 2 LGI1-Ab+ and 1 CASPR2-Ab+patients. Serum immunoglobulin G(IgG) from 6/16 CASPR2-Ab+patients bound to sensory neuronal cocultures compared to 0/14 LGI1-Ab+patients(p=0.019) and 0/12 healthy controls. Serum IgG from 10/16 CASPR2-Ab+patients bound to DRG cultures