EPR-347 | Comparative effectiveness of natalizumab and ocrelizumab on disability progression in RRMS in the Italian MS register

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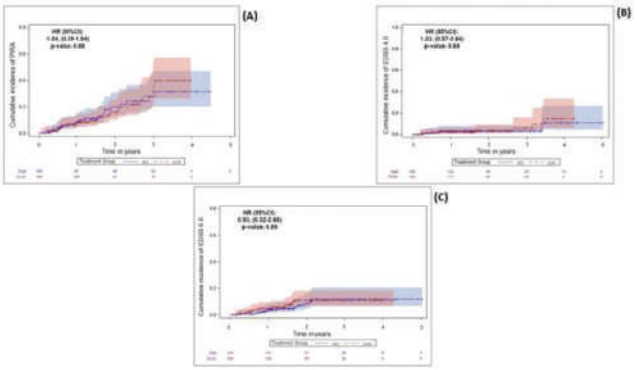
Background and Aims: To compare the risk of 6-months confirmed progression independent of relapse activity (PIRA), relapse associated worsening (RAW), and irreversible Expanded Disability Status Scale (EDSS) 4.0 and 6.0 in a real life-cohort of naïve relapsing-remitting multiple sclerosis (RRMS) patients treated with natalizumab (NTZ) or ocrelizumab (OCR).

Methods: RRMS patients with a first visit within one year from disease onset, treated with NTZ or OCR and ≥3 EDSS score evaluations were extracted from the Italian MS and Related Disorders Register. To mitigate the impact of potential biases, pairwise propensity score (PS)-matched analyses were performed. Risk of reaching the outcomes were estimated using multivariable Cox proportional hazards models.

Results: A total of 770 subjects were included (NTZ = 568; OCr = 212). The median (IQR) follow-up after treatment start was 1.63 (0.87–2.72) and 1.60 (0.80–2.68) years, respectively. The PS-matching retrieved 195 pairs. No RAW events were recorded. No differences between the two groups (NTZ – treated group as reference) were found in the risk (HR, 95% CI) of reaching a first PIRA (1.04, 0.59–1.84; $p = 0.88$) event, an irreversible EDSS 4.0 (1.23, 0.57–2.66; $p = 0.60$) and EDSS 6.0 (0.93, 0.32–2.68; $p = 0.89$).



Cumulative incidence of PIRA (A), irreversible EDSS 4.0 (B) and irreversible EDSS 6.0 (C) in NTZ and OCR treated patients.

Conclusion: Both OCR and NTZ strongly suppress RAW events in RRMS patients. In the short-term, the number and the risk of achieving PIRA events, EDSS 4.0 and 6.0 milestones are not significantly different between the two groups. A longer follow-up is essential to confirm the results on disability outcomes.

Disclosure: The authors report no conflicts of interest with respect to the contents of the current study, but note they have received advisory board, speaker honoraria, travel support, research grants or clinical trial support from the manufacturers of DMTs.

EPR-348 | Vagus nerve stimulation improves remyelination in a rat toxic demyelination model

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Background and Aims: Multiple sclerosis (MS) is a neuroinflammatory and neurodegenerative disease of the central nerve system, characterized by immune-mediated demyelination. Current MS treatments poorly address the chronic inflammation nor offer effective remyelination for axonal protection. Vagus Nerve Stimulation (VNS) shows potential in tackling both neuroinflammation and remyelination in MS. In this preclinical study the effect on remyelination was investigated in a toxic demyelination model.

Methods: In 35 Lewis rats, lysolecithin (LPC) was injected in the corpus callosum to induce a demyelinated lesion. Three days post-injection (dpi), 22/35 rats were perfused to analyse the lesions during demyelination and peak inflammation. 13/35 rats were perfused at 11 dpi to analyse the lesion during remyelination. VNS (0.5sON/29sOFF, 1.0 mA intensity, 30 Hz frequency, 250 μs pulse width) or sham stimulation was performed from two days before injection, until the day of perfusion (either three or 11 dpi). The extent of demyelination was evaluated by a luxol fast blue staining and cresyl violet counterstaining.
Results: At 11 dpi (timepoint of partial remyelination), demyelination was significantly reduced by 57.4% in VNS compared to sham, indicating improved remyelination by VNS. At three dpi (timepoint of demyelination) no significant difference was found between VNS and sham, indicating that VNS does not prevent against the direct demyelinating effects of LPC with the applied stimulation parameters.
Conclusion: Histological evaluation of LPC-induced demyelination showed that VNS significantly improves remyelination, suggesting a possible role for VNS as remyelinating strategy in MS. Further investigation is required.
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Neurorehabilitation

EPR-349 | Power of pepper kids robot to train social skills in children with neurological disorders

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Background and Aims: The aim was to investigate child-robot interaction (CRI) in children with neurological disorders (ND) for designing social neurorehabilitation.
Methods: Study took place in Tartu University Children's Clinic. 89 children (4–16 years) participated: 50 with ND, 39 typically developed n control group (CG). 49/89 interacted directly, 40 via video. Interaction was examined in three ways: survey based on four socio-cultural concepts, therapists' observations and children's evaluation of emotional state.

FIGURE 1: Interaction session between child and robot pepper.

Results: Children quickly engaged with Pepper, median contact time was 2.0 [IQR 1.0–3.0] seconds. 93.8% sustained eye contact during whole session (8–10 min). 40% of children with ND believed the robot was very safe compared to 17.9% of CG ($p = 0.025$). Children who communicated with robot through video showed significantly less gesticulations and were more static compared to direct interaction group (55.9% vs. 80%; $p = 0.040$). Direct communication was more effective, but interaction via video also attracted children. 55% of children attributed three or four out of four anthropomorphistic characteristics to Pepper. On Smilyometer, 65 children evaluated their own and Pepper's mood as happy (Mdn 4 out of 5).