Abstract Title: Antibodies Against the Inward Rectifying Potassium Channel KIR4.1 Precede the Onset of Multiple Sclerosis

Press Release Title: Antibody May be Detectable in Blood Years Before MS Symptoms Appear

Objective: To determine whether inward rectifying potassium channel KIR4.1 antibodies can be detected in multiple sclerosis (MS) patients before the onset of disease.

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Background: Antibodies against KIR4.1 are found in a subpopulation of adults and children with clinically isolated syndrome or MS. However, it is unknown whether the antibody response to KIR4.1 precedes the onset of MS or emerges after the disease already is established.

Design/Method: We screened plasma samples from 16 healthy blood donors with subsequent diagnosis of MS (pre-MS) for KIR4.1 specific antibodies by Enzyme-linked Immunosorbent Assay based on homotetrameric KIR4.1 protein. First, we investigated samples collected a few months (2-9) before the first clinical attack. As control group we investigated 16 age- and sex-matched healthy blood donors without notification of a later MS. In a second step, we aimed to investigate additional time-points before (up to 6 years) and after disease onset in those KIR4.1 antibody positive patients. The Mann-Whitney-test was used to compare groups.

Results: Pre-clinical MS patients had significantly higher KIR4.1 antibody titer than healthy controls (p=0.0185). Seven pre-clinical MS patients were considered positive for KIR4.1 antibodies, 2 showed borderline activity and 7 were negative. All healthy controls were negative for KIR4.1 antibodies. In the longitudinal analysis, KIR4.1 antibodies were found in pre-clinical MS patients several years before the first clinical attack. Antibody titer varied at different time points during pre-MS in individual patients. Titers before and after disease onset did not differ significantly in those patients analyzed.

Conclusions: KIR4.1 antibodies are present in plasma of MS patients long before the onset of the first disease symptoms.

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