

P019 Impaired motor coordination and cortical hypomyelination in Hemopexin-null mice

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Iron is an essential factor in myelination of axons. However, the specific role of iron in this process remains unknown. Hemopexin is a plasma protein with the highest heme binding affinity. We have reported that Hemopexin-null mice show dysregulated iron homeostasis in the basal ganglia, thalamus and cerebral cortex that might affect motor behaviour and myelinogenesis. Moreover, literature data demonstrate that Alzheimer's disease patients present higher Hemopexin levels in cerebrospinal fluid than healthy subjects.

Therefore, we analyzed motor performance and myelin distribution in Hemopexin-null mice at 3, 6, 9 and 12 months of age.

Motor coordination was analyzed with the rotarod test.

Hemopexin-null mice were unable to perform efficiently on the rotarod starting from six months of age (Hemopexin-null mean score < 23% of the wild type).

Myelin-specific Black-Gold stain showed a reduction in cortical myelinated fibers in Hemopexin-null mice compared to wild-type controls. Biochemical analysis showed a reduction of the myelin binding protein (MBP) expression in the cortex of Hemopexin-null mice.

These results show that Hemopexin, may affect myelination, and consequently, motor performances. Thus, modulation of Hemopexin expression in brain might be an important factor in the pathogenesis of human neurodegenerative disorders characterized by iron overload and myelin deficits.