Strain and sex differences in somatosensation and sociability during experimental autoimmune encephalomyelitis

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INTRODUCTION
Multiple sclerosis (MS) is an autoimmune disease affecting around 1 million people in the US. This disease is associated with physical symptoms such as fatigue, weakness, pain and psychological symptoms such as mood problems and diminished sociability. MS also has been known to be sexually biased toward females. In this project we have used the experimental autoimmune encephalomyelitis (EAE) and relapsing remitting experimental autoimmune encephalomyelitis (RR-EAE), the mouse model for MS. We hypothesized that EAE progression is associated with changes in muscle strength, balance, pain, and sociability and that these variations are linked to sex and/or strain. Our results indicate that strain but not sex influenced differences in muscle strength and balance during EAE, and both sex and strain have an impact on sociability and mechanical nociception, regardless of EAE disease status. Our goal is to provide some insight about the change in social behavior of MS patients and its effect on their social and day to day activities.

EXPERIMENTAL DESIGN

RESULTS

DISCUSSION

• To our knowledge this is the first attempt to assess the effects of strain, sex, and disease stage on muscle strength and/or balance, pain, and sociability during EAE and RR-EAE.

• B6 and SJL mice performed differently on the Deacon’s weight lift and Kondziela’s inverted grid tests thus, these tests can be valuable assays to elucidate motor and balance capabilities during EAE neuropathology.

• Notably, there significant differences for the number of entries during the sociability test but not for time and number of encounters. Likewise, there were no differences for self-focused behaviors (data not shown).

• One limitation of this study was that we did not investigate the performance of female SJL after a relapse. Therefore, future studies should include the observation during relapses and chronic stage (~42 dpi) to evaluate the efficacy of using these tests to assess strain and sex differences after a relapse or at the chronic stage.