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LETTER TO THE EDITOR | Higher Neural Functions and Behavior

Multiple facets of the cerebellum in multiple sclerosis

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Recently, we read the paper by Schreck et al. (2018) regarding our recent publication “Cerebellum and cognition in multiple sclerosis: the fall status matters” (Kalron et al. 2018). The authors raised important points concerning the multiple facets of cerebellum integrating cognition, behavior, and movement in people with neurological diseases and in the aging population. The authors comment on our classification of fallers and nonfallers. Fall status was based on the patient’s response to a single question: whether he/she fell during the past year. We believe that the implementation of new digital and remote communication tools will improve reporting accuracy of the incidence of falling, not only in the people with multiple sclerosis (MS) but also in other populations with a high risk of falling. This approach has been recently discussed by Marziniak et al. (2018). Furthermore, these technologies can provide crucial information on the incidence of falling, i.e., where it occurred (indoor, outdoor), during which activity (walking, cleaning, dressing, etc.), and at what hour of the day. Moreover, these technologies might confirm whether the fall occurred in cognitive overload (i.e., dual tasking) or whether it was related to an ataxic gait pattern. We are confident that the information amassed from advanced technologies will improve the information collected from advanced technologies will improve the incidence of falls in people with MS is particularly valuable given the fact that risk factors for falls are multidimensional.

The authors correctly noted that patients with MS, classified as fallers, were significantly older than nonfallers. Bernard and Seidler (2014) demonstrated that structural alterations occur in the cerebellum with aging. Some may argue that the decreased cerebellar volumes found in the fallers may be attributed to age as opposed to disease progression. Although our model included statistical corrections for age, the results could have been slightly distorted by age-related confounders. We agree that isolating the effects of age and disease duration is vital when examining the incidence of falling, the role of the cerebellum in these conditions. Expanding our view of falls in people with MS is particularly valuable given the fact that risk factors for falls are multidimensional.

From a clinical perspective, researchers are encouraged to carry out randomized controlled trials examining the effectiveness of pharmacological/nonpharmacological interventions aimed at improving cognition and/or reducing falls and whether the success of these programs depends on cerebellar structure and/or connectivity. A greater challenge would be to examine via imaging, the impact of such interventions on cerebellar characteristics throughout short- and long-term periods of time. At present, research studies in this area are limited (Thomas et al. 2012; Zheng et al. 2018).

Finally, we call for a scientific conference deliberating this topic. We are confident that forging relationships with experts from various fields and discussing topics such as gait, falls, cognition, and brain imaging in MS will encourage innovative collaborations that will not only have scientific value but also work for the benefit of the patients.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS


REFERENCES


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