

Temporal Profile of Exercise-Induced Changes in Plasma Brain-Derived Neurotrophic Factor Levels of Schizophrenic Individuals

Authors : Caroline Lavratti, Pedro Dal Lago, Gustavo Reinaldo, Gilson Dorneles, Andreia Bard, Laira Fuhr, Daniela Pochmann, Alessandra Peres, Luciane Wagner, Viviane Elsner

Abstract : Approximately 1% of the world's population is affected by schizophrenia (SZ), a chronic and debilitating neurodevelopmental disorder. Among possible factors, reduced levels of Brain-derived neurotrophic factor (BDNF) has been recognized in physiopathogenesis and course of SZ. In this context, peripheral BDNF levels have been used as a biomarker in several clinical studies, since this neurotrophin is able to cross the blood-brain barrier in a bi-directional manner and seems to present a strong correlation with the central nervous system fluid levels. The patients with SZ usually adopts a sedentary lifestyle, which has been partly associated with the increase in obesity incidence rates, metabolic syndrome, type 2 diabetes and coronary heart disease. On the other hand, exercise, a non-invasive and low cost intervention, has been considered an important additional therapeutic option for this population, promoting benefits to physical and mental health. To our knowledge, few studies have been pointed out that the positive effects of exercise in SZ patients are mediated, at least in part, to enhanced levels of BDNF after training. However, these studies are focused on evaluating the effect of single bouts of exercise of chronic interventions, data concerning the short- and long-term exercise outcomes on BDNF are scarce. Therefore, this study aimed to evaluate the effect of a concurrent exercise protocol (CEP) on plasma BDNF levels of SZ patients in different time-points. **Material and Methods:** This study was approved by the Research Ethics Committee of the Centro Universitário Metodista do IPA (no 1.243.680/2015). The participants (n=15) were submitted to the CEP during 90 days, 3 times a week for 60 minutes each session. In order to evaluate the short and long-term effects of exercise, blood samples were collected pre, 30, 60 and 90 days after the intervention began. Plasma BDNF levels were determined with the ELISA method, from Sigma-Aldrich commercial kit (catalog number RAB0026) according to manufacturer's instructions. **Results:** A remarkable increase on plasma BDNF levels at 90 days after training compared to baseline ($p=0.006$) and 30 days ($p=0.007$) values were observed. **Conclusion:** Our data are in agreement with several studies that show significant enhancement on BDNF levels in response to different exercise protocols in SZ individuals. We might suggest that BDNF upregulation after training in SZ patients acts in a dose-dependent manner, being more pronounced in response to chronic exposure. **Acknowledgments:** This work was supported by Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (FAPERGS)/Brazil.

Keywords : exercise, BDNF, schizophrenia, time-points

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020