Study of the Association between Serum Level of Cystatin C and Behavioral Symptoms of 6-Hydroxydopamine – Induced Parkinsonism in Rat

Ali Sarbazi Golezari1,2*, Nafiseh Rastgoo1, Ayda Faraji2, Tahereh Dargahi2, Gilda Khandan1, Arvin Babayan1, Hashem Haghdoost Yazdi2

1Student Research Committee, Qazvin University of Medical Sciences, Qazvin, Iran
2Cellular and Molecular Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

Published: 11 April, 2017

Abstract

Introduction: Parkinson’s disease (PD) is the second most neurodegenerative disorder which is characterized by a progressive loss of dopaminergic neurons in the substantia nigra pars compacta. Clinical symptoms do not appear until approximately 70% of dopaminergic neurons and 80% of the striatal dopaminergic terminals have been lost. Thus, detecting nonclinical factors such as detecting biomarker for PD is necessary. In this study, we evaluate the serum level of Cystatin C as a possible biomarker of PD in 6-hydroxydopamine (6-OHDA)-induced Parkinsonism in rat.

Materials and Methods: Rats were divided into two groups: Parkinson and Control. 6-OHDA was administered by stereotaxic surgery into forebrain bundle. Severity of the Parkinsonism was evaluated by Apomorphine (APO)-induced rotational test at the third and sixth week’s post-surgery. Also, serum level of Cystatin C was measured before surgery and at the third and sixth weeks post-surgery. Results: Although rats of control group didn’t show a significant response to APO, rats of parkinson group showed significant rotations. The rotations at the sixth week’s post-surgery were significantly more than the rotations at the third week’s post-surgery. However, there was no significant difference between serum level of Cystatin C in rats of control and parkinson group. Also, there was no difference between serum level of Cystatin C in rats of parkinson group before and after the surgery. There was no difference between serum level of Cystatin C and severity of symptoms in rats of parkinson group. Conclusion: Our data show that in 6-OHDA animal model of PD, serum level of Cystatin C cannot predict onset or progress of PD and therefore this compound cannot consider as a biomarker for PD.

Keywords: 6-hydroxydopamine, Animal model of parkinson, Apomorphine-induced rotational test, Cystatin C

*Corresponding Author: Ali Sarbazi Golezari
E-mail: ali@doctor.com