Relation of serum levels of homocysteine, vitamin B12 and folate to cognitive functions in Egyptian Multiple Sclerosis patients

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Background: Vitamin(B12) and folate have a role in normal methylation through (folate-vitamin B12-methylation) pathway which needed for myelin regeneration. Hyperhomocysteinaemia, vitamin(B12) and folate deficiency have been linked to cognitive dysfunction in multiple sclerosis (MS) patients.

Aim: This study aimed to examine the relation between serum levels of homocysteine, vitamin(B12), folate and cognitive functions in Egyptian MS patients.

Methods: Forty-five clinically definite MS patients and twenty matched healthy controls were included in the study. Cognitive assessment done for all participants using Addenbrooke's Cognitive Examination III (ACE-III) and trail making test. Serum levels of homocysteine, vitamin(B12) and folate were estimated using ELISA technique.

Results: MS patients showed significant worse performance in ACE-III and trail making tests compared to controls (P≤0.001). Serum levels of homocysteine, vitamin(B12) and folate showed no significant difference between patients and controls. ACE-III total score showed a significant negative correlation with homocysteine level (r = -0.692, P ≤ 0.001) and a significant positive correlation with Vitamin(B12)(r = 0.480, P= 0.001) and folate levels (r = 0.312, P= 0.037).Trail making test showed a significant positive correlation with homocysteine level (r = 0.394, P =0.007), and a significant negative correlation with Vitamin(B12) level (r = -0.345, P=0.20).By using regression analysis, Homocysteine was found to be the only significant predictor for cognitive impairment in MS patients.

Conclusion: Hyperhomocysteinaemia, vitamin(B12) and folate deficiency were associated with cognitive impairment in MS patients. Homocysteine was an independent risk factor and predictor for cognitive impairment in MS patients.

Speaker Biography

Haidy Elshebawy has completed her PhD at the age of 21 years from faculty of medicine, Alkasr Alainy Hospitals, Cairo University and received her master's degree in neuropsychiatry in May 2014 with excellent degree. She has published her papers and participated in many national and international conferences.

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