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Potential Role of High Omega6 to Omega3 Fatty Acids Ratio in Increasing Odds of Neuromyelitis Optica Spectrum Disorder

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Background: High omega6 to omega3 fatty acids ratio (w6. w3 ratio) is known as an inflammatory factor in diet. This study designed to investigate the effects of dietary w6. w3 ratio on Neuromyelitis Optica Spectrum Disorder (NMOSD) odds.

Method(s): A case-control study was conducted in a referral specialist clinic for NMOSD patients, Sina hospital, Tehran, Iran. Seventy NMOSD patients with definite diagnosis based on 2015 international consensus criteria in case group and 164 hospital-based controls were enrolled in this study. A semi-quantitative validated food frequency questionnaire with 168 item was completed for all participants according to usual dietary consumption of one last year of study enrollment. In order to running two logistic regression models, dietary w6. w3 ratio was stratified into quartiles and ORs was computed.

Result(s): The mean ratio of w6. w3 intake increased from 14.57 in the first quartile to 51.95 in the fourth quartile of w6. w3 ratio. A direct association between higher w6. w3 ratio and increased odds of NMOSD was found in both models. By adjustment for age and gender in the first model, the fourth quartile showed a significant 2.94-fold increase in NMOSD odds compared with the first quartile (95%CI: 1.23-7.03; P-trend: 0.77). Further adjustment for total energy intake, BMI, cigarette smoking and alcohol consumption status in the second model, also resulted in a significant OR of 2.58 in the fourth quartile compared with the first quartile (95%CI: 1.01-6.60; P-trend: 0.21).

Conclusion: Our results underline a possible role of high omega6/ omega3 fatty acids ratio as a risk factor for NMOSD. Due to modifiable property of this ratio, our finding is valuable for reducing risk of NMOSD which has unknown risk factor. More investigations are needed to approve our results.