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Low Carbohydrate Diet Score and Neuromyelitis Optica Spectrum Disorder

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Background: NMOSD is a rare autoimmune disease which mostly causes optic neuritis and transverse myelitis. Based on inflammatory characteristic of NMOSD we aimed to investigate low carbohydrate diet (LCD) score as NMOSD risk factor.

Methods: A case-control study was conducted in sina hospital NMOSD specialist clinic, Tehran, Iran, among patients with definite diagnosis based on 2016 international consensus criteria. Seventy NMOSD patients with disease duration < 3 years and without any dietary changes after diagnosis and 164 healthy controls were enrolled in this study. Data on demographic and anthropometric status were obtained. Dietary data during the year prior to the study in control group and the year before NMOSD diagnosis in case group was obtained by a validated 168-item food frequency questionnaire and were analyzed by nutritionist 4 software. To determine the lcd score, participants were stratified into 11 groups according to carbohydrate, protein, fat and also animal fat, animal protein, vegetable fat and vegetable protein intake. The participants who had higher LCD score had more fat and protein intake and less carbohydrate consumption.

Results: The mean age of participants was 35.34±9.87 and 42.94±15.31 years in case and control groups, respectively. Total LCD scores increased from the median of 21.00 in the first decile to the median of 53.00 in the tenth decile. After adjustment for all confounding factors, a significant association between higher lcd score and lower risk of NMOSD incidence was detected. The risk of suffering from NMOSD declined about 85%, 94%, 84%, 88%, 84% and 93% across the fifth to tenth deciles of LCD score compared to the first decile (p-trend=0.002).

Conclusions: Our results highlighted a significant positive correlation between LCD score and NMOSD occurrence. Thus, it can be speculated that the higher carbohydrate intake may increase the risk of NMOSD. However, further studies are needed to confirm these results.