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Neuromyelitis Optica Spectrum Disorder and Its Environmental Risk Factors for Nmo-IgG Sero-positivity

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Background: A strong association was observed between passive smoking and water-pipe smoking with an increase in neuromyelitis optica spectrum disorder (NMOSD) risk. The presence of a highly specific serum autoantibody (NMO-IgG) that reacts against the water channel aquaporin-4 (AQP4), causes the inflammation and demyelination in NMOSD NMO-IgG is very specific test for NMOSD. We studied the association between NMO-IgG and as cigarette smoking and alcohol use.

Methods: A case–control study was conducted in a referral hospital center in Tehran of among patients with NMOSD to assess the possible relation between positivity of NMO-IgG and environmental factors such as cigarette smoking and alcohol use. The enzyme-linked immunosorbent assay (Elisa) was used for checking the presence of aquaporin-4 immunoglobulin g (AQP4-IgG) status. Most of the tests have been completed during the relapse before receiving corticosteroid. We designed a questionnaire to cover important epidemiological data of NMOSD and conducted structured face to face interviews patients by trained interviewers to collect the data. finally the logistic regression was applied in analysis via SPSS software package.

Results: Totally 94 NMOSD patients enrolled in study. Female to male ratio was 4.8:1. Mean age of disease onset was 37.9 years. The presence of NMO-IgG was positive for 44 (46.8%) and negative for 50 (53.2%) of patients. The increased NMO-IgG positivity odds among life time smokers (or = 3.24; 95% CI= 1.16, 9.08), Current smokers (or = 6.08; 95% CI= 1.26, 29.39), passive smokers (or = 2.22; 95% CI= 1.10, 4.50), and whisky/vodka consumption (or = 3.65; 95% CI= 1.21, 10.93) was observed. An association between water-pipe smoking, beer and wine intake and NMO-IgG positivity was not observed (p value > 0.05).

Conclusions: Iranian NMOSD patients seemed to have similar NMO-IgG status to caucasians with lower frequency of serum positivity. Life time and current smoking, passive smoking and whisky/vodka consumption are risk factors for NMO-IgG positivity. Studies have been revealed the role of smoking in development of auto-antibodies. Water-pipe smoking is emerging globally as a health problem, mostly among the young population in Middle-East countries. There was an association between alcohol consumption and risk of developing NMOSD.