Sero-molecular survey on Toxoplasma gondii infection among drug addicted and non-addicted individuals: a case-control study

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Abstract:

Background: Up to now, epidemiological studies on the prevalence of Toxoplasma gondii infection among drug addicted individuals have been rarely performed. By designing an age and sex matched case–control study, we sought to determine the prevalence and associated factors with T. gondii infection in these population using serological and molecular techniques.

Methods: One hundred and thirty-seven drug addicted individuals and 141 healthy subjects were enrolled in this study. Informed consent as well as a standard questionnaire were obtained from all subjects participating. Blood samples were collected from each participant and the serum was screened for anti-Toxoplasma antibodies (IgG and IgM). PCR assay was performed using the primer pair targeting the RE and GRA6 genes of T. gondii. Then, PCR products were sequenced to determine genotype.

Results: The seroprevalence of T. gondii infection based on IgG titer was 34.3% in case and 9.9% in the control groups, revealing a statistically significant difference (OR = 4.37; 95% CI = 2.46–9.12; P = 0.001). After analyzing the variables studied through the questionnaire, age was the only significantly factor associated with the anti-T. gondii IgG antibody in case group. Considering PCR assays with RE genomic target, the prevalence of T. gondii infection was 5.1% in the case and 3.5% in control groups which the difference was no statistically significant (OR = 1.46; 95% CI = 0.45–4.73; P = 0.521). Subsequently, all sequenced samples were genotype #1 using the GRA6 genomic target.

Conclusions: T. gondii exposure is relatively high among drug addicted individuals in Iran, and there is a need for health policymakers and researchers to establish enlightenment and prevention programs for these population at risk of infection.

Keywords: Drug addicted individuals, Molecular prevalence, Seroprevalence, Toxoplasmosis.