

Abstract

BACKGROUND: *Toxoplasma gondii* imparts a considerable burden to public health. Human toxoplasmosis can be life-threatening in immunocompromised individuals, has been associated with psychiatric disorders, and can cause severe congenital pathologies, spontaneous abortion, or stillbirth. Environmental modes of transmission contributing to the incidence of human toxoplasmosis are poorly understood. We sought to examine National Health and Nutrition Examination Survey (NHANES) data for risk factors associated with *T. gondii* seroprevalence.

METHODS: *T. gondii* serology results reported for Continuous NHANES survey years 1999-2004 and 2009-10 were examined. To explore associations with toxoplasmosis seropositivity, covariates of interest were selected a priori, including source and home treatment of tap **water**. Associations between potential risk factors and evidence of IgG antibodies against *T. gondii* were assessed using multivariable logistic regression.

RESULTS: Among 23,030 participants with available *T. gondii* serology across 8 years of continuous NHANES survey data (1999-2004; 2009-2010), persons born outside the United States were significantly more likely to be seropositive, and seropositivity was inversely associated with years spent in the United States. Among US-born participants, participants with homes on well **water** (both those who used at-home **water** treatment devices and those who did not), as well as participants with public/private company-provided tap **water** who did not use at-home **water** treatment devices, were significantly more likely to be seropositive compared to participants who used home treatment devices on tap **water** provided by a private or public **water** company. A comparative subpopulation analysis revealed age-adjusted seroprevalence among US-born persons 12-49 yrs old significantly declined to 6.6% (95% CI, 5.2-8.0) ($P < 0.0001$) in 2009-10, compared to previously published reports for NHANES data from 1988-1994 (14.1%) and 1999-2004 (9.0%).

CONCLUSIONS: Data suggests that *T. gondii* infections continue to decline in the United States, but the overall infection rate remains substantial at nearly 7%. Despite the limitations in the Continuous NHANES cross-sectional survey, the association between well **water** use and *T. gondii* infection warrants further research.
