

Rapid immunochromatographic test (RDT) versus enzyme linked immunosorbent assay (ELISA) technique for diagnosing toxoplasmosis among individuals with mental disabilities

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Abstract

Background: *Toxoplasma gondii* is a ubiquitous protozoan parasite that is estimated to infect one-third of the world's human population. In the quest of a suitable diagnostic tool for detection of *T. gondii* antibodies, the rapid immunochromatographic test has been validated versus the enzyme linked immunosorbent assay (ELISA) technique for diagnosing toxoplasmosis among individuals with mental disabilities.

Method: A cross-sectional study was carried out in Alexandria governorate, Egypt during the period from December 2015 to May 2016. Blood samples were collected from 188 mental disabled individuals. The first aliquot was tested by the rapid diagnostic test (RDT), the 2nd and 3rd aliquots were tested quantitatively for anti-*T. gondii* IgG and IgM antibodies using ELISA test.

Results: The seroprevalence of toxoplasmosis based on RDT was 26.6% and it significantly increased to 48.9% by using ELISA. The diagnostic parameters of RDT versus ELISA for IgG were: sensitivity 54.4%, specificity 100%, PPV 100%, NPV 69.6% with a diagnostic efficiency of 77.7%, while for IgM were: sensitivity 29.03%, specificity 100%, PPV 100%, NPV 87.7% and diagnostic efficiency 88.3%. Cohen's kappa coefficients were 0.549 and 0.406 for IgG and IgM respectively indicating good to moderate agreement between the two tests for detecting IgG and poor to fair agreement for IgM.

Conclusion: Although RDT is inferior compared to ELISA, its speed, simplicity, low cost, high specificity and its good diagnostic efficiency in detecting IgG make it an important preliminary screening tool for diagnosing toxoplasmosis in remote endemic areas where facilities for ELISA are not available.

Biography

Amany Ibrahim Shehata Hassan is an Assistant Professor of Parasitology and Medical Entomology, Tropical Health Department, High Institute of Public Health, Alexandria University, Egypt. She has got her PhD degree in Public Health majoring "Parasitology and Medical Entomology" from the above institute in February 2002. She has been working in that institute since 1990. She is an expert in field studies concerning endemic parasitic diseases in Egypt, especially among vulnerable population groups as mentally challenged individuals. She published many papers in reputed journals. She was nominated by the WHO to participate in the course: "Capacity Building in Research Methods and Ethics" which was organized by WHO & TDR & IPT, in Tunisia in 2016.

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