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Letter to the Editor

Anti-*Toxoplasma gondii* IgG avidity testing is necessary for diagnosis of acute toxoplasmosis

Dear Editor

Toxoplasma gondii is an obligate intracellular coccidian that has a complex life cycle alternating between asexual reproduction, which takes place in several tissues of humans and other vertebrates, and sexual reproduction, which takes place in epithelial linings of the digestive tract of cats.[1] Humans become infected either congenitally (mother-to-fetus *in-utero* transmission), through food or water contaminated with cat faeces or by eating under-cooked meat of infected animals.[1] Pregnant women are at higher risk of abortion and congenital transmission if infected with *T. gondii* during the first and third trimester, respectively.

Antibody-based serological testing is often the first step in diagnosis. However, there could be difficulty in differentiating acute from chronic infections. Serodiagnosis of toxoplasmosis is usually achieved by detecting IgG and IgM against *T. gondii*. The IgG avidity test is an important additional test routinely performed in most developed nations. Low IgG avidity suggests acute infection, while high IgG avidity confirms chronic or reactivated infection.[2] The presence of IgM antibodies alone cannot be considered reliable for making a diagnosis of acute toxoplasmosis. IgM antibody titers rise from 5 days to several weeks following acute infection, reaching a maximum after 1–2 months and they decline more rapidly than IgG.[2] Although IgM antibodies can decrease to low or undetectable levels, in many cases they may persist for years following acute infections.[3] IgG antibodies appear later than IgM and are usually detectable within 1–2 weeks after the infection, peaking within 12 weeks to 6 months after acute infection. The antibodies will be detectable for years after acquired infection and are usually present throughout life.[3]

Knowing when infection occurred during pregnancy is important in evaluating the risk of congenital transmission, initiating antibiotic therapy, and ensuring appropriate prenatal counseling. The IgG avidity test has been prescribed for such utility. IgG avidity measures the strength of IgG binding to the organism. Avidity, in most cases but not all, shifts from low to high after approximately 5 months. If the avidity is high, this suggests infection occurred at least 5 months before testing. Transmission to fetus occurs predominantly in women who acquire acute infection during pregnancy.[3]

Previous findings showed that risk of congenital transmission increases with gestational age, with the highest rates (60–81%) being the third trimester compared with 6% in the first trimester.[4] However, disease severity decreases with gestational age, with first trimester infection resulting in miscarriage.[4] Recently, it has been recommended that IgG avidity is maximally useful in distinguishing between acute and chronic infection when IgM antibodies are present.[5]

We read with interest recent articles on a serological survey of *T. gondii* infections among pregnant women in KSA. These studies reported varying prevalence of anti-*T. gondii* IgM among pregnant women ranging from 0.6% to 6.4%.[6–9] However, none of them conducted the IgG avidity test for women with IgM positive results. Considering the inconsistency of IgM serology in providing accurate prevalence data on acute toxoplasmosis, there is a need to test all women who are IgM seropositive to *T. gondii*.

To complement the above observation with findings from our study, 32 (8.9%) pregnant women with *T. gondii* IgM seropositive samples at University of Maiduguri Teaching Hospital were investigated for IgG avidity indices. Six women (18.8%) had high IgG avidity, while 26 (81.3%) had low IgG avidity indicating acute toxoplasmosis. Out of the women with low IgG avidity, 18 (69.2%) were on the first trimester, 6 (23.1%) on the second trimester and 2 (7.7%) on the third trimester.[10] Testing for the IgG avidity of IgM positive pregnant women should be considered in order to assess risks of miscarriage or congenital transmission. The present article will be more useful if clinicians adopt the correlation of newborn clinical outcome with IgG avidity results.

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Conflict of interest

The authors have no conflict of interest to declare.

Authors' contributions

IAN conceived and designed the study, provided research materials and conducted the research, collected and organized the data. MSS analyzed and interpreted the data. HAA and IAN wrote initial and final drafts of the article and provided logistic support. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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