

## Predictors of *Toxoplasma gondii* IgG Seropositivity and Cranial Ultrasound Patterns among Children with Hydrocephalus

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**Background:** *Toxoplasma gondii* infection during pregnancy is associated with serious neonatal complications, including hydrocephalus. In many high-income countries, *T. gondii* screening and treatment during the antenatal period are routinely carried out to prevent associated complications, whereas in most low-income countries, there is no routine screening of *T. gondii* during pregnancy. Despite the parasite being common in Tanzania, there is a paucity of information on the prevalence of *T. gondii* and cranial ultrasound patterns among children with hydrocephalus.

**Methods:** An analytical cross-sectional hospital-based study involving 125 infants with hydrocephalus attending the Bugando Medical Centre (BMC) was conducted between May 2017 and February 2018. Sociodemographic and other relevant information was collected using a pretested data collection tool. Venous blood samples were collected, and sera were used for the detection of specific *T. gondii* antibodies by indirect enzyme-linked immunosorbent assay (ELISA) as per manufacturer's instructions. Data were analysed using STATA version 13 software.

**Results:** The mean age of enrolled children was  $4.8 \pm 3.5$  months. Out of 125 infants with hydrocephalus, 29 (23.2%, 95% CI: 21-36) were seropositive for *T. gondii*-specific IgG antibodies. By multiple generalized linear model analysis, being male (aRR = 1:1, 95% CI: 0.9–1.5,  $p = 0.049$ ),

higher birth order (aRR = 1:2, 95% CI: 1.0–1.5,  $p = 0.023$ ), consumption of fish meat (aRR = 1:6, 95% CI: 1.2–2.3,  $p = 0.003$ ), and using other methods of cooking meat than boiling (aRR = 1:7, 95% CI: 1.1–2.5,  $p = 0.015$ ) were independent risk factors for *T. gondii* IgG seropositivity. Obstructive hydrocephalus was significantly more common among *T. gondii*-seronegative infants compared to IgG-seropositive infants (31.3% [30/96] vs. 13.8% [4/29];  $p = 0.049$ ).

**Conclusions:** A significant proportion of infants with nonobstructive hydrocephalus are *T. gondii* IgG seropositive, and this is predicted by male gender, increase of birth order, consuming fish, and using other methods of cooking meat than boiling. These facts highlight the importance of continuing health education for pregnant women regarding *T. gondii* transmission and the need to follow-up their infants so that appropriate counselling and management can be provided.

### Biography

Sofia Ottaru is an attending physician and head of Pediatric Department at the Shree Hindu hospital. She is running pediatric sickle cell and well-baby clinic at the hospital. Currently, she is involved in Clinical Learning Networking project at Mwanza as a pediatrician which is funded by World Bank under Pediatric Association in Tanzania. She is a young researcher striving to grow up her interest on neonates and genetic related diseases such as sickle cell.

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