



Does toxoplasmosis relate with brain cancer?

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Abstract: The present study investigates the association of toxoplasmosis with brain cancers by identifying IgG and IgM *Toxoplasma* antibodies in brain cancer patients and healthy individuals and discusses the role of some immunological aspects related to these diseases. Seventy-eight patients from the outpatient and inpatient clinics of the Al-Amal National Hospitals for Cancer Management and Neurosurgery Teaching Hospital in Baghdad city during the period from June 2015 to June 2016 and 59 healthy blood donor volunteers as control subjects were also enrolled in the study. Analysis for anti-*Toxoplasma* IgG antibodies and anti-*T.gondii* immunoglobulin M (IgM) antibodies were done for diagnosis of toxoplasmosis in all subjects. Levels of INF- γ , IL-4, TNF- α , IL-10 and IL-17 were evaluated in the sera of all subjects by means of ELISA method. In addition, Glial fibrillary acidic protein (GFAP) means of concentration were assessed. The results showed that 82 out of 137 cancer patients were positive for anti-*Toxoplasma* IgG antibodies while 42 cases were positive among healthy volunteers (control). Most cancer patients were having brain cancer (78 out of 137) and the highest rate of toxoplasmosis was among them (66.66%). Concentration of both IgG and GFAP was increased in cancer and control seropositivity with toxoplasmosis. The relative risk factors of *Toxoplasma* infection were larger twice in brain cancer patients than in healthy control and the odd ratio to get an infection among brain cancer was 3.619 times more than in healthy subjects. Concentration of INF- γ , TNF- α and IL-17 was higher in cancer and healthy control, while IL-10 revealed no significant difference in all groups. IL-4 was increased only in cancer patients. The study concluded that there was a relationship between brain cancer and toxoplasmosis but it needs more investigation to prove that and to guess which one causes progress of the other. Moreover, GFAP may be used to determine the brain injury in toxoplasmosis patients but this also needs a design for further investigation.

Key words: Toxoplasmosis, brain cancer, cytokines.