

High frequency of infection of lung cancer patients with the parasite *Toxoplasma gondii*

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Toxoplasma gondii is an intracellular protozoan parasite which can be found in all warm-blooded animals. Current estimates of prevalence of human infection range 10% (e.g. UK), through 10-20% (US) to over 40% in some European and S. American countries. In this study, we set out to investigate the prevalence in a cohort of 76 lung cancer patients. *T. gondii* was detected using four specific PCR markers, SAG 1, SAG 2, SAG 3 and B1 and using both specific immunohistochemical (IHC) staining. All 76 samples were found to be positive for *T. gondii* infection by both PCR and IHC. Sections examined using IHC could be used to classify parasites into tachyzoites and infected macrophages/other cells (both defining an active infection) and cysts (inactive/dormant infection). Of the 76 patients, 73 (96%) showed active infections while only cysts could be found in the remaining 3 patients (4%). Logistic regression was used to investigate any relationships between active/inactive infections with age, gender, smoking, asthma and COPD. No significant associations were found. These results show that an extremely high proportion of these lung cancer patients have active infections suggesting that the parasite might play a role in the disease symptomatology in lung cancer patients.