Establishing the Role of Latent Toxoplasmosis in the Ethiopathogenesis of Schizophrenia

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Schizophrenia is a pervasive, neuropsychiatric disease of uncertain cause. Genetic factors play a role in its etiology, environmental factors are also important. Epidemiologic studies suggest infections as risk factors for the disease developing in later life. In this cross-sectionally designed study we focused on evidence specifically linking infection developing in later life. In this cross-sectionally designed studies suggest infections as risk factors for the disease environmental factors are also important. Epidemiologic uncertain cause. Genetic factors play a role in its etiology, environmental factors are also important. Epidemiologic studies suggest infections as risk factors for the disease developing in later life. In this cross-sectionally designed study we focused on evidence specifically linking infection developing in later life.

Toxoplasma gondii to the etiology of schizophrenia. Three different group were examined; 300 schizophrenic patients, 150 control individuals with other psychiatric diagnosis (OPD), 150 healthy control (HC) were enrolled in this study. IgG antibody to T. gondii were measured by ELISA (Meditens Diagnostics BV, Netherlands) Toxoplasma IgG antibody was quantified using the Sabin-Feldman dye test as reference test. In the schizophrenic group 60.7% of patients, in the first control group including OPD 36.7% of patients and in the second control group including HC 45.3% of the sample were found to be positive for Toxoplasma IgG. The seropositivity rate for anti-Toxoplasma IgG antibodies in schizophrenia patients was significantly higher than OPD and HC groups (X²= 25.16, p = 0.000). No statistically significant differences were found between male and female patients in patient group for Toxo-IgG positivity rates (p > 0.05) whereas significant differences were found in male and female patients between schizophrenia and OPD group and HC groups (p = 0.05). Toxoplasma IgG positivity was detected significantly higher in the 51 to 65 age group than patients in the 25 to 34 and 35 to 50 age group. Only in the 51 to 65 age group Toxoplasma IgG positivity rates was significantly different as compared to the two other control groups in the same age group. In the other age groups no significant differences were found between schizophrenic patients and control groups for IgG positivity rates.

In conclusion, our study indicates that Toxoplasmosis may contribute to the etiopathogenesis of schizophrenia, this effect is particularly remarkable in the 51–65 age group. No particular gender effect was observed.

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Overexpression and Protective Role of Interleukin-6, Tumor Necrosis Factor-Alpha and Nitric Oxides in Epidemiologic and Clinical Ocular Toxoplasmosis

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The cytokines interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-alpha), as well as the accumulation of nitric oxides (NO), have been studied with regard to a possible role in protection against the development of ocular toxoplasmosis. In a murine model of ocular toxoplasmosis, mRNA transcripts for inflammatory mediators, such as IL-6, TNF-alpha and inducible NO-synthase, were increased during chronic infection. In further studies, mice treated with TNF-alpha were not protected against lethal challenges with Toxoplasma parasites, but mice treated with anti-TNF-alpha antibodies showed increases in trophozoite numbers and transient signs of illness. Moreover, the inhibition of NO production with aminoguanidine in mice infected with Toxoplasma parasites resulted in a marked increase in the symptoms of ocular inflammation. In the clinical situation, increased levels of IL-6, TNF-alpha and NO were often found to correspond with critical events during ocular toxoplasmosis, such as extended conjunctivitis, vitreous turbidity and/or temporary blindness. In the analysed patients, IL-6 and TNF-alpha bioactivities were routinely analysed by the B9 and WEHI164 bioassays, respectively, and NO was evaluated as concentration of nitrite by a compensated Griess reaction. Statistical analysis was performed by using the t-Student test and the Pearson’s correlation coefficient (PCC). The highest levels of IL-6, TNF-alpha and NO were recorded during critical episodes of ocular toxoplasmosis. The levels of IL-6 were higher than those of TNF-alpha or NO, and were statistically significant (p = 0.0049) when compared to the rest of recorded IL-6 values. The best correlation was always observed between TNF-alpha and NO (PCC: 0.4), whereas IL-6 presented a PCC of 0.3 either with TNF-alpha or with NO. As described in the murine model, the increased levels of IL-6, TNF-alpha and NO may represent a protective role for the host by controlling the number of Toxoplasma parasites and the further development of ocular complications.

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Detection of Acanthamoeba in Tap Water and Contact Lens Cases Using PCR

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Background: Acanthamoeba keratitis is a rare but devastating corneal infection, with almost 90% of cases associated with contact lens wear. Infections in patients with contact lens-related AK have been associated with the use tap water in the care of contact lenses, rinsing the lens case with...
tap water, handling lenses with wet hands, and washing the face whilst wearing lenses. *Acanthamoeba* can colonise lens cases exposed to tap water. To determine the presence of *Acanthamoeba* in tap water in Hong Kong, and of contamination of contact lens cases using a polymerase chain reaction (PCR) detection method.

**Method:** Tap water was collected from the bathroom sink of 100 households in Hong Kong and tested for the presence of *Acanthamoeba* by means of PCR amplification. Characteristics of homes were noted with respect to age, building type, and location. A sample of 100 contact lens cases were collected from regular users of contact lenses. The inner surface of the case was swabbed and tested for the presence of *Acanthamoeba*. The risk for contamination was significantly higher in older properties, those located in the older urban area of Kowloon, and those in which the bathroom tap was served by a water tank. Only one contact lens case yielded *Acanthamoeba* and this subject admitted poor compliance with lens care routines.

**Conclusions:** Levels of *Acanthamoeba* detected using PCR were somewhat higher than previously reported in Hong Kong. Older plumbing and poorly maintained water storage tanks may increase the risk of *Acanthamoeba* contamination. Poor compliance with care of the lens case, allowing for the build up of biofilm may increase the risk of *Acanthamoeba* contamination of the case and possible *Acanthamoeba* keratitis.

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Molecular Diagnosis of *Babesia* Infection Among Rodents Collected from the Offshore Kinmen Island of Taiwan

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*Babesiosis* is an emerging tick-transmitted zoonotic infection caused by intraerythrocytic protozoan parasites of the genus *Babesia* and rodent-borne *B. microti* was recognized as the major causative agent for human infection. In order to realize the prevalence of *Babesia* infection among rodent hosts in the offshore Kinmen Island of Taiwan. We conducted a whole-year survey to investigate the *Babesia* infection among rodent hosts and identify the *Babesia* genospecies in the Kinmen island. Genomic DNA were extracted from blood specimens of 283 rodents and further amplified by PCR using specific primers of Piro A/B and Bab 1–4, targeting a specific fragment of the gene encoding the nuclear small-subunit ribosomal RNA (18S rRNA) of *Babesia* spp. and *B. microti*, respectively. Results indicate that the seasonal prevalence of *Babesia* infection among rodent hosts was observed with an average infection rate of 25.4% (72/283), ranging from 9.5% to 50%, and *B. microti* was identified in 12.4% (35/283) of rodents. The higher seasonal prevalence was observed on April (50%) and May (43.8%). The highest infection rate was also observed at the district of Kinning township (33.3%). Thus, our results not only reveal the prevalence of *Babesia* infection among rodents in the Kinmen island but also primarily identify the persistence of *B. microti* in the natural hosts of Taiwan.

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Reactivity of Antibodies to Hookworm Excretory-SECRETORY Antigens from Hookworm Infected Patients in Northern Nigeria

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**Background:** Little is known about the antigens of hookworms or the possibility of stimulating protective immunity in infected patients. However, in order to develop effective antimicrobial therapy, it is necessary to understand the molecular nature of parasite antigens and host response. *Necator americanus*, which is prevalent in northern Nigeria, has been shown to express a range of excretory-secretory (ES) protein antigens. In this study, sera from patients infected with *Necator americanus* were tested at a 1:100 dilution against radiolabelled *Necator americanus* excretory-secretory products. The purpose was to determine whether the immune system of hosts harbouring *Necator americanus* is capable of identifying epitopes expressed by the parasites.

**Methods:** Serum was collected from 10 patients diagnosed as infected with *Necator americanus* on the basis of faecal egg counts. Sera from a pool of hookworm infected Australian aboriginals (Aussie pool) and normal human sera (NHS) from non-infected persons served as controls. Immunoprecipitation of antigenic polypeptides was done by the addition of 10 μL of serum from infected and non-infected individuals to 100 μL of 10 mM Tris (pH 7.4), 5 mM EDTA, 0.9% (w/v) NaCl, 0.05% (v/v) Tween 20 containing 1.5 × 105 cpm of labeled ES products. Immune complexes were precipitated by incubation for 1 hour at 22°C with protein A Sepharose, followed by extensive washing in the same buffer at 0°C.

**Results:** Sera from infected Nigerian patients recognized and bound *Necator americanus* ES products and was precipitated. Response from the Nigerian sera against hookworm ES products showed great variability but was similar to that from the pool of hookworm infected patients from Australia. Normal human serum (NHS) showed a negative response to hookworm ES products.

**Conclusion:** Sera from hookworm infected patients is capable of reacting against defined hookworm antigens. The response elucidated however, is diverse in antigen recognition. This has implication for immunodiagnosis and for therapy.

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