

Identification of a Mouse-Virulent Recombinant Type I/III *Toxoplasma gondii* Strain in Liver Cytology of an Immunosuppressed Cat Infected with FeLV–C Subgroup

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Introduction: *Toxoplasma gondii* is a ubiquitous apicomplexan parasite for which cats serve as the definitive host. Although infection in cats is common, overt clinical disease is infrequent and typically restricted to immunocompromised individuals. To date, no consistent association has been established between specific *T. gondii* genotypes and defined clinical phenotypes in feline hosts.

Case presentation: This report describes a case of systemic toxoplasmosis in a 5-year-old Siamese cat infected with feline leukemia virus (FeLV), classified within the FeLV-C subgroup. The animal presented with a two-month history of lethargy, hyporexia, weight loss, and non-regenerative anemia. The cat, a rescued free-ranging feline with persistent outdoor access, initially responded to treatment with doxycycline and prednisolone for suspected *Mycoplasma* spp. infection. However, clinical relapse occurred, accompanied by discomfort in the head and neck region, consistent with peripheral neuropathy or encephalitis. Subsequent treatment with raltegravir, prednisolone, darbepoetin alfa, cyclosporine, and oral clindamycin (with uncertain bioavailability) failed to prevent further clinical deterioration. The cat developed pyrexia, severe anemia, neutropenia, hyperbilirubinemia, hypoglycemia, and elevated ALT activity. Abdominal ultrasonography and thoracic radiography revealed diffuse hepatic parenchymal changes and a generalized interstitial pulmonary pattern. Cytological examination of a hepatic fine-needle aspirate identified organisms morphologically consistent with *T. gondii*, confirmed by qPCR. Despite the initiation of intravenous clindamycin and trimethoprim-sulfamethoxazole, the cat developed generalized seizures, acute respiratory distress, and septic shock, leading to euthanasia. Molecular genotyping of the hepatic isolate, using targeted next-generation sequencing across 13 polymorphic loci, identified a recombinant type I/III strain previously characterized as virulent in murine models from the same geographical region.

Discussion and conclusions: This report underscores the clinical variability of toxoplasmosis in cats and contributes to the limited epidemiological data on strain distribution in animals. Genotyping efforts may facilitate source attribution in zoonotic events and reveal associations between parasite genotypes and disease phenotypes.

Keywords: Toxoplasmosis; Genotype; Immunosuppression; Clinical disease; Diagnosis.

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