

ACUTE DISSEMINATED TOXOPLASMOSIS IN A SMUGGLED JUVENILE CHEETAH (*ACINONYX JUBATUS*)

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A privately owned sixteen-week-old cheetah cub (*Acinonyx jubatus*) was referred to Nad Al Shiba Veterinary Hospital. The cheetah presented with anorexia, pyrexia, tachypnoea, anaemia and icterus. The abdomen was swollen and tender with palpable hepatomegaly. The cub had been in the owner's possession for 3 weeks and was suspected to have been wild caught. Despite treatment the cheetah died after 3 days.

Gross postmortem revealed hepatomegaly, splenomegaly and haemorrhagic congestion of all lung lobes. Histopathology revealed a multifocal acute necrotising myocarditis with intralésional basophilic protozoal tachyzoites consistent in morphology to *Toxoplasma gondii*. Necrotising lesions were also seen in the pancreas and liver. A severe diffuse sub acute interstitial pneumonia was present with extensive intra-alveolar haemorrhage and accumulations of proteinaceous fibrin rich fluid. Immunohistochemistry using *T. gondii* specific antibodies revealed positive labeling in multiple tissues including the lung, pancreas, liver, heart, spleen and urinary bladder. In addition a sample of frozen lung tissue submitted for PCR confirmed the presence of *T. gondii*. A frozen serum sample submitted for serological testing revealed a positive IgM titre of 20 and IgG titre of 100 (titres greater than 50 are positive).

There are a number of reports of *T. gondii* exposure from cheetah in both zoological and free ranging populations. This appears to be the first report of an acute symptomatic infection in a cheetah. The diagnosis of toxoplasmosis is challenging. Faecal shedding of oocysts in cats suffering from acute toxoplasmosis is very rare and no oocysts were found in this case. It appears that as interstitial pneumonia is a common feature of toxoplasmosis, cytological examination together with PCR testing of lung or tracheal washes may be useful. Serological tests in this case were validated for use in domestic cats but not cheetah. There appears to be little information available on the optimal assay for serological use in non-domestic felids. However, results revealed elevated IgM which is commonly detected in the serum of clinically sick domestic cats during a period of active infection and does not last longer than 3 months post infection. It appears this is the first report of elevated IgM titres in a non-domestic felid actively infected with *Toxoplasma gondii* and indicates the need for further research into the use of this assay as a means of diagnosing toxoplasmosis in actively infected non-domestic felids using a single blood sample. IgG titres are commonly raised in exposed non-domestic felids, however, single samples do not aid in the diagnosis of active infection as IgG levels may be raised for months to years following exposure. The demonstration of a rising IgG titre (at least 4 fold) over a 2-3 week period may indicate recent or active infection in domestic cats.

Domestic and exotic felids are the only known definitive hosts of *T. gondii* with transmission via three routes, ingestion of feline faecal matter containing oocysts, transplacental infection and ingestion of bradyzoites in infected meat. The latter route appears the most efficient in domestic cats. In addition to the route of infection, the host age, presence of concurrent infections and immunodeficiencies

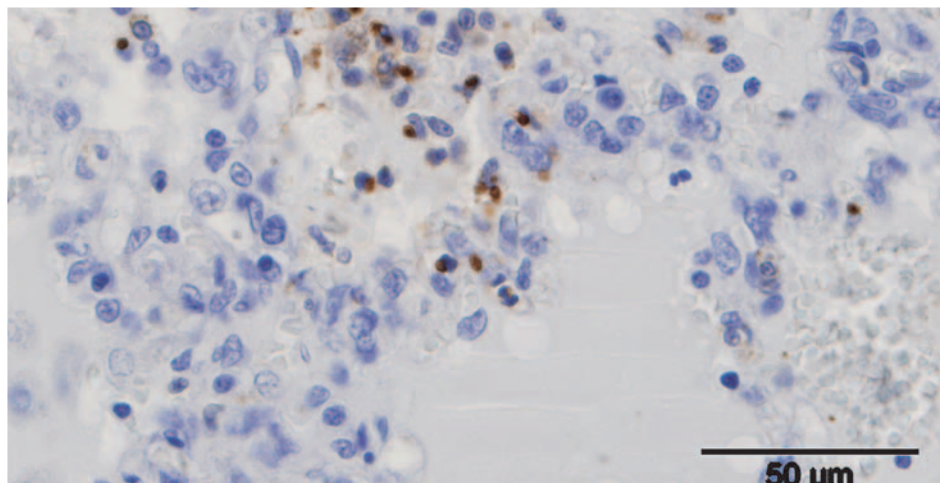
are all known to affect the clinical outcome of toxoplasmosis in domestic cats. Unfortunately this cheetah was highly stressed having been captured from the wild, transported illegally and likely housed with other domestic and non domestic animals before being sold as a household pet. It seems probable that this contributed to the clinical outcome of this case.

The smuggling of illegally captured wildlife for the pet trade is a continuing problem in the Middle East. This case highlights the dangers this trade presents to both wildlife and humans. *Toxoplasma gondii* is a zoonosis, causing abortion in women and disease in immunosuppressed patients.

References and full text for this article will be found on the website www.wmenews.com after acceptance for publication.



Juvenile cheetah suffering from clinical toxoplasmosis and fitted with a naso-oesophageal feeding tube and iv line. (©Chris Lloyd)



Immunohistochemistry using *T. gondii* specific antibodies showing positive labeling of tachyzoites in cells within the alveolar septum. (©Dr David Buxton Moredun Research Institute)



Post mortem revealed severe haemorrhagic congestion of all lung lobes. (©Chris Lloyd)