Neosporosis in a dog in Hungary

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Abstract: A Basset hound dog developed hind limb paresis at 2 months of age. The dog remained partially paralysed and died at 14 months of age. The predominant lesion was severe, chronic, non-suppurative, necrotising meningoencephalitis. Neospora caninum-like tachyzoites and tissue cysts were found in the brain. This report further extends the geographic range of canine neosporosis.

Key words: Neospora caninum, neosporosis, dog, paralysis

INTRODUCTION

Neospora caninum is an apicomplexan parasite that causes paralysis and death in dogs, abortion and neonatal mortality in cattle, sheep, goat and horse (Dubey 1990). It was first described and isolated from naturally infected dogs in the United States in 1988 (Dubey et al. 1988a,b). Until that time it had been confused with the structurally similar parasite Toxoplasma gondii (Dubey and Beattie 1988; Dubey et al. 1988a). Natural infections in dogs have been found in the United States (Dubey et al. 1988a,b), Australia (Munday et al. 1990), Norway (Bjerkås et al. 1984), Sweden (Uggla et al. 1989), England (Dubey et al. 1990), Belgium (Poncelet et al. 1990) and Switzerland (Wolf et al. 1991). This is the first record of neosporosis in Hungary.

MATERIALS AND METHODS

Clinical history

The smallest puppy in the litter of a Basset hound bitch showed signs of ill-health shortly after weaning at two months of age. The first clinical sign noticed by the owner was the paresis then paralysis of the hind limbs. Later incontinentia alvi et urinae and
loss of hair developed. The clinical signs persisted for several months with temporary improvements of health. During this time the dog was treated many times with antibiotics, glucocorticoids and vitamins. Ultimately, the dog was submitted to the Small Animal Hospital of the University of Veterinary Science, Budapest at 14 months of age. Apathy, convulsions and tetraplegia were noticed. The dog died shortly after its admission to the hospital.

Pathology

The dog was necropsied. Sections of brain fixed in 10% buffered neutral formalin were stained with hematoxylin and eosin (HE) and with anti-*N. caninum* and anti-*T. gondii* antibody sera in an avidin-biotin complex immunohistochemical test using the methods of Lindsay and Dubey (1989) and Anderson et al. (1991). Sections of brain were deparaffinized and processed for transmission electron microscopy as described previously (Dubey et al. 1989a).

RESULTS

Necropsy examination revealed no major gross abnormality. There was no evidence of concomitant infection.

Microscopically severe, chronic, non-suppurative, necrotising meningoencephalitis diffusely affected both grey and white matter. Tachyzoites and tissue cysts were dispersed in the lesions. Tachyzoites were seen individually and as large aggregates. Tissue cysts up to 50 μm in diameter contained numerous slender bradyzoites and had 1-2 μm thick cyst walls.

In transmission electron micrographs numerous tachyzoites seen in neural tissue were in division into 2 zoites, indicating the fast replication of the organism. Unfortunately, the organelles were partly disrupted because of autolysis.

Tachyzoites and tissue cysts stained positively with both anti-*N. caninum* and anti-*T. gondii* antibody sera.

DISCUSSION

Staining of the parasite with both *T. gondii* and *N. caninum* antisera is perplexing but *N. caninum* from naturally infected dogs occasionally reacts with anti-*T. gondii* serum (Dubey et al. 1990b).

The clinical history of ascending posterior paralysis is characteristic of neosporosis (Dubey 1990). There was no evidence of concomitant infection, contrary to what is generally seen in toxoplasmosis (Dubey and Beattie 1988). The tissue cyst walls were thicker those that of *T. gondii*. Large groups of dividing tachyzoites are rare in *T. gondii* infection. These findings which were similar to those reported in other natural cases of canine neosporosis (Bjerkås et al. 1984, Dubey et al. 1988a,b, 1990a, Munday et al.
1990, Poncelet et al. 1990, Uggla et al. 1989, Wolf et al. 1991) support the diagnosis of *N. caninum* infection. This report further extends the geographic range of canine neosporosis.

The source of infection, life cycle of the parasite and treatment of neosporosis in dogs are unknown (Dubey 1990). But veterinarians should be alert to the fact that *N. caninum* can be highly pathogenic and distinct from *T. gondii*.

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**Sréter, T., Sebestyén, P. és Dubey, J. P.: A kutyák neosporosisának első hazai megállapítása**


**REFERENCES**


