**Sarcocystis neurona** Infection in a Pacific Walrus (*Odobenus rosmarus divergens*) and a Bottlenose Dolphin (*Tursiops truncatus*) Under Human Care: Case comparison

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**Abstract**

*Sarcocystis neurona* is a protozoal parasite that has been observed more frequently in wild marine mammals as a cause of morbidity and mortality.¹,² There is limited information on the prevalence of sarcocystis and its effects on marine mammals under human care. Here we present two cases of sarcocystosis in two marine mammals under human care.

**Case 1**

A 21 year old male Pacific walrus presented with shifting lameness in the hind and front flippers. The lameness initially resolved with anti-inflammatory treatment. Four months later he developed facial and body tremors, lethargy and inappetance. The tremors subsided over the course of a week with diazepam treatment. A month later the lameness returned and his appetite and attitude greatly decreased. Treatment with dexamethasone, valium and enrofloxacin was initiated and helped to increase his appetite and improve his attitude for a few weeks. Despite treatment, body tremors returned a few weeks later and quickly developed into grand-mal seizures and death.

A full post-mortem examination was performed and revealed diffuse lung congestion, mild carpal swelling, a pale myocardium, and a grossly normal brain. Histopathology revealed that death was due to protozoal encephalitis and pulmonary manifestations of the infection. Morphology of the protozoal parasites was consistent with *Sarcocystis neurona* and infection was confirmed via immunohistochemistry.

**Case 2**

A 5 year old bottlenose dolphin presented with abnormal behavior and anorexia two weeks after arriving from another facility. Complete blood cell counts and chemistry panels were normal at that time. The clinical signs initially improved with diazepam but worsened a few months later. Repeat blood work revealed a leukocytosis, elevated erythrocyte sedimentation rate, decreased alkaline phosphatase and normal muscle enzymes. Protozoal titers were run on banked serum from the initial start of clinical signs as well as from the current sample and the titer increased from 1:5120 to 1:10240. At this time treatment was started with ponazuril (10mg/kg SID x 30days), prednisone (0.25mg/kg BID) and Clavamox. The dolphin started to improve within...
days and the clinical signs resolved. Protozoal titers decreased after treatment back to 1:5120 and remained slightly elevated at 1:160 for the next few years.

*Sarcocystis neurona* is an intracellular protozoal parasite with a two host life cycle and opossums are the only known definitive host.¹ The mode of transmission in marine mammals is unknown, but birds and insects can act as transport hosts.⁴ In this case, there are wild opossum on the park grounds that could have defecated around or in the outdoor exhibit, exposing the marine mammals or the oocysts could have been transported by a vector or fomite and subsequently ingested by the animals. It is more likely that the dolphin in case 2 was exposed at the previous facility it lived in and succumbed to infection after the stress of transport and introduction to a new facility. To the authors’ knowledge, this is the first case of sarcocystis encephalitis in a Pacific walrus and may reflect a sensitivity to this protozoal parasite like that in harbor seals (*Phoca vitulina*).⁴,⁵

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**Literature Cited**


