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## A Case of Leucocytozoonosis in A Wild Mallard

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During the first week of August, 1963, a juvenile male mallard (*Anas platyrhynchos*) was found moribund in the Presque Isle Park area, Ontario. It was examined and necropsied by Dr. R. Julian at the Regional Veterinary Laboratory, Brighton, Ontario. Other than extreme emaciation, no gross lesions were noted. Tissues from a variety of organs were fixed in formalin and submitted for histologic examination.

Breast muscle tissues were typical of advanced nutritional dystrophy. An average of 36 poorly developed megaloschizonts of *Leucocytozoon* sp. were found per cm<sup>2</sup> of muscle tissues sectioned at 6-7 $\mu$ . The most striking lesions, however, were in the brain. There, megaloschizonts were found 300 to 400 per cm<sup>2</sup>, in all stages of development from the trophozoite stage to cysts 160-190 $\mu$  in diameter (fig. 1). In addition, there was proliferation of capillaries and extreme proliferative changes in the intima of larger vessels, to the extent that many arteries and veins were nearly obstructed (fig. 2). Thrombi were not seen but hemorrhages associated with mature or ruptured megaloschizonts were common.

Blood vessels in all organs contained large numbers of *Leucocytozoon* gametocytes. Schizonts were not found in the liver, lung, kidney and testicle. The spleen was not submitted for examination.

Megaloschizonts were always found closely associated with blood vessels. Release of merozoites from mature megaloschizonts appeared to be a gradual

process. This was accompanied by activity of glial phagocytes or Gitter cells in the surrounding tissue. Gitter cells became filled with the merozoites released from cysts and frequently invaded the cysts. It is possible that in carrying debris and merozoites back into the circulating blood Gitter cells may serve a function mutually beneficial to both host and parasite. Cysts which were emptied of merozoites either had collapsed or had become filled with blood, suggesting "recanalization" by the blood stream.

### Discussion and Conclusions

The large size (190 $\mu$ ) and number of the megaloschizonts in the brain of this duck suggest that this tissue is favorable for their development. This is contrary to the conclusions of Cowan (1955), who found development of megaloschizonts in the brains of domestic ducks to be retarded in comparison to their development in the spleen. The largest size of megaloschizonts in the spleen recorded by Cowan was 206 $\mu$  and the largest brain megaloschizonts observed by Newberne (1957) were 118 $\mu$ . It is unfortunate, in our case, that the spleen was not available for comparison.

Signs of weakness and starvation shown by this duck were probably due to heavy parasitism with *Leucocytozoon*, with resultant anemia, neurologic disease, and inability to feed. The clinical and gross pathological observations in this case suggest that ducks found in the field in weakened or starving condition should be examined histologically for evidence of *Leucocytozoon* infection.

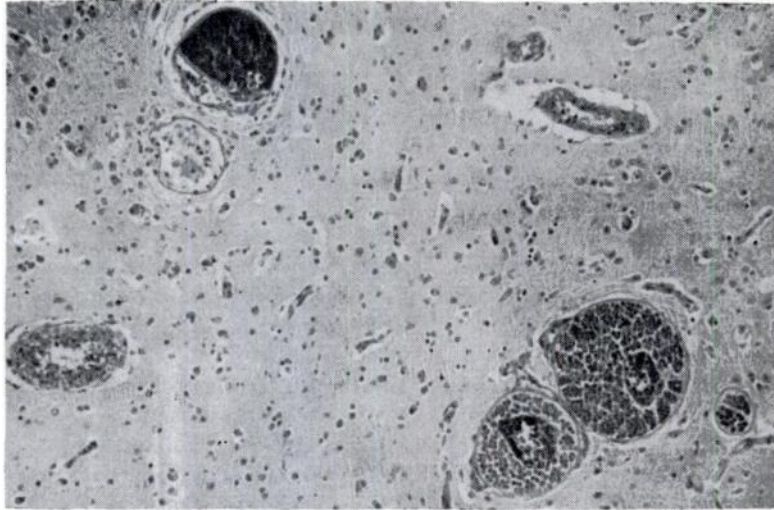


FIGURE 1

Cerebrum with *Leucocytozoon megaloschizonts* in various stages of development to the mature cyst containing many small dark merozoites (upper left). Below it, is a cyst emptied of merozoites.

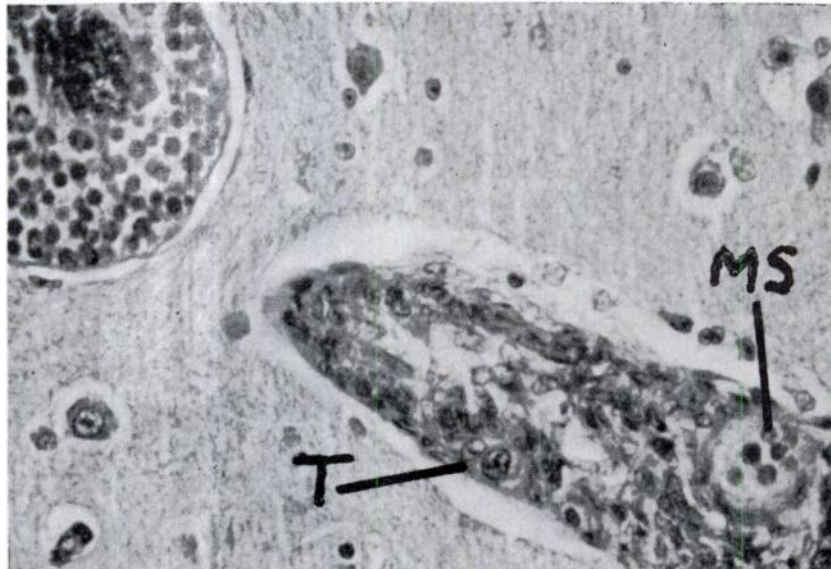


FIGURE 2

Cerebrum with megaloschizont to show the central body and cytomeres. The blood vessel has a markedly proliferated intima containing trophozoites (T) and an early megaloschizont (MS).

## REFERENCES

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