

A LABORATORY REPORT ON A CASE OF CANINE HISTOPLASMOSIS IN ONTARIO

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A REVIEW of the literature since the first reported case of histoplasmosis by Darling¹ in 1906 indicates that the incidence of this disease is increasing. *Histoplasma capsulatum* infection appears to be world-wide in distribution.² The organism is not specific for man, but may be found in the domestic and wild animals. Not until 1939, when De Monbreun reported an instance of histoplasmosis occurring in a dog, was *Histoplasma capsulatum* found in nature other than in man. *H. capsulatum* may be described as an ubiquitous organism, in areas where histoplasmosis exists; the sources and modes of dissemination are not clearly understood. Recently *H. capsulatum* has been recovered from the soil.³ Published reports dealing with animal species affected with histoplasmosis state that the fungus has been recovered from rats and skunks,⁴ mice and cats,⁵ dogs,⁶ a Kodiak bear from the Columbus, Ohio, zoo⁷ and a horse.⁸ Furcolow⁹ reports on histoplasmin sensitivity tests in cattle in Kansas. He states that histoplasmin reactors were found.

The canine appears to be the only species in which infection with histoplasmosis has been shown to be transmitted from one to another member.¹⁰ The significance of this finding is that it suggests the possibility of human infection through exposure to animals. Some workers consider the dog to be a source of the disease in man, among them Pará,¹¹ who reported histoplasmosis in a child and in a dog closely associated in the same household. Olson, Bell and Emmons⁵ attempted to relate naturally occurring histoplasmosis in three dogs to four reported human cases in Virginia. They were not able to demonstrate any association between the dogs and the human patients. Ticks, *Dermacentor variabilis*, were allowed to feed on one of the dogs ill with histoplasmosis. *H. capsulatum* was recovered from the ticks.

Reports of histoplasmosis in Canada are quite rare. Green¹² gives results of histoplasmin tests conducted in humans in Manitoba. Stewart¹³ also reports on findings of histoplasmin testing in humans in the Maritimes. Mankiewicz *et al.*¹⁴ describe a human case of pulmonary histoplasmosis with cavitation. No reports of cases of histoplasmosis in animals in Canada have been noted.

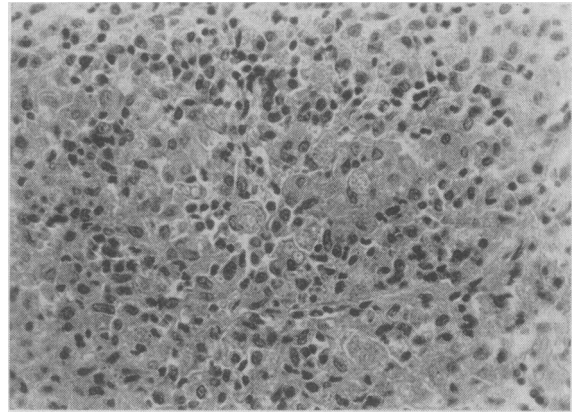


Fig. 1.—Spleen tissue from dog naturally infected with *H. capsulatum*. Approx. 515 \times .

CASE HISTORY

The animal affected was a male boxer aged 21 months. The dog was admitted to the Ontario Veterinary College in a state of emaciation, with a history of a chronic cough and laboured breathing. Antibiotics, saline and dextrose were administered without any apparent response. The animal died a short time after admission.

On necropsy the entire parietal pleura was covered with small nodules, from milium to hazel-nut size. The mediastinum had the same nodular appearance although the nodules were considerably larger, measuring 3-4 cm. in diameter. On the surface of the lungs numerous white, slightly protruding nodules from 0.5-3 cm. in diameter were present. Incision of the larger ones revealed a hollow centre, containing air and only a trace of a yellowish slimy fluid. The lymph nodes in the thoracic cavity were all firm, white and enlarged to about three times normal size. The cut surface was yellowish-grey and slimy.

HISTOPATHOLOGY

The lesions, which were chiefly pulmonary in distribution but also involved liver, spleen, and lymph nodes, were characterized microscopically by varying sized areas of focal necrosis with a very profound reticulo-endothelial cell proliferation. Many of the macrophages were filled with spherical basophilic staining bodies around which a colourless halo was observed. These bodies were morphologically typical *Histoplasma capsulatum* organisms. They were also seen free in the tissue spaces (Figs. 1 and 2).

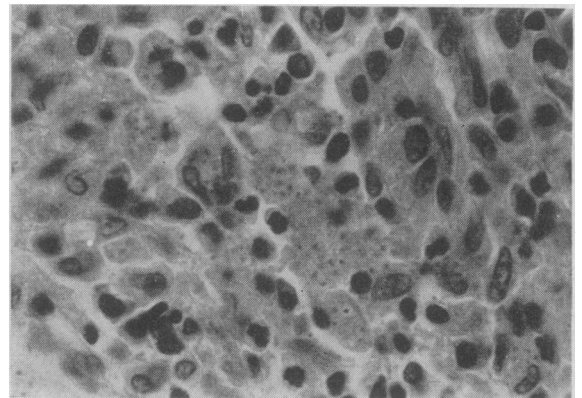


Fig. 2.—Spleen tissue from dog naturally infected with *H. capsulatum*. Infiltration of macrophages with spherical basophilic staining bodies shown. Approx. 1,255 \times .

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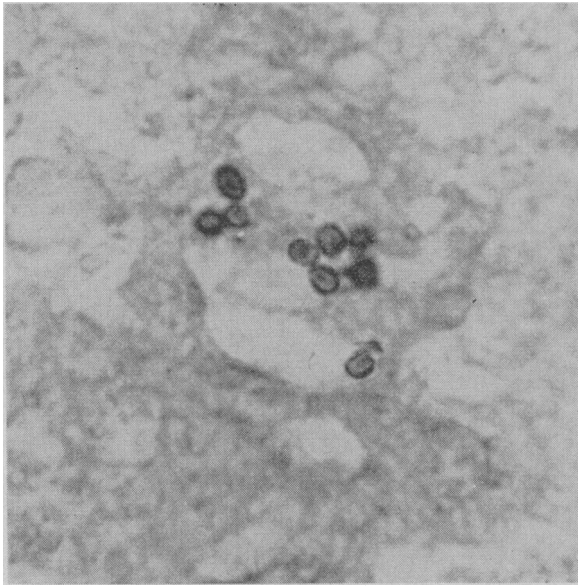


Fig. 3.—Liver tissue from mouse experimentally infected with *H. capsulatum*. Approx. 1,000 ×.

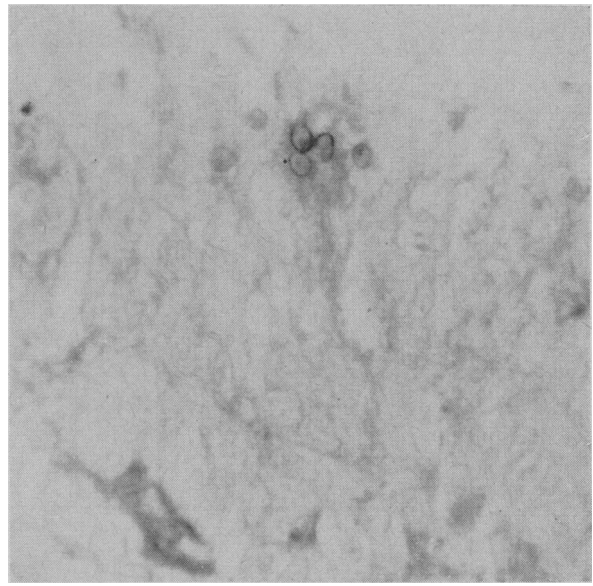


Fig. 4.—Spleen tissue from mouse experimentally infected with *H. capsulatum*. Approx. 1,000 ×.

MYCOLOGY

Blood agar plates containing 5% horse blood were inoculated with material removed from the lung nodules, and placed in the incubator at 37° C. The plates were examined after a six-day period of incubation. Moist, dull white colonies appeared. Smears prepared from the colonies and examined under the microscope revealed oval, yeast-like bodies composed of budding cells.

Sabouraud agar plates and slopes were also inoculated with lung tissue and exudate and incubated at room temperature. Growth of colonies on Sabouraud media was observed at the end of 14 days. The colonies were greyish-brown. Smears from the colonies showed thick-walled spores with finger-like projections.

ANIMAL INOCULATION

A group of white mice were each given intraperitoneal inoculations of 1 ml. of a mixture of organism and egg yolk. This mixture was 50% egg yolk and 50% aqueous suspension of fungus growth at room temperature. The aqueous suspension was as heavily saturated with fungus spores as was feasible. All of the inoculated mice were destroyed three months later. Liver and spleen impression smears were made and stained by the Hotchkiss-McManus method (Fig. 3). Hotchkiss-McManus stained tissue sections of liver and spleen were also prepared (Fig. 4). Both methods of tissue examination frequently revealed numerous *Histoplasma capsulatum* organisms.

DISCUSSION

Histoplasmosis among wild and domestic animals appears to be widespread. Human cases of histoplasmosis are being reported from various countries of the world at frequent intervals. Outbreaks of histoplasmosis in domestic animals, particularly dogs, have reached significant proportions since the initial reported case in 1939. At present the transmission of canine histoplasmosis to man has not been proven but the com-

municability of this disease from dog to dog has been established. There is still the possibility that histoplasmosis is transmitted from animals to man; if this should prove to be the case, the dog could serve as an ideal medium for this transfer. It has been shown by experimental studies¹⁰ that *Histoplasma capsulatum* may be disseminated by sputum, saliva, faeces and urine from infected dogs.

SUMMARY

A case of canine histoplasmosis is reported. The diagnosis is confirmed by pathological and mycological studies, as well as animal inoculation tests. To our knowledge this is the first authenticated diagnosis of this infection in animals in Ontario and possibly Canada.

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