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ACTINOBACILLUS SEPTICEMIA IN A BLACK SWAN *(Cygnus atratus)*

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Abstract: A species of *Actinobacillus* was isolated in pure culture from the carcass of a captive Australian black swan *(Cygnus atratus)* dying of acute septicemia. The gross and microscopic findings are described and the significance of the isolate is discussed.

INTRODUCTION

Actinobacillus spp. have been reported infrequently from birds.[1,3] Hacking and Sileo[3] isolated an *Actinobacillus* sp. from six waterfowl with variable lesions but were unsure of the pathologic significance of the isolate. In the present case, an *Actinobacillus* sp. biochemically identical to the Hacking and Sileo isolate, was associated with an acute fatal septicemia in a black swan.

HISTORY

A three-year-old Australian black swan *(Cygnus atratus),* hatched and raised in Southern Ontario was acquired four months prior to its death. The bird was maintained in an aerated pond surrounded by pasture, which it shared with a mate and a group of five white swans which were separated by a wire fence. Wild ducks and geese had access to the area and occasionally visited the pond. The clinical signs were of sudden onset with gasping and swaying of the neck followed rapidly by death.

MATERIALS AND METHODS

Tissues from lung, heart and liver were fixed in 10% buffered formalin, embedded in paraffin, sectioned at 6μm and stained with hematoxylin and eosin. Heart and liver sections were also stained with Van Kossa and Perls Prussian Blue, respectively. Heart, liver, lung and spleen were asceptically cultured onto 10% bovine blood agar and MacConkey agar. A Staph. streak was applied to the lung culture for possible *Hemophilus* sp. The blood plates were incubated in a moist atmosphere at 10% CO_2.

RESULTS

Macroscopic Findings: The bird was in good body condition. The pericardial sac contained 20 ml of dark serosanguinous fluid and there were extensive petechial hemorrhages over the epicardium. Both lungs were congested and markedly edematous. The liver was firm, slightly enlarged and finely mottled throughout the parenchyma. The spleen was slightly enlarged and had multiple irregular white foci. Numerous small hemorrhages were found throughout the kidneys.

Microscopic Findings: The lungs were congested and air capillaries had collapsed because of edematous thickening of the septae. In the parenchyma were scattered foci of dense clumps of bacterial growth associated with mild lymphocyte infiltrations (Fig. 1). Subepicardial hemorrhage sometimes extended deep between myocardial fibres

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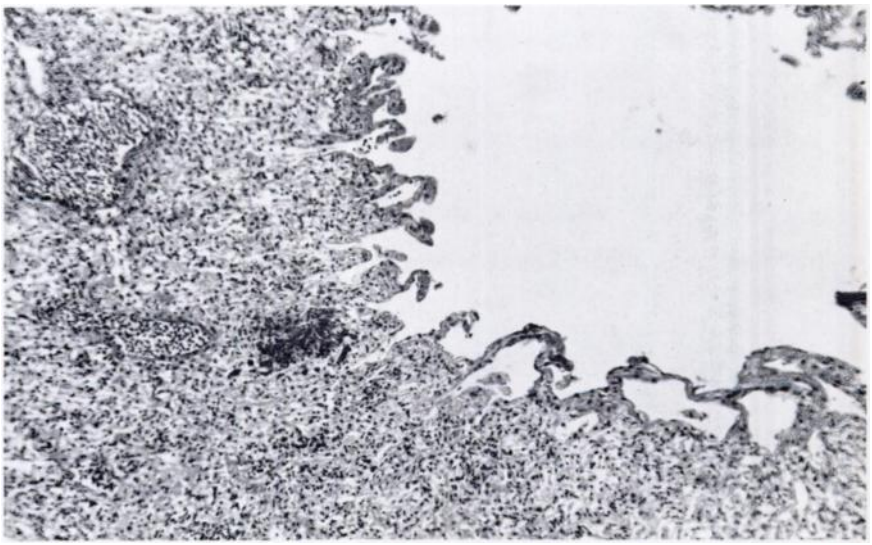


FIGURE 1. Colonies of *Actinobacillus* organisms in the lung of a black swan. H&E stain, ×114.

(Fig. 2) and localized granular myofibral degeneration often had variable degrees of mineralization (Fig. 3). The liver was congested and there was some intrahepatocytic accumulation of hemosiderin. Most portal vessels were surrounded by moderate mononuclear cell infiltration.

Bacteriology: A pure culture of *Actinobacillus* sp. was isolated from heart, liver, lung and spleen. The bacterium was morphologically and biochemically identical to the *Actinobacillus* isolate described by Hacking and Sileo[3] with the exception that the xylose sugar test was positive in the black swan isolate.

DISCUSSION

Actinobacillus spp. *(A. suis* and *A. equuli)* are known to cause septicemic disease and acute mortality in swine[2,4,6,7] and horses.[5] *Actinobacillus* spp. have been recovered from birds occasionally but have not been associated with septicemia. The previous avian isolates have been of questionable pathogenicity and experimental inoculations into ducks and mice failed to reproduce disease.[3] The *Actinobacillus* isolated from the black swan was recovered from various organs in pure culture and gram-negative bacteria morphologically identical to *Actinobacillus* spp. were associated with microscopic lesions.

Actinobacillus spp. in mammals are generally thought of as opportunistic invaders and can be isolated from clinically normal pigs and horses.[2,5] *A. suis* and *A. equuli* primarily cause acute vascular lesions resulting in edema, hemorrhage and focal necrosis, usually with minimal inflammatory response. The lesions described in the black swan are similar to those reported in acute *Actinobacillus* infections in swine and horses.

This report should draw attention to yet another differential diagnosis of acute gram-negative septicemic disease of birds.

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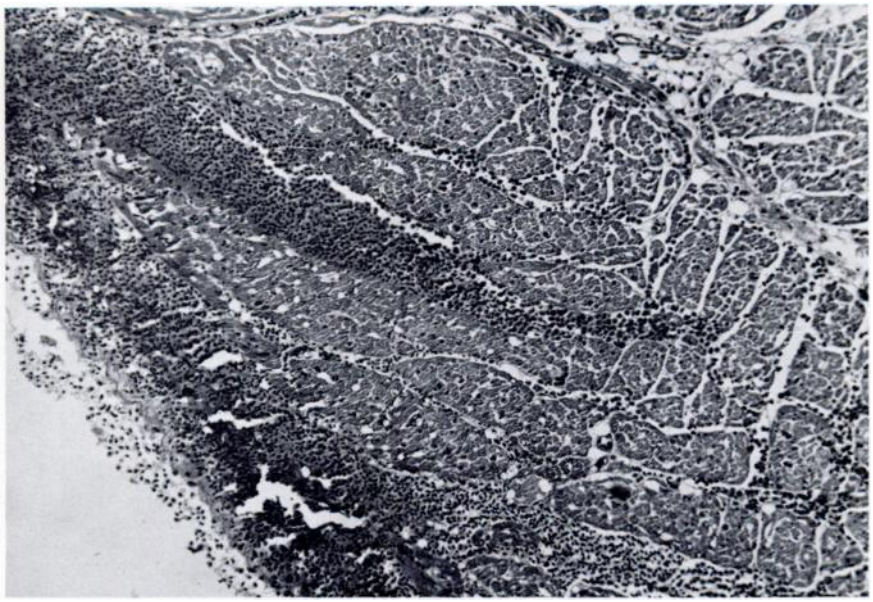


FIGURE 2. Subepicardial hemorrhages extending into the myocardium. H&E stain, ×114.

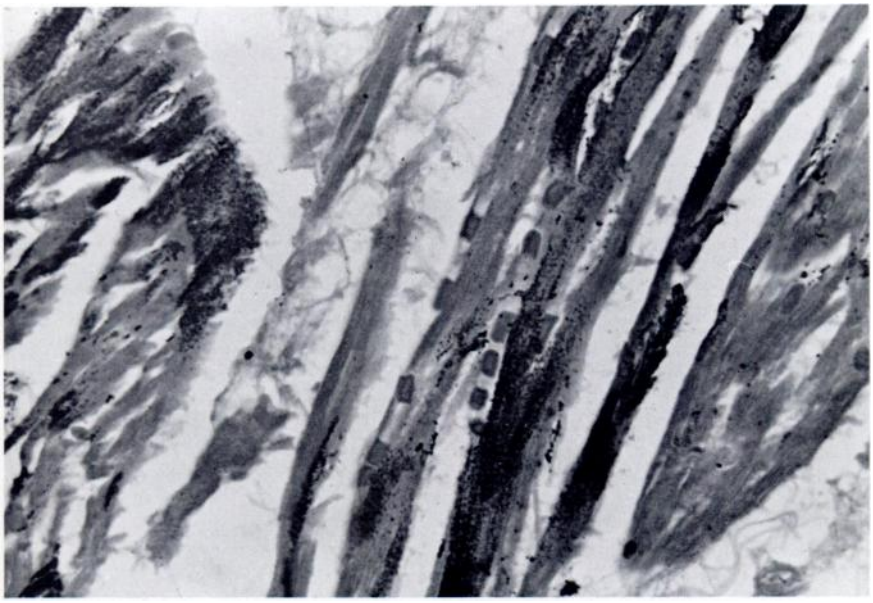


FIGURE 3. Myofibre degeneration with mineral precipitations. Van Kossa, ×450.

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