

MULTIPLE PROBLEMS IN A PIED CURRAWONG (*Strepera versicolor*) (CASE 1164.1)

CASE HISTORY

Juvenile male pied currawong (*Strepera versicolor*), found on the ground. Moderate dyspnoea noted upon clinical examination. Euthanasia elected.

CLINICAL PATHOLOGY HISTORY

Blood smears reveal round basophilic organisms within the cytoplasm of monocytes.

GROSS PATHOLOGY

External findings: No significant findings.

Hydration: good, Muscle mass: good, Fat deposits: absent

Internal findings: The liver and spleen are markedly enlarged. Fibrinous yellow material coats the pericardial sac, air sacs, several loops of the small intestine and the pleura. The gastrointestinal tract is filled with ingesta.

HISTOPATHOLOGY

Large numbers of cells circulating within vascular spaces have an eccentric, semilunar nucleus and the cytoplasm has been largely replaced with a large basophilic organism bearing a small, dense, central nucleus.

Specific lesions are not evident within the following tissues: skeletal muscle, skin, bone marrow, brain, pancreas, colon



Fig 1. Lung H&E 4x

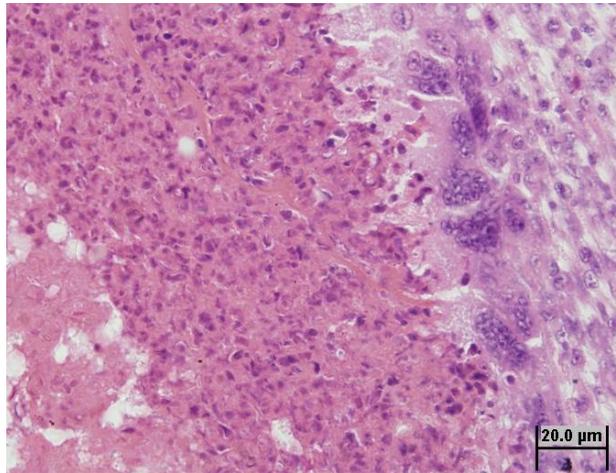


Fig 2. Lung (see inset Fig 1) H&E 100x

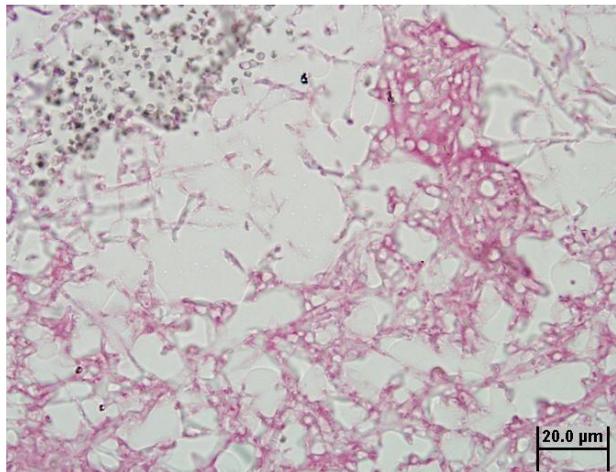


Fig 3. Lung (see inset Fig 1) H&E 100x

Myocardium: The epicardium at the heart base contains large numbers of mononuclear cells. The myocardium also contains multifocal mononuclear cell infiltrates. Cells bearing the round, basophilic organisms are scattered throughout these inflammatory infiltrates.

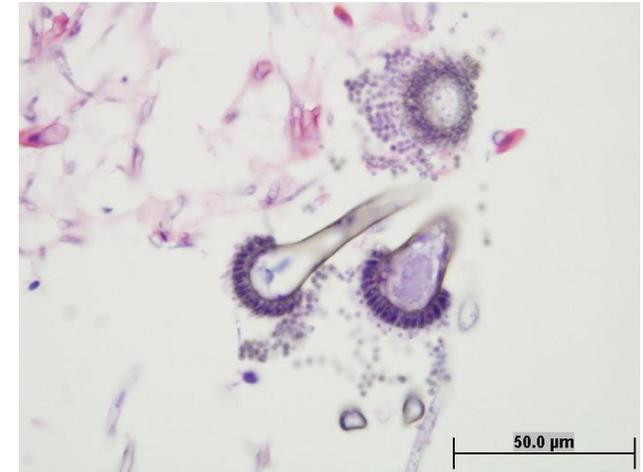


Fig 4. Lung H&E 100x

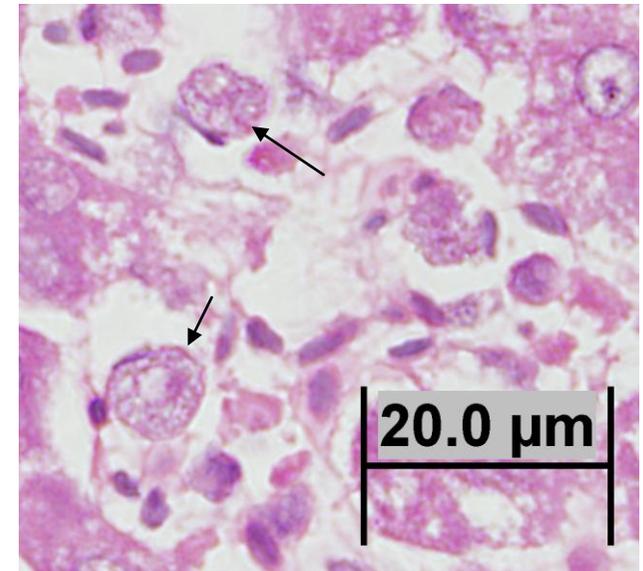


Fig 5. Blood cells, hepatic sinusoids. H&E 100x

Tasks: Describe the changes seen here. State a morphological diagnosis and describe any visible aetiological agents. What special stains might be used to highlight these aetiological agents?

Lung: The pulmonary parenchyma has focally been replaced by a very large granuloma (Fig 1) containing abundant eosinophilic cellular debris and surrounded by a thick, poorly circumscribed wall of multinucleate giant cells, macrophages, and scattered heterophils (Fig 2). A central clear space is evident within the eosinophilic debris and mycotic hyphae (Fig 3) and conidiophores (Fig 4) are visible within the space. A negative impression of branching, septate hyphae is evident throughout the eosinophilic material. The pulmonary parenchyma adjacent to this granuloma is markedly consolidated and contains large numbers of mononuclear cells, heterophils, and two smaller granulomas.

The remainder of the pulmonary parenchyma is congested and many airways contain eosinophilic fluid. Large numbers of cells bearing round, basophilic organisms are evident throughout the pulmonary parenchyma (Fig 5) these are Leucocytozoon (see arrows) in blood cells in hepatic sinusoids. The cell cytoplasm has been filled by the organism, displacing the nucleus to a thin band at the periphery of the cell.

Small intestine: The blood vessels of the intestinal lamina propria contain large numbers of the cells containing round, basophilic organisms. Small numbers of coccidial gametocytes are evident within the intestinal mucosa at the villar tips.

Proventriculus / Ventriculus: The serosa is segmentally thickened with mononuclear cells and scattered heterophils. These infiltrates are more intense surrounding the serosal blood vessels.

Oesophagus: A focal, small lymphoid aggregate is located in the lamina propria at the junction of the oesophagus and proventriculus.

Bursa of Fabricius: The bursa is markedly involuted.

Liver: The hepatic sinusoids contain very large numbers of the cells bearing the organisms described above.

Kidney: The renal interstitium is multifocally distended with organisms as described above.

BACTERIOLOGY

Liver: No growth

Lung: *Serratia marcescens*

Pericardium: *Serratia marcescens*

MORPHOLOGICAL DIAGNOSIS

Euthanasia

Fibrinous air sacculitis and pericarditis - *Serratia marcescens*

Extensive mycotic granulomatous pneumonia

Marked leucocytozoonosis

Hepatosplenomegaly

COMMENTS

It is surprising that the young bird was still in relatively good body condition considering the myriad of lesions noted upon gross and microscopic post mortem examination. The number of organisms resembling coccidial meronts in circulating blood cells is remarkable. It is difficult to say with certainty that the severe Leucocytozoon infection predisposed the bird to bacterial and fungal respiratory tract disease. It is found incidentally in some birds, but seems to be associated with disease when in high numbers, though it is sometimes uncertain whether the increased numbers are a cause or result of concurrent disease.

“Imported cockatoos, birds of prey, and some types of passerines are most frequently parasitized by blood protozoa such as Haemoproteus, Leucocytozoon, Plasmodium, and Atoxoplasma spp.

Haemoproteus is commonly seen on blood smears from clinically normal cockatoos; it appears as an intraerythrocytic gametocyte that partially encircles the nucleus of the host cell. Leucocytozoon is a large intranuclear parasite that white or red blood cells. It has a characteristic “winged” appearance on the blood smear. Treatment for these conditions is probably best directed at any concurrent disease, stress, or nutritional problems. Plasmodium is a much more serious infection (malaria), best known for causing deaths in canaries, although deaths in psittacines have been reported. Affected birds have hepatomegaly, splenomegaly, and depression; the intraerythrocytic gametocytes and schizonts can be seen next to the host nucleus. Treatment is difficult, but quinacrine hydrochloride at 250 mg/kg, PO (gavage), s.i.d. for 5 days

(repeated in 10 days) has been used.

The life cycles of these parasites are indirect, usually using a mosquito or biting fly. Less common blood parasites include Atoxoplasma (which is sometimes recognized as an intracytoplasmic inclusion in circulating lymphocytes), trypanosomes, and various microfilariae."

Taken from

<http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/170308.htm> (see website for picture)

Fungi would be highlighted by use of PAS stains and, being one of the Enterobacteriaceae, *Serratia* spp would be visible as Gram-negative rods on Brown and Brenn stains, or perhaps more clearly as rods on Geimsa stain. *Serratia marcescens* is well documented as a cause of nosocomial infections of humans.

REFERENCES

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