Pericardial Effusion in a Gang Gang Cockatoo

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A 7 year old female Gang Gang Cockatoo (*Callocephalon fimbriatum*) was presented with a 3 month history of reduced exercise tolerance. She was housed in a large aviary with a male, and fed a good diet. The owner is an experienced keeper and breeder of Gang Gang Cockatoos.

On initial examination whilst the clinical history the bird appeared in good condition and in excellent feather. The faces were deep green in colour and it had a mild biliverdinuria. After quickly catching the bird in a small towel she rapidly became distressed and had to be released within seconds. There was no palpable abdominal swelling. She regained her position on the perch in her carry cage within a few minutes. The bird surprised me in how quickly and severely distressed she became with open-mouthed breathing and her wings outstretched when returned to the cage.

After further conversation with the owner regarding the difficulties of examination and diagnostics it was elected to anaesthetise the bird, take radiographs and treat with a long acting antibiotic (doxycycline - *Psittavet* injectable). The owner was warned of the predilection of the Gang Gang Cockatoos with chronic disease syndromes to be infected with mycobacteria. He was also warned of the zoonotic potential of this infection. The birds best chances of survival would revolve around having a chlamydial polyserositis affecting primarily the pericardium.

Radiographs revealed an enlarged globular cardiac silhouette clear but diminished air sac spaces and a regular lung pattern. The liver was not enlarged. The bird was admitted to hospital and appeared a little less distressed each day when the cage was cleaned and fresh food and water was provided.

Three days latter an ultrasound was preformed and demonstrated that the globular cardiac silhouette was caused by a pericardial effusion and not a cardiac hypertrophy. Once again the bird became very distressed. Great care must be exercised with cardiac ultrasound because any pressure applied to the abdomen under the end of the sternum can dramatically compromise respiratory function.

Weekly Psittavet injections were continued, the bird appeared brighter, ate well, but always became distressed with the slightest handling. Two weeks after treatment commenced a second ultrasound gave the impression that the effusion was decreasing in volume. Two days after the fourth injection she collapsed and died.

Post mortem examination revealed a pale mottled liver, a massive pericardial effusion and a heart base granuloma. *Diff Quik* of the granuloma revealed negative staining of intracytoplasmic organisms in the macrophages. This is consistent with mycobacteria infection.

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Histopathology

The heart base lesion is bordered by fibrosis and contains multiple dense granulomas undergoing central necrosis, surrounded by a thin rim of multinuclear giant cells, fibroblasts and lymphocytes. There are large numbers of rod shaped Gram positive and Ziehl-Neelsen positive bacteria present within the macrophages and within the necrotic debris. These are consistent with Mycobacteria species. The epicardial tissue contains mild aggregates of macrophages, lymphocytes and plasma cells.

Throughout the liver parenchyma there are scattered, variably sized nodules of inflammatory cells including macrophages, lymphocytes, plasma cells and a few heterophils there are occasional rod shaped Ziehl-Neelsen positive bacteria within the macrophages.

There is moderate diffuse autolysis of the small intestine and pancreas but no evidence of mycobacteria in the sections examined.

The lung is moderately congested with scattered small foci of activated macrophages mixed with lymphocytes and plasma cells mainly within the interstitium surrounding respiratory bronchioles. Within these macrophages, there are large numbers of rod shaped Ziehl-Neelsen positive bacteria.

In the kidney there is moderate diffuse congestion, small scattered foci of mononuclear inflammatory cells and moderate diffuse degeneration and necrosis of tubular epithelial cells. The spleen parenchyma is expanded by monocyte macrophage hyperplasia. Within scattered groups of these macrophages, there are large numbers of rod shaped Ziehl-Neelsen positive bacteria.

Discussion

Mycobacterial infections in Gang Gang Cockatoos appear to be a well recognised entity. (Gallagher, Gelis, Vogelnest; Personnel Communications). WE have also seen several cases in our practice over the years. All of our previous cases have involved abdominal granulomas.

The apparent absence of intestinal lesion and the presence of mycobacterial organisms in the lung suggest that this case may have resulted from an aerosol infection. I am still awaiting the results of attempts at culturing the organism. If these are unsuccessful I will pursue DNA typing from the tissue samples. Two other Gang Gang Cockatoos have died in this collection in recent times and histopathology has failed to demonstrate mycobacteria.

I find birds with marked respiratory distress very difficult to work with, the ability to collect diagnostic material is limited by the constant risk of the bird collapsing. In retrospect this bird may have benefited from an attempt at pericardiocentesis. The approach would be through the abdomen at the point of the sternum.

In future consideration will be given to multiple drug therapy for mycobacterial cases Enrofloxcin 30mg/kg, Clarithromycin[2] 55mg/kg and Rifabutin[3] 6mg/kg, combined have been reported to be effective.[1, 2]

The zoonotic potential of this infection is discussed with the owners with an emphasis on the risks to immune compromised people. In the households that contain a transplant patient, I strongly recommend euthanasia of the bird, or if this is not acceptable rehousing the bird.

References

1. Rosskopf W, Woerpel R. Diseases of cage and aviary birds. Lea and Febiger 1996. p 569-570

2. Lennox A, Van Der Heyden N. AAV Proceedings 1999. p 425-426

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2 *Klacid*: Abbott. Tabs 250 mg, 500 mg; suspension sucrose; fruit punch flavoured; powder for reconstitution - 250 mg/5 mL 50 mL

3 *Mycobutin*: Pharmacia & Upjohn. Capsules 150 mg.