Avian Pathology Challenge

Case Report

Four Scheepmaker's crowned pigeons (*Goura scheepmakeri sclaterii*), housed in the same enclosure in a zoo, died over a 4-day period. The exhibit also contained 2 yellow-tailed cockatoos (*Calyptorhynchus funereus funereus*), 2 blue-winged kookaburras (*Dacelo leachii*), and 2 wattled brush turkeys (*Aegopodius arfakianus*). All these birds were treated with 200 mg of enrofloxacin (Baytril 10%) per liter of drinking water for 10 days, 3 months previously, after a *Salmonella* species was isolated from 1 dead and 1 live eclectus parrot (*Eclectus* species) and from the environment.

The first crowned pigeon, a 6-month-old female, was found dead without any signs of illness. Concurrently, a 4-month-old male from the same parents, but from a consecutive clutch, was found moribund. Despite intensive care, the bird died 3 hours later. Following are the results of blood count and serum chemistries from this bird. Reference ranges have been determined from pigeons (*Columbia livia*) as used at Utrecht University. Values include packed cell volume, 25% (reference range, 39–59%); white blood cell count, $7.4 \times 10^9$ /L (reference range, 13–22.3 $\times 10^9$ /L); uric acid, 1.4 mmol/L (reference range, 0.15–0.77 mmol/L); calcium, 2.4 mmol/L (reference range, 1.9–2.6 mmol/L); total protein, 34.6 g/L (reference range, 21–35 g/L); albumin, 13.0 g/L (reference range, 11.1–13.5 g/L); and aspartate aminotransferase, 3105 U/L (reference range, 45–123 pigeons). Both parents were administered 5 mg/kg q12h of enrofloxacin (Baytril [Bayer, Germany] 5%) prophylactically, but they died 4 days later.

Pathological Findings

At postmortem, all the crowned pigeons were in good-to-excellent condition, and most birds still had food in the proventriculus. All lungs were dark red and mottled, with edema and foamy content in the bronchi. Other areas of the lung were emphysematous. Although other findings were less consistent, the liver, spleen, and kidney were generally pale and swollen.

Organisms ($2 \times 10^3 \mu$) were seen in the lungs, liver, spleen, and intestines in impression smears stained with Hemacolor (Merck, KgaA, Darmstadt, Germany) (Fig 1). No organisms were found in the brains.

No aerobic pathogens were cultured from the livers, lungs, spleens, and intestines of any of the birds. But *Escherichia coli* was isolated from the liver, lung, or spleen (or all) from each of the birds, and *Corynebacterium kutcheri* was cultured from the lung of the adult female.

The liver, spleen, lung, kidney, duodenum, pancreas, and brain from each of the birds were fixed in 10% formalin and examined histologically. Acute to subacute inflammations and necrosis were observed in the livers, kidneys, and spleens. Peracute changes (i.e., hyperemia and vascular damage) that resulted in transudate and hemorrhages were observed in the lungs (Fig 2). Lymphocytes, heterophils, and macrophages were associated with tissue damage in the liver, kidney, and spleen. Although a cellular response was also present in the intestinal wall and pancreas, it was not associated with necrosis. No pathology was observed in the brains.