Aegyptianella-like inclusion bodies in two birds of prey from central Italy

W. TARELLO and N. RICCIERI

SUMMARY

Two diurnal free-ranging birds of prey, a Peregrine falcon (*Falco peregrinus brookei*) and a Marsh-Harrier (*Circus aeruginosus*), exhibited Aegyptianella-like inclusions bodies in red blood cells in association with compatible clinical signs. This study suggests that aegyptianellosis may affect seasonally migratory birds in Central Italy.


CASE 1

A young female Peregrine falcon (*Falco peregrinus* subsp. *brookei*) weighing 740 grams was found in late October 2002 near the Trasimeno Lake (Umbria, Central Italy). Clinical signs, consistent with Aegyptianella infection, were the following: anorexia, emaciation and paralysis.

A subcutaneous haematoma was evident on left wing in the absence of wounds or signs of trauma. X-ray did not reveal anomalies and stool examination proved negative for eggs of *Ascaridia, Cestoda, Capillaria, Syngamus* and coccidian infection. A Wright-stained blood smear revealed the presence of dark-violet inclusion bodies 0.5-1 µm in size resembling *Aegyptianella pullorum* organisms in 0.1 % of red blood cells (Fig 1).

Following previous therapeutic experiences [15], the falcon was treated orally with doxycycline, 12 mg/kg/12 hours for 21 days, showing rapid improvement of appetite and ability to fly within 3 days. During the following 2 weeks the wing haematoma progressively disappeared without any topic aid and the raptor rapidly gained weight and became more reactive by handling. Blood smears of control made at day 21 demonstrated complete absence of haemoparasites. The Peregrine falcon was then ringed and successfully released in the wild.

CASE 2

During the same week, in late October 2002, a female Marsh-Harrier (Circus aeruginosus) weighing 700 grams was rescued near the Trasimeno Lake, showing a similar clinical pattern: anorexia, emaciation, diarrhoea, fever (41°C) and paralysis of wings. Wright-stained blood smears revealed at the microscopic examination the presence of round and clover-like inclusion bodies morphologically resembling Aegyptianella pullorum in 0.75% of erythrocytes (Fig. 2). Collateral examinations proved negative. The bird of prey was treated orally with doxycycline, but it progressively deteriorated and finally died 3 days later.

Discussion

It is intriguing to note that two birds of prey showing Aegyptianella-like inclusions in the blood and compatible clinical signs, were rescued during the same week of late October 2002 near the Trasimeno Lake in Central Italy, and that both raptors do not breed in this area.

The Marsh-Harrier (Circus aeruginosus) is a winter visitor, migrating in autumn from Northern Europe to Central Italy [4, 17], whereas the Peregrine falcon (Falco peregrinus) occasionally reach the lake in the form of erratic young birds fledging from the Appennini mounts [17].

These coincidental facts, reinforced by the case of a migrant Bittern (Botaurus stellaris) with aegyptianellosis observed in the same area in December 1998 [15], seem to indicate that the disease occurs seasonally among wildlife in the Trasimeno Lake District, mostly affecting migratory birds at their autumn arrival. It is acknowledged that birds imported in endemic areas are more susceptible to the infection, showing severe signs such as diarrhoea, anorexia, fever, paralysis and sudden death [1]. Aegyptianella pullorum infection is reported in domestic fowl, ducks, geese, pigeons, turkeys, quails, ostriches and parrots [7, 10-12], but experimental transmission has been demonstrated to be successful in wild birds too [1]. It is therefore not surprising to observe similar inclusions in the blood of two birds of prey showing a compatible clinical picture, although this may represent the first report of the condition in falcons worldwide.

It is believed that very few veterinarians working with raptors perform routine haematology as part of the necessary laboratory diagnostic support [13] and this fact may account for the lack of previous evidences.

Since the diagnosis of aegyptianellosis is based on blood smear examination, particular attention should be drawn to possible misdiagnosis with Plasmodium or Babesia avian species [8, 13]. The pigmented ring forms typical of Plasmodium spp. and the non-pigmented 1 to 5 µm sized irregular vacuoles typical of Babesia shorttii [13] were not seen in the blood of these raptors.

On the other hand, Leucocytozoon and Haemoproteus spp. are much wider in size and easier to detect [8]. The violet-stained, round (Fig. 1), oval or clover-like (Fig. 2) inclusions bodies observed in these two birds of prey showed colour, shape and size (0.5 to 1 µm) in accord with the commonly described morphological features of Aegyptianella spp.[10]. These rickettsial forms can be seen either inside or outside the red blood cells membranes, since erythrocytic vesicularation is the mode of entrance or exit of initial bodies from the red blood cells [6].

The tick vector, Argas persicus, is present in Italy [14] and it is known as a common ecto-parasite of chicken also affecting a vast variety of vertebrate hosts, including humans [3]. Nymphs and adults feed on birds during the night only and suck the blood for a short period of time, leaving the host at daylight [3]. Consequently, we should not expect to find A. persicus ticks on wild birds caught during daytime. The tick bite may result occasionally in anaemia-depending weakness and toxin-induced paralysis [5]. Curiously, that was the clinical picture observed in these two birds of prey, one of which was showing a subcutaneous haematoma on a wing. Lesions typically associated with the Argas persicus infestation, include a foreign-body reaction with oedema and haemorrhage which develops around the site of attachment [9]. Although ticks were not recovered from these cases, the analysis of eco-ethological aspects of these findings seems to indicate that the infection was acquired locally.

Suggestion has been made that the migratory birds from tropical countries, of which an abundant population exists in the Trasimeno Lake District [17], may be the carriers of aegyptianellosis causing epidemic foci in south-east Europe [16].

This hypothesis is compatible with the acknowledged notions that Aegyptianella spp. may affect a great variety of domestic and wild birds [2] and that it is particularly frequent in those imported from tropical areas [11].

Inconsistent therapy outcomes observed in the two reported cases may depend upon the load of Aegyptianella, duration of the disease and immunological response of the host. It is interesting to note that inclusion bodies were present in about 0.1% of erythrocytes in the Peregrine falcon and in a diseased heron which previously responded to therapy [15]. The burden of inclusion bodies was apparently 7-fold heavier in the Marsh-Harrier of this study not reacting to therapy. This observation may provide future prognostic indications, taking also into account the evidence that the stress induced by migration greatly influences the immune competence and consequently the response to therapy, in birds referred to wildlife veterinary clinics.
FIGURE 1. — *Aegyptianella*-like inclusion body in the reported Peregrine falcon (Wright stain, × 100).

FIGURE 2. — Clover-like inclusion body typical of *Aegyptianella pullorum* in the reported Marsh-Harrier (× 100).

Bibliographie


