

Case Study

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Management of Bumble Foot in Duck

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ABSTRACT

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A one year old female duck was presented with the history of lameless and swelling over the foot region. Close examination revealed swollen necrosed area of the lower part of the foot and it was diagnosed as bumble foot infection. Bumble foot is a skin infection in the bottom of a duck's foot. It will soon, if not treated, run up the leg and into the body, leading to a severe septicaemic infection or even death. It starts by getting a small cut on the bottom of the foot, getting the infection through it and then leading to a black scab on the bottom of the foot. This case narrates the successful treatment and management of the condition by treating the affected part with 0.1% potassium permanganate solution and surgically removing the pus from the area. Antibiotic course along with other supportive treatment was given to the bird.

Introduction

Bumble foot also known as Footpad dermatitis or plantar pododermatitis, (Shepherd and Fairchild, 2010) is a condition characterized by skin lesions due to contact with perching conditions such as sharp perches on the ventral footpad of birds (Poorbaghi *et al.*, 2012). Bumble foot can lead to formation of abscess and it look like calluses hard to touch and it affects both feet. The causative agents of bumble foot are *Staphylococcus aureus*, *Streptococcus spp.*, *Escherichia coli* or *Proteus spp* that affect bone, tendons sheaths

and joints. In poultry, *Staphylococci* are common inhabitants of the skin (Devriese *et al.*, 1992). *Staphylococci* are found as secondary infections in foot-pad ulcers (Hester, 1994) and are involved in a number of different disease complexes (Scanlan and Hargis, 1989; McCullagh *et al.*, 1997). Predisposing factors include excessively dry or abraded feet in water birds, heaviness and inactivity, unhygienic condition, constantly standing on perches and puncture of the pad by overgrown claw. Besides some forms of bumble foot are caused by Vitamin A deficiency. This vitamin promotes appetite,

digestion and also increases resistances to infection. This paper report it describes the clinical lesions, diagnosis and treatment of bumble foot in a duck.

Materials and Methods

A duck of age one year old was weighing 2.1 Kg with swelling over the digital foot pad and lameness was presented. The duck had stopped laying eggs for the past few days but taking feed normally.

On close examination of the bird, revealed swollen mass of necrosed area on the lower part of the foot and it was diagnosed as bumble foot infection. Pus sample were collected and bacteriological culture and biochemical tests were performed to identify the cause of infection (Fig. 1).

Treatment

The bird was restrained properly and the affected foot was washed thoroughly with 0.1% potassium permanganate solution to sterilize the area and avoid further infection.

Lignocaine 2% injected to induce local anaesthetic affect. Incision was given over the area and the scab, pus and necrotic tissues were removed surgically. Betadine solution along with Charmil was advised to apply topically for 10 days to protect the wound from flies. An antibiotic dose of Ceftriaxone, Anti-inflammatory (Meloxicam) and B complex vitamin was injected for the next 5 days to suppress the infection and improve general health of the bird.

The results of bacteriological culture from drained pus are presented in Table 1. These data demonstrated *Staphylococcus spp.*, *E. coli* and *Pseudomonas spp.* as of infectious agents in the digital pads potentially leading to bumblefoot.

Characterization of bacterial isolates

The pus specimen was inoculated on blood and MacConkey agar plates. The streaked plates were incubated at 37°C for 24 hr. Bacterial colonies on blood agar plates were later Gram stained. Characterization of bacterial isolates was based on standard microbiological methods.

Identification of isolates were done based on colony morphology, catalase test, oxidase test, coagulase test and biochemical tests like Methyl red test, Urease test, Voges proskauer, Citrate utilization test, Indole test (Koneman *et. al.*, 2005).

Bumblefoot is considered to be painful and critically impairs the birds' welfare (Lay *et.al.* 2011). In general, the housing system (e.g., cage vs. non-cage), perching behavior, wet litter, scratching, perch and flooring material, and poor foot hygiene have been identified as causes of these foot health problems (Tauson and Abrahamsson, 1994; Wang *et al.*, 1998; Weitzenb'urger *et al.*, 2006; Blokhuis *et al.*, 2007; Rongen *et al.*, 2008; Shimmura *et al.*, 2010; Lay *et al.*, 2011). Nevertheless, specific information on risk factors within aviary systems for these foot problems remains scarce.

Harms and Simpson (1975) reported that birds with foot-pad dermatitis had an unsteady walk, and Hester (1994) described how foot-pad dermatitis causes birds to walk with a hobbling gait. Schmidt and Lüders (1976) suggested that the lesions cause pain, resulting in reluctance to move and thus decreased feed consumption.

In majority of cases, surgery will be necessary which consists of opening the abscess and carefully removing all the necrotic material, taking care to avoid nerves, tendons and blood vessels (Coles, 2007). Combination of

surgery, local and antibiotic course selected after antibiotic sensitivity test along with proper post-operative care are effective and useful to heal these kind of infection.

Table.1 Biochemical data of infectious agents (*E coli*, *Staphylococcus aureus*, *Pseudomonas spp.*)

Test Bacteria	I	MR	VP	Ci	Co	O	U	Cat
<i>Staphylococcus aureus</i>	-	+	+	-	+	-	+	+
<i>E coli</i>	-	+	-	-	-	-	-	+
<i>Pseudomonas spp.</i>	-	+	-	+	-	+	-	+

*(I) Indole; (MR) Methly red; (VP) Voges proskauer ; (Ci) Citrate; (Co) Coagulase; (O) Oxidase; (U) Urease; (Cat) Catalase.

Fig.1 Swelling and Abscess in digital pad in a one year old duck



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