

FAVUS IN A BACKYARD CHICKEN (*GALLUS GALLUS DOMESTICUS*)

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Introduction

Favus, or avian ringworm, is a dermatophytosis that is rarely reported in poultry today. (Saif and Fadly 2008) However, given the strong influx in backyard poultry being presented to avian and exotic veterinarians in recent years, it is an important diagnosis which should not be overlooked. The classical clinical presentation includes white crusting lesions on unfeathered skin which can extend to the feathered portion of the skin and form scutula around the base of feather follicles, leading to feather loss. The most commonly isolated organism is *Microsporum gallinae*, however *M. gypseum* and *Trichophyton simii* have also been isolated as causative agents. (Fonseca and Mendoza 1984, Droual, Bickford et al. 1991, Bradley, Bickford et al. 1993) The present report describes a particularly striking and intensely pruritic case of generalised feather loss with hyperkeratosis in a backyard laying hen.

Case report

A 16 month old black Orpington (*Gallus gallus domesticus*) hen presented to the University of Queensland Veterinary Medical Centre, Gatton for intense pruritis and feather loss progressively worsening over one month. The hen was obtained as a layer pullet in July 2013 and was kept in a coop with nine other chickens which were clinically healthy. The chickens were fed a commercial layer diet and were given free range of the owner's yard during the day.

Two months prior to presentation the chicken was treated at a local veterinary clinic after the owners noticed discharge from the nares and bubbles from the conjunctival sac. A presumptive diagnosis of a respiratory infection was made and treated with amoxicillin clavulonic acid injections and ofloxacin (Allergan Australia Pty Ltd, Gordon NSW 2072) eye ointment for one month. The clinical signs associated with this episode resolved, and one month post-antibiotic administration the chicken began to develop periorbital feather loss which progressed to generalised feather loss over the head. Since these initial signs, the bird had progressively lost feathers under its wings, legs, crop and neck.

On physical examination the bird was in good body condition with a weight of 1820g. The beak was a normal shape, length and colour, with no evidence of overgrowth or malocclusion. The nares were bilaterally symmetrical, with no evidence of discharge or erosion. The eyes were clear; there was no ocular discharge but

there was substantial periorbital feather loss. The aural cavity was heavily inflamed and contained a large amount of caseous exudate. There was generalised feather loss along the length of the bird, beneath the wings, down both legs, on the crop and around the head. The skin surrounding these areas of feather loss was dry and scaly with hyperkeratosis of the head and neck area. There was evidence of external parasites (feather lice). The droppings and all other body systems were examined and were unremarkable.



Figure 1. The 16 month old black orpington hen on presentation, showing marked feather loss and white crusting lesions on the unfeathered skin as well as scutula around the base of the feather follicles.

The chicken was admitted to hospital for further diagnostic workup which included a faecal smear, sticky tape impression and skin scraping which were all within normal limits. Three skin biopsies were then collected using lignocaine 2% local anaesthetic bleb and a 4 mm biopsy punch. Skin biopsies taken from dorsal neck, left lateral head and left lateral dorsal body and were placed in formalin for histopathological examination. The biopsy punch holes were closed using 3/0 PDS in a cruciate pattern. The bird was discharged awaiting histopathology results.

Histopathology revealed follicles with multifocal suppurative folliculitis with intralesional fungal organisms, follicular keratosis, multifocal epithelial cell degeneration and severe chronic lymphoplasmacytic and histiocytic perifolliculitis.

PAS stain revealed that within the feather follicle, in the clear spaces affecting the epidermal and follicular epithelium and occasionally embedded in the keratin lamellae of the epidermis there were multifocal aggregates of variably sized pink-staining round conidia, 0.5- 1 μ in diameter. They sometimes formed dense accumulations that resembled hyphae but were just accumulations of conidia (see Fig. 1). These findings were consistent with those of severe lymphoplasmacytic and histiocytic perivascular and multifocal granulomatous dermatitis with oedema, epidermal ulceration, multifocal cysts, diffuse hyperkeratosis and acanthosis and intralesional fungal organisms. Based on morphology the fungal bodies observed in this sample were most likely *Microsporium* spp.

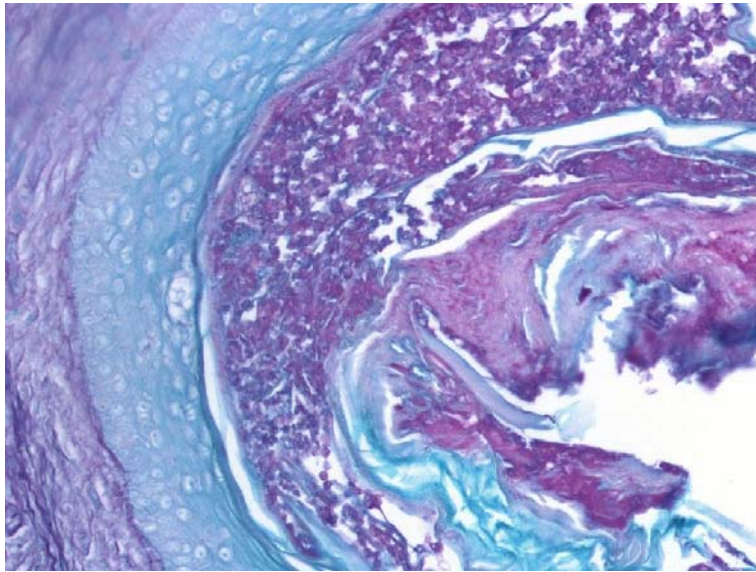


Figure 2. PAS (40x) showing a feather follicle with multifocal aggregates of pink staining round conidia and dense accumulations which resemble hyphae but are simply accumulations of conidia.

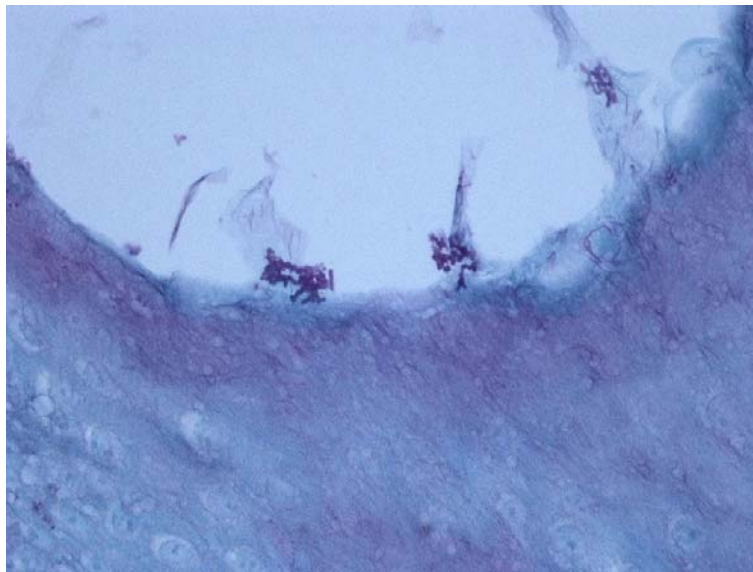


Figure 3. PAS (100x) showing multifocal aggregates of pink staining round conidia (approximately 0.5 – 1 micron in diameter), forming dense accumulations along the superficial epidermis.

The bird was treated with Grisovin 125mg SID for three months. The bird is still on treatment at the time of writing, but the skin is markedly improved.

Discussion

Favus infections are caused by *Trichophyton megninii* and the disease process is normally superficial, chronic and self-limiting or slowly progressive. Favus is no longer a disease of financial significance to the poultry industry and is rarely present in backyard flocks, (Saif and Fadly 2008) nonetheless it is important to keep it on our differential list for progressive feather loss and pruritis of any chicken presented.

The lesions are initially located on unfeathered skin (comb, wattle) through superficial invasion of the stratum corneum by fungal hyphae. The resultant hyperplasia and hyperkeratosis is usually contained within the superficial layers of the skin and so there is minimal inflammatory response. As the fungal hyphae spread concentrically, the small spots may coalesce to form dry and scaly wrinkled crusts and given time, these lesions may progress to feathered skin as occurred in this case. These lesions in feathered skin may develop scutula which present as depressions around the feather follicle and result in loss of the feather. There are few references in the literature describing the intense pruritis which was a key component of this case, and, indeed the reason for presentation. (Riedel 1950, Saif and Fadly 2008, Pollock, Stephen et al. 2012)

Trichophyton megninii is a dermatophytic fungus that is transmissible between animals by contact or through fomites but rarely affects more than one animal in the group. The infection is diagnosed by histological evaluation of hyphae or spores in skin lesions and feather follicles and a definitive diagnosis is achieved through culture on Sabouraud dextrose agar.

Many of the *Trichophyton* infections resolve spontaneously over time, however in backyard poultry, topical and systemic antifungals are indicated to facilitate more rapid resolution. It is important to note that premises may become infected and so management of the disease includes decontamination of premises as well as treatment of affected birds.

Acknowledgement

My thanks to the University of Queensland pathology service for their interpretation of the histopathology.

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