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Fly strike in broilers in Kamrup district of Assam

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Abstract

Fly strike also known as myiasis, is the infestation of any part of the body by the larvae of Cyclorrhaphan dipterous insect (maggot) which feed on host tissues or body fluids. Economic loss in terms of meat, milk and wool production in livestock has been well documented; the same in poultry however is rather ignored by workers both in India and abroad engaged in avian health. Although mortality is negligible, morbidity may be enormous resulting in reduced both egg and meat production. Therefore, the present study has been undertaken in 13 broiler farms with stock capacity ranged from 201 to 1000 in Kamrup district of Assam to observe the prevalence of myiasis. A total of 2015, 2005, 2258 and 982 birds were examined at the age of 4th, 5th, 6th and 7th weeks, respectively. The overall infestation rate was 1.24%. The study revealed 0(0.00%), 21(1.05%), 45(1.99%) and 24(2.24%) birds infected with myiasis at the age of 4th, 5th, 6th and 7th week, respectively. In regards to stock capacity the prevalence rate was recorded as 0.28%, 0.45%, 1.27% and 1.79% with number of birds ranging from 201-400, 401-600, 601-800 and 801-1000, respectively. The χ^2 test revealed significant difference ($p < 0.05$) in prevalence rate of myiasis amongst both the age groups and stock capacity of broilers in the commercial broiler farms. The maggots were identified as that of *Chrysomya bezziana*. It was observed that more was the age and stock capacity more was the infection rate of fly strike. The vent area was found to be prone for infestation with maggot as this site get generally contaminated with filthy litter mixing with cloacal secretions making the area vulnerable for attraction of flies.

Keywords: fly strike, broiler, *Chrysomya bezziana*, Assam

Introduction

Fly strike or myiasis is a sanitized nickname for maggot of Cyclorrhaphan dipterous insect living and feeding on the living tissue of any part of the body of host especially in animals, humans and birds which results in an infestation. It occurs when adult botflies, blowflies and screwflies lay their eggs within an existing open wound present in the bird especially in warm weather condition. Maggots hatching from these eggs destroy the living tissues of vent region of the infested birds. The infested sites get generally contaminated with filthy litter which is mixed with cloacal secretions make the area vulnerable for attraction of flies. Economic loss in terms of production and productivity in poultry however is rather ignored by both India and abroad workers engaged in avian health coverage. Although mortality in poultry is negligible, morbidity may be enormous in terms of egg and meat production. Moreover, maggot infested birds cause repugnance to the consumer. Myiasis of various types of large animals is well documented worldwide ^[1, 2] including India ^[3] but information about the same in poultry, ducks and alike are very scanty ^[4]. Myiasis is very rare in birds ^[5]. Worldwide distributed *Chrysomya* species ^[6] draw the attention of medical and veterinary entomologists because some species within this genus are ectoparasitic, causing myiasis in animals and humans ^[2, 7]. Hence the present study was undertaken to assess the prevalence of fly strike in broiler farms of both Kamrup metro and rural district of Assam.

Materials and Methods

To carry out the study 13 broiler farms with stock capacity ranged from 201 to 1000 were selected in both Kamrup metro and rural district of Assam to observe the prevalence of myiasis. The farm holding ranged from less than 300 to 1200. A total of 2015, 2005, 2258 and 982 birds were examined at the age of 4th, 5th, 6th and 7th weeks, respectively to record the prevalence of fly strike. The maggots of flies were identified as per the standard method ^[8].

Results and Discussion

The vent area was found to be prone to get infested with maggot for this site get generally contaminated with filthy litter which was mixed with cloacal secretions make the area vulnerable for attraction of flies (Fig. 1). A droppings-soiled vent area caused the skin to breakdown have been shown in Fig. 2. The maggots were all up her side as well, under the skin. The bird in the present investigation was reluctant to move and had fight wound in the vent region. The existing wound might have attracted adult female flies to lay eggs and the newly hatched larvae invaded the healthy tissue in the vent region, causing myiasis up to the keel region, forming a tract. Pasty vent was the buildup of faecal matter around the vent or rear end of a chicken. This build up might be not only unsightly, as the feathers become matted with droppings, but could cause other problems as well including dirty litter materials, internal bacterial infections and fly strike. Fly strike found in the present study was a disgusting condition where flies lay their eggs in the faeces around the vent and when the maggots hatched out, they consumed the droppings and/or diseased flesh of the area. Fly strike might be also occurred on wounds that are not properly treated. The maggots could be moved internally and cause many problems both painful and deadly to a chicken. The myiasis infested bird showed abdominal distension (swollen belly), leading to an accumulation of faeces to the feathers below the vent (Fig. 3). A few reports were published on fly strike in poultry in India and abroad viz. a case of cutaneous myiasis in Chennai, India in a one and half year old Rhode Island Red cock was reported by Jeyathilakan *et al.* [9]. Jeyathilakan *et al.* [9] also reported microscopic examination of the infesting maggots around the vent to keel region belonged to *C. bezziana*. Farcas *et al.* [4] reported the development of traumatic myiasis due to plucking of feather, other injuries and bacterial infections, the predisposing factors of fly strike as observed in the present investigation.



Fig 3: Clinical symptoms of fly strike in broiler

The prevalence of fly strike in relation to age has been depicted in Table 1. The study also revealed 0(0.00%), 21(1.05%), 45(1.99%) and 24(2.24%) birds infested with myiasis at the age of 4th, 5th, 6th and 7th week, respectively. The prevalence was nil in age group of 4 weeks. The χ^2 test revealed significant difference ($p < 0.05$) in prevalence rate of myiasis amongst the different age groups of broiler in the present study. A gradually increasing trend of prevalence rate towards the increasing of their age was observed as shown in Fig. 4. This might be due to the increasing of droppings in the litter material, negligence of the farmers, poor management of the litter materials, increase excessive moisture in and around the shed hence increase fly populations, increase requirement of the water but reduce management of the water trough etc. The prevalence and clinical manifestation of traumatic myiasis due to flies in geese flocks was reported by Farcas *et al.* [4] in Hungary. The prevalence myiasis in birds was not published in large scale from India but the prevalence of cutaneous myiasis was recorded as 53.00, 42.00, 4.00 and 1.00% in dogs, cattle, sheep and rabbits, respectively in Bangalore, Karnataka [3].



Fig 1: Vent infested with maggot



Fig 2: Droppings-soiled vent

Table 1: Prevalence rate of fly strike in relation to age

Age (week)	No. of birds examined	No. of birds positive for maggot	Prevalence (%)	χ^2 Value
4	2015	0	0.00	263.12**
5	2005	21	1.05	
6	2258	45	1.99	
7	982	24	2.44	
Total	7260	90	1.24	

** Significant at $p < 0.01$

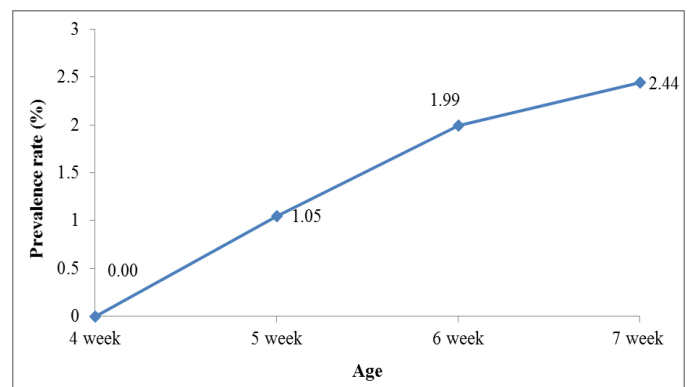


Fig 4: Showing prevalence rate of fly strike in relation to age

In regards to stock capacity the prevalence rate was recorded as 0.28, 0.45, 1.27 and 1.79% with a number of birds ranging from 201-400, 401-600, 601-800 and 801-1000, respectively (Table 2 and Fig. 5). The overall infestation rate was 1.24%.

The χ^2 test revealed significant difference ($p < 0.05$) in prevalence rate of fly strike amongst groups of different stock capacity of broilers in the study areas. The probable explanation might be the same as mentioned in the prevalence

rate of fly strike in relation to age. Moreover, overcrowding enhance the droppings in the deep litter materials which might be the cause of the increased population of myiasis causing flies in the sheds.

Table 2: Prevalence rate of fly strike in relation to stock capacity

Stock capacity (Nos.)	No. of shed examined	No. of birds examined	No. of birds positive for maggot	Prevalence (%)	χ^2 Value
201-400	3	360	1	0.28	374.56**
401-600	4	2014	9	0.45	
601-800	2	1416	18	1.27	
801-100	4	3470	62	1.79	
Total	13	7260	90	1.24	

** Significant at $p < 0.01$

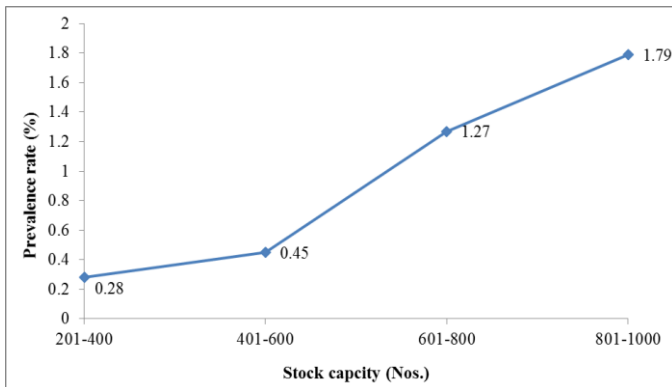


Fig 5: Showing prevalence rate of fly strike in relation to stock capacity

The maggots were identified as that of *Chrysomya bezziana* based on characteristic features of the larvae followed by life cycle study (Fig. 6). The detail life cycle study has been reported in another publication is in the progress. Therefore, the study of myiasis in birds caused by maggots of *C.*

bezziana is the first report from Assam as per the available literature in India after the report of Jeyathilakan *et al.* [9] from Karnataka. Al Khalidai and Shareef [10] reported cutaneous myiasis in a turkey caused by *L. serricata*. *Cochliomyia hominivorax*, *Wohlfahrtia magnifica*, *Lucilia serricata* and *Phormia regina* were reported to be the species to cause myiasis in birds [7, 11, 12]. Farcas *et al.* [4] reported myiasis in geese caused by *W. magnifica* and *L. serricata*. Stewart [13] reported a case of cloacal myiasis in a hen that was invaded by screw worm larvae. Based on morphology of anterior and posterior spiracles, Puttalakshamma *et al.* [3] found two species of maggot viz., *C. bezziana* (77%) and *L. cuprina* (22%) responsible for cutaneous myiasis in animals of Bangalore, Karnataka. It was observed that more was the age and body weight more were the infection rate which might be due to pendulous abdomen those frequently got soiled with the litter making the area vulnerable for attraction of flies. While Farcas *et al.* [4] recorded myiasis in 5 geese flocks were infested by *W. magnifica* and *L. serricata*, the larva of the latter were found to be less invasive than the former.



Fig 6: Life cycle of *Chrysomya bezziana*

Conclusion

The study concluded moderate prevalence of fly strike or myiasis especially in broiler managed in deep litter systems in Kamrup district of Assam. The vent region was found most vulnerable tissue of broiler for development of fly larvae to cause myiasis. Both the age and stock capacity of the broiler influence on the prevalence of myiasis in commercial broiler farm.

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