



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 2149-2152
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www.thepharmajournal.com
Received: 08-09-2022
Accepted: 11-10-2022

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Disease occurrences in desi chicken in Coimbatore district of Tamil Nadu

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Abstract

The present study was undertaken to ascertain the disease prevalence in desi chicken in Coimbatore District of Tamil Nadu from 2016 to 2021. A total of 220 desi chickens were brought to Veterinary University Training and Research Coimbatore for postmortem examination. The diagnosis was made based on history, clinical signs, gross lesions observed during necropsy examination, microscopic and histopathological examination. The flock size varied from 20 to 1500 numbers with 15 days of age to two years. Out of 220 desi birds examined, the majority of birds were affected by Newcastle disease (25.45%) followed by respiratory infection (12.73%), Coccidiosis (12.27%), Colibacillosis (6.82%), pecking (6.82%), Gastro intestinal parasitism (6.36%), Fowl cholera (5.45%), Fowl pox (4.55%), Heat stress (3.92%), Enteritis (3.92%), Gizzard erosion (3.43%), Viseral gout (3.18%), Lymphoid leukosis (2.73%), Infectious bursal disease (1.82%), Prolapse and egg bound (1.82%), Fatty liver haemorrhagic syndrome (1.36%) and Ascites (0.91%). Desi chicks in the age group of 0-8 weeks showed high prevalence (53.63%) of disease followed by the birds in the age group of 9-18 weeks (32.72%). Adult birds more than 18 weeks of age were the least affected (13.63%) in this study.

Keywords: Disease prevalence, desi chicken, Coimbatore district, Newcastle disease

Introduction

Livestock sector is an important subsector of the agriculture of Indian economy. It forms an important livelihood activity for most of the farmers and peoples in rural as well as in urban areas, supporting agriculture in the form of critical inputs, contributing to the health and nutrition of the household, supplementing incomes and offering employment opportunities. In recent days, there is huge demand of desi or indigenous poultry breed in urban areas due to its rich flavor which are mostly reared in backyard system (Conroy *et al.*, 2005) [8] and also support the landless peoples for additional income and increase the livelihood security. Desi chicken rearing is mainly practiced in rural areas, now a day's peoples in peri urban and urban areas are also rearing successfully to meet out their nutritional requirement with minimum housing facility and inadequate technical knowledge. In Coimbatore district, desi chickens are reared under free range, semi intensive system and intensive system. Farmers encountered many constraints both infectious and non infectious diseases while rearing desi bird (Parthiban *et al.* 2017; Vadivoo *et al* 2020) [18, 34].

Several factors influence the disease prevalence in desi birds which includes geographical condition, management practices adopted by the farmers, type of breed, bio security measures and lack of awareness on scientific practices to control the diseases. The present study was undertaken to ascertain the disease prevalence in desi chicken in Coimbatore District of Tamil Nadu from January 2017 to July 2022. The results of such study will provide an overall picture of disease prevalence in a particular district so that proper control measures can be taken and educating the rural farmers on the scientific methods of desi bird farming.

Materials and Methods

The study was conducted based on post mortem findings recorded at the Veterinary University Training and Research Centre, Coimbatore during the period from January 2016 to July 2022. A total 220 sick and dead desi chickens were examined during the study. The diagnosis of different diseases was carried out based on the clinical history of the flock, age of affected birds, clinical signs and symptoms, characteristic post-mortem gross lesions, morbidity and mortality rates, laboratory investigations including microscopic and histopathological examination.

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Diagnosis of viral disease mainly based on classical post mortem lesions. For diagnosis of Fowl cholera and coccidiosis, observation of bipolar organism in Leishman stained liver impression smear and oocyst respectively. Histopathological examination was carried out for confirmation of lymphoid leucosis.

Results and Discussion

Based on this study, the desi birds in Coimbatore district were mostly affected with Newcastle disease (25.45%). Newcastle disease (ND) is a major constraint to desi birds rearing and frequently causing mortality rates of 75 per cent to 100 per cent in unvaccinated flocks (Spradbrow, 1993) [33]. Desi chickens act as reservoirs of virulent NDV and poses continuing threat to poultry population throughout the world (Alexander, 2003) [11]. The high prevalence of this disease in desi birds is mainly due to improper vaccination, through contact with wild and migratory birds which are not vaccinated and inadequate knowledge on adopting scientific practices in desi bird rearing. Similar results were also recorded by Parthiban *et al.*, (2016) [18], Arthanarieswaran *et al.*, (2018) [2], Vadivoo *et al.*, (2020) [34]. Respiratory infection is the most serious disease affecting poultry and causes heavy economic losses in the poultry farmers worldwide. Several microorganisms of the genus *Pasteurella*, *Mycoplasma*, *Bordetella* and *Haemophilus* were involved in respiratory diseases complex (Hafez, 2002) [12]. In this study, 12.73% respiratory infection was recorded in affected birds. Major infection was noticed during rainy and winter season. Avian coccidiosis is an enteric parasitic disease caused by multiple species of the protozoan parasite of the genus *Eimeria*. It is one of the most common and economically most important diseases of poultry Olanrewaju, *et al.*, (2014) [16]. Out of 220 birds examined 27 birds found positive for Coccidiosis. In this study high occurrence was noticed during rainy season followed by summer. Similarly Vadivoo *et al.*, (2020) [34] reported more prevalence of coccidiosis in desi birds during rainy season. Saravanajeyam *et al.*, (2016) [29] reported that the incidence of intestinal coccidiosis in desi chicken was high due to poor managerial practices, malnutrition and non-inclusion of coccidiostats in feed as preventive measure. This is in accordance with the history stated by the desi bird farmers who raise their flock in commercial mode with poor litter managerial practices and noninclusion of coccidiostats in feed as preventive measure. Pecking is a major welfare problem in desi bird rearing. It may be caused by endogenous (genetic and physiological) and environmental (feeding, density and housing conditions) factors. Colibacillosis is caused by various strains of Avian Pathogenic *Escherichia coli* (APEC). Most commonly involved strains of *E. coli* are O1, O2, O18 and O78 (Wang *et al.*, 2014) [36]. *E. coli* is ubiquitous in nature and cosmopolitan in distribution. It is a common inhabitant of the intestinal tract of poultry and other birds. The feed, water, litter, faecal material, dust particles inside poultry shed, rodent droppings are the source of infection. Transmission is also possible from breeder /layer to the new born chick via vertical route (Petersen, 2006) [6]. In this study, the prevalence of Colibacillosis in native chicken was recorded based on post-mortem examination and presence of fibrinous pericarditis and peri hepatitis and yolk sac infection. An overall 6.82% of Colibacillosis in desi birds were recorded. Rahman *et al.*, (1999) [25] recorded the prevalence of avian Colibacillosis in

all age groups. Indiscriminate use of antibiotics to control early chick mortality (Olarinmoye *et al.*, 2013) [38], contaminated water (Rahman *et al.*, 1999) [25] and rearing of multi age group birds in single roof is important factor for constant presence of infection in flock.

In our study, the occurrence of feather pecking was 6.82%. Santhosh *et al.*, 2011 [39] reported that feather pecking behavior was noticed more in Aseel breed under floor system of rearing which starts around four to five weeks of age. Pakhira *et al.*, 2016 [17] stated that feather pecking and cannibalism can be effectively prevented without the use of beak trimming, proper housing and feeding management and also by selecting birds that are less prone to feather pecking and cannibalism. The prevalence of Gastrointestinal parasitism recorded in this study was 6.36%. Magwisha *et al.*, (2002) [23]; Percy *et al.*, (2012) [20] stated that variation in the prevalence of parasitic infection could be due to the difference in climatic conditions of region, availability of intermediate hosts or adoptability of managerial practices.

Fowl Cholera is economically important disease and reported in chickens over 16 weeks of age (Glisson *et al.*, 2008) [11]. In this study more cases were recorded in adult male birds and the disease prevalence is 5.45%. The causative organism *Pasturella multocida* causes the infection through contaminated feed, water and equipment. Improving the sanitation will reduce the infection. It is important to note that recovered birds may remain as carriers even after 9 weeks after infection (Parvin *et al.*, 2011) [19]. Fowl pox (FP) a viral disease, causes significant economic losses in domestic poultry flocks through transient drop in egg production in layers and retarded growth in young birds. Morbidity and mortality rates due to FP may be higher than 50% (Skinner, 2008) [31]. The prevalence of Fowl pox in this study was 4.55%. Skinner, (2008) [31] reported more than 50 per cent mortality and morbidity due to fowl pox.

Gizzard erosions have been attributed mostly to certain non-infectious nutritional factors, like vitamin deficiencies, biogenic amines in fish meal and mycotoxins (Gjevre *et al.*, 2013) [10]. In this study, the prevalence of Gizzard erosion recorded was 3.43%. Chitradevi *et al.*, (2020) [7] reported gizzard erosion in commercial layer grower chicken due to Fowl adenovirus serotype 2 and 3 by molecular methods.

Ayo *et al.*, (2011) [3] reported heat stress is very common in the tropical and subtropical regions and the economic losses on poultry production as a result of stunted growth, decrease in hen-day production, increased cost of production, high rate of mortality due to depressed immunity, and reproductive failure. In our study, 3.64% of heat stress cases were recorded during March to May. This may be due to inadequate housing facilities and summer management practices adopted by the farmers. Gout is a common metabolic disorder that results in abnormal accumulation of urates in domestic birds. Based on post-mortem examination, the prevalence of visceral gout was 3.18%. Visceral and articular gout have been reported in pheasants, Japanese quail, ducks, aviary birds and chickens (Fitz-Coy *et al.*, 1988; Nayak *et al.*, 1988; Rao *et al.*, 1993) [9, 15, 26]. Lymphoid leukosis is the commonest neoplasm in chicken caused by avian leukosis virus (ALV). It usually occurs between 14th to 30th week of age. Incidence is highest at about sexual maturity (Vegad *et al.*, 2011) [25]. However avian leukosis outbreaks have also been reported in younger chickens (Balchandran *et al.*, 2009) [4]. In our study, 2.73% of Lymphoid leucosis was reported in desi chicken. Gross and

histopathological findings of this study is similar to that of S Soujanya, *et al.*, (2019) [32]. Chitradevi *et al.* (2017) [7] confirmed avian leukosis virus infection in commercial broiler chicken in Tamil Nadu by PCR amplification of 466 bp glycoprotein gene of ALV subgroup A–E and found 77 per cent positivity. Though the occurrence of Lymphoid leucosis is less in this study, prevention and control of lymphoid leucosis is very important to avoid huge economic losses due to mortality and decreased performance of the bird.

In our study, based on post-mortem examination, the prevalence of 1.82% of Infectious bursal disease was recorded in desi chicken. Preeti *et al.*, (2018) [23, 24] reported the Infectious bursal disease outbreak in broiler flocks throughout the year in Haryana State even after vaccination. Death of 16 days old desi broiler chickens due to infectious bursal disease was recorded in Hyderabad by Sathyamoorthy *et al.*, (2018) [30]. Effective implementation of biosecurity measures and regular decontamination, allowing sufficient fallow period before restocking of birds and following proper vaccination schedule will help to prevent the outbreak of infectious bursal disease in a poultry farm. Very less prevalence of Prolapse and egg bound, fatty liver haemorrhagic syndrome and ascites were recorded and mortality and morbidity was very less in this condition.

This type of studies will help to assess the disease prevalence in particular area and help to implement control measures. More awareness will be created among desi chicken farmers to adopt scientific management practices for prevention of both infectious and non-infectious diseases.

Acknowledgement

Authors thank the Tamil Nadu Veterinary and Animal Sciences University for providing facilities to carry out the work

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