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Problems of gout in commercial broilers

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Abstract

Gout is one of the common problems in Commercial broilers. Mostly gout issue encounter during July to October months and cause severe mortality upto 25-30%. Problem starts as early as 7th day and persist upto 22nd days of age. Gout is characterised by white chalky deposition in vital organs as well as in joints. Liver heart and kidneys are the major organs affected by Gout. IB, IBH, IBD and ANV viruses are associated with this issue. Biosecurity plays a vital role in controlling the incidences of gout. This problem is mostly seen in places where temperature is very hot and humid. During this period water intake in birds got reduced and medication to enhance water intake should be used. Traditionally farmers use Beetal leaves in water to enhance water intake, and which is one of the common practices. Samples collection for viral isolation is very important to identity the infectious cause of the Gout. Gout is responsible for huge economic loss to the farmers and broiler industry. Hence, addressing this issue properly is the need of the hour.

Keywords: commercial broiler, gout, viruses and bio-security

Introduction

Poultry industry is flourishing very fast in India. To cop up with high demand for meat and eggs, the poultry has been genetically engineered for higher productivity. Modern technologies were introduced in this sector to increase the production within a shorter time to fetch more profit out of it. In the process to achieve the desirable outcome, the birds are subjected to stress and health of the bird is compromised. This is responsible for increased incidences of production related disorders and metabolic issues amongst birds. The kidney is a vital organ of the bird with diverse metabolic and excretory function viz. maintaining the chemical composition of body fluids, removal of metabolic waste and toxic products, regulation of blood pressure and blood volume and conservation of fluids and electrolytes [1]. The kidneys are long, paired and located in depressions in the pelvis bone in the abdominal cavity. The kidneys are normally reddish-brown in colour and have 3 distinct lobes or divisions [2, 3]. When renal function stops uric acid, normally excreted by the kidney in the urine, is then deposited any place that blood is circulated. A bird with no renal function is likely die within 36 hours [4, 5, 6]. Gout, is resultant to kidney damage from any of a number of potential cause, namely infectious or nutritional disease, ingestion of toxins, or a combination of factors [7].

Both visceral (deposition of white chalk-like material on the surface of various abdominal organs as well as the pericardial sac) and articular (white chalk-like deposits in joints of the limbs) gout have been reported in pheasants, Japanese quail, ducks, aviary birds and chickens. Seasonal variation, with higher incidence of gout in summer and winter than in autumn has also been reported in chicken [8, 9, 10, 11].

During monsoon, this situation arrives in most part of India including West Bengal, when humidity is high in some hot and humid belts and water intake varies drastically, and also moisture content of feed ingredient like maize, GNC, etc as well as finished feed increases. This high moisture content results in mould growth in finished feed which may not cause clinical Mycotoxicosis all the times. But combined effect of several sub-clinical levels of mycotoxins regularly causes immunosuppression. Immunosuppression at early stage of chick's life resulting easy entry of infections like IBH, IBD, followed by *E. coli*, CRD, etc at later stage. Both IBD & IBH are immunosuppressive in nature and invites each other in field condition resulting high mortality in chicks. Immunosuppressed chicks never grow well and secondary infection like *E. coli* & CRD is eminent resulting consistent slow mortality with

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poor productivity.

Causes

The exact cause of gout is often difficult to determine. The actual kidney damage may occur long before the onset of mortality. The possible factors that contribute to gout are Nutritional, Infectious, toxic or any combination of these. Nutrition causes includes high level of dietary calcium for prolong period of time, low phosphorous content in feed, high protein content of feed, Vitamin A deficiency, excessive use of salts in feed and one of the major issues is dehydration of eggs and chicks at hatchery or during transportation to farms. A common problem which is less discussed when we talk about gout is poor brooding of chicks at farm level which includes insufficient use of drinkers leads to low water intake, less heat source leads to huddling, high flock density and poor ventilation.

Infectious sources are Infectious Bronchitis (IB), Avian Nephritis virus (ANV) and Inclusion Body Hepatitis (IBH) where common post mortem lesion is pale swollen kidneys with urate deposits. Most commonly problem starts from 7-8th day of age and diminishes by 21-22nd day of age, mortality varies with the severity of the infection. Infectious Bursal Disease (IBD) – Sub-clinical IBD in early age causes swelling of kidneys with urate depositions along with pathognomic changes in Bursa ^[11], which may vary in size with sticky to cheesy secretions inside. Toxins also responsible for kidney related issues mostly mycotoxins like ochratoxins, Afltoxins, oosporein and dioxynivalenol or DON through maize, GNC, rice gluten, Wheat etc. Antibacterial, such as Sulfas and aminoglycosides like Gentamycin, Neomycin, etc are nephrotoxic.



Fig 1: Chalky deposition in heart and liver



Fig 2: Enlarged kidney with white Patches

Control of Gout

It is not easy to control gout as it is a multifactorial problem. Many factors contribute in higher incidences of Gout during

the month of June-July to October-November in West Bengal. Sudden spells of continues rain for two to three days responsible for drastic fall in environmental temperature especially during late night and early morning causing huddling during brooding stage and water temperature also came down and became chill causing low water intake in birds. These birds developed gout and kidney enlarged problem as the age proceed.

Some viral diseases like IBH and IBD both are immune suppressive in nature and are responsible for aggravating the situation. During monsoon feed ingredients contaminated with fungus because of high moisture content of particles lower the immunity of birds' right from early age. IBD affect chicks of 5-7 days of age because of lower immunity amongst chicks because of consumption of fungal contaminated feeds and affect the immune organs of birds. Kidney being a vital organ more prone to IBD and IBH infection and develop Gout issues in chicks.

One cannot think of poultry farming without Farm Biosecurity, which is an integral part of this industry. Compared to last few years, people of west Bengal developed more awareness about the importance of Biosecurity. West Bengal farmers engaged in commercial poultry farming focusing more on biosecurity and shed cleaning and preparation activities. But one of the major problems that still present is lack of proper shed rest, which plays a vital role in reducing the microbial load of shed as well as nearby environment. Shed ready with proper chemical and dose is very important to reduce and control the load of microbes. Second most serious issue is lack of dead pit. Farmers throwing dead birds to forest areas, home backyard or water bodies which contaminate the environment and leads to serious consequences and gout might be one of them. Superior quality water sanitizers in correct dose and regular spray helps to reduce existed infection in shed. Stress is not at all ideal for chicks and such birds surely develop gout problem. Prolonged chicks delivery time responsible for dehydration in chicks, along with improper ventilation in shed, impure water, insufficient numbers of utensils, alkaline water PH are responsible for lower water intake and which ultimately leads to gout in birds. Brooding is regarded as the foundation of birds, and improper brooding ill seriously affect the flock and in due course of time such birds developed gout and Ascites. In most of the commercial farms of West Bengal, it is seen that they are more reliable on medication rather than management practices and over medication is also responsible for stress to birds. Feed plays a vital role and we must ensure the good quality and fungal free ingredients to produce poultry feed. Excessive salt should also be avoided to protect the birds from Gout. Cleaning of farms utensils to avoid contamination, after feeding feeder cone must be clean to avoid contact with water (During spray) and developed fungal growth. It is also important to give protect to birds through Vaccination and for which first of all we must ascertain the strain of virus and for which we need the disease history of locality, Epidemiology of disease, maternal antibody of DOC, need of booster dose of IB, IBD vaccine. Based on the field condition, we must follow medication and vaccination schedule.

Jaggery water is very effective in controlling gout mortality and also by avoiding unnecessary medication with antibiotic especially gentamicin and sulfas we can minimise the gout issues. Vitamin E and Selenium should be incorporated in

feed or through water medication to improve the immune status of birds. It is always wise of keep healthy gut flora of birds and Probiotics plays a vital role in maintaining healthy gut environment. Use of acidifier based on water PH is always a good practice.

Conclusion

With the time poultry industry also developing very fast and now it's high time to invest, act and plan more scientifically and professionally towards industry. With time many harmful viruses evolved themselves and causing serious concern to poultry industry. A toxin free feed to birds in many dimensions will benefit the industry, and we must come up with proper steps to minimise it. A more scientific approach towards farmers concentrated in villages and engaged in poultry industry need a thorough interaction to at least fulfil the demand of Biosecurity. With time more issues like gout will come up in future and we shall need a through awareness amongst farmers.

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