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RESEARCH

Outbreak of Sudden Death Syndrome in Broiler Chicken in Kathmandu Valley, Nepal

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Abstract

The incidence of sudden death of broiler birds above 40 days suddenly increased in the month of August 2008 in Kathmandu valley. Birds that were presented for post-mortem examination in Central Veterinary Laboratory Tripureswor Kathmandu were usually found dead on their backs with wings out-stretched. Incidence rate was recorded between 1.5 to 2.5% of the flock. The mean mortality due to sudden death syndrome was 1.3 - 9.6% and mortality usually occurs after 6 week of age. There are no outstanding gross lesions on post mortem examinations, except for muscle oedema, pulmonary, renal and liver congestion, and congestive splenomegaly.

Penicillium spp., *Aspergillus spp*., *Candida spp*, *E.coli, Streptococcus spp.* and *Staphylococcus spp*. were the usual organisms isolated from culture samples of liver, lung, spleen and proventriculus. Reduction of mortality was achieved by feed restriction, supplementation of glucose containing electrolyte, liquid toxin binder, Immunomodulaters, acidifier and antibiotic therapy. The condition seems to be related to fast growth rate. A practical approach seems to use diets with 5-7% reduction in nutrient density. The provision of more space and supportive treatment with anti-stress medicine may also be beneficial. This incidence of sudden death syndrome in birds in Kathmandu Valley was reported for the first time and needs to be investigated further.

Key word: Sudden death syndrome, broiler birds, Kathmandu Valley, Nepal.

Introduction

From the first week of August 2008 there were sudden increase in mortality of broilers above 6 week age (Table 1). There are no premonitory signs. Just before death, birds appear normal and it was common to observe the birds feeding, drinking or walking normally. Then suddenly, affected birds exhibit clinical signs such as extending their neck, squawk and start wing beating as well as leg extension before falling back on their back and die suddenly.

Material and Methods

Postmortem examination of birds that died of sudden death syndrome showed no outstanding gross pathology. All birds were well fleshed, with muscle oedema and general pulmonary congestion and oedema. Feed was present along the entire digestive tract and the gall bladders of birds were usually filled with bile. The liver was pale to yellow enlarged, molted appearance and kidneys were usually slightly congested and have patchy subcapsular haemorrhage. Usually, the proventriculus contains a milky fluid with hemorrhagic patches and intact food particles are present in gizzard. Crop in some bird was full with liquid intact food particles. Intestine was ballooning in appearance with thick mucous filled ingesta was present. Congestive splenomegaly was observed in almost all birds. Bursa was almost normal to atrophid. All these post mortem observations conform to the descriptions of the syndrom made by *Ononiwu,et. al.* (1979).

Laboratory Finding of Mycobiota and Microbiota of Postmortem Tissue samples: A total 86 tissue samples of lung, iver, speen, peoventriculus and gizzard, were collected during postmortem examination and were subjected for both bacterial and mycological culture. Result of microbiological examination is given in Table. 2.

Treatment and Preventive measure given to the rest of birds in flock: All birds remaining in flocks were subjected to restricted feed up to 8-10%, and feed to twice daily only. Supplementation with glucose containing electrolyte, liquid toxin binders, immunomodulator, and simple broad-spectrum antibiotics were provided in water. Vitamin B complex supplementation was totally

Table: 1. Epidemiology of Affected flock in Kathmandu Valley with sudden Death Syndrome in Month of August 2008.

Age	No.of farm	Population at risk	Morbidity (%)	Mortality (%)	No. of samples examined
First week	22	16620	4250 (25.57%)	369 (2.22%)	44
Second week	14	15450	1235 (7.99%)	232 (1.50%)	28
Third week	20	10260	848 (8.26%)	157 (1.53%)	40
Fourth week	30	15700	2380 (15.16%)	149 (0.94%)	60
Fifth week	13	16450	4750 (30%)	1650 (0.3%)	26
Sixth week	12	18850	4550 (25%)	876 (0.19%)	24
Total	111	93330	18013 (17.01%)	3436 (1.56%)	222

withdrawn. All birds remaining in all affected farms responded well to the above management and there were marked improvement in the overall condition of the flock.

Result and Discussion

Sudden Death Syndrome (SDS) is an acute heart failure disease that affects mainly male, fast growing chickens that seem to be in good condition. Although a common condition in fast growing birds, the pathogenesis remains unclear (*Ononiwu,et.al.*, 1979). Cardiac arrhythmias are involved in the pathogenesis of SDS with ventricular arrhythmias (VA) being the most common observation representing premature ventricular contractions and fibrillation (Olkowski and Classen, 1997; 1998). It has been reported that broilers fed with high vitamin D3 diet above the recommended levels in an attempt to prevent commonly occurring leg problems were 2.5 fold more likely to succumb to acute heart failure and die of SDS (*Nain,et.al.*,2007). SDS was also experimentally induced by feeding diets containing the mycotoxin moniliformin that resulted to cardiac injury with subsequent alterations in cardiac electrical conductance (*Reams,et.al,* 1997) suggesting the possible role of chronic mycotoxicosis to the causation of SDS. Other implicated causes of SDS include continuous artificial lighting (*Ononiwu,et.al*, 1979b), deviations in dietary calcium and phosphorus (*Scheideler,et. al,* 1995), feeding crumble-pellet diets (*Proudfoot, et.al,* 1982), dietary fat content (*Rotter,et.al*, 1985) and feeding frequency *Bowes,et.al.*,1988). The later reco-mmendation of restricted feeding supports well the previous observation that abdominal fat deposition increases the risk of SDS such that restrictions on calorie:protein ratio decreases the incidence of SDS (*Mollison,et.al,* 1984).

The present investigation indicates that broilers in good body weight condition when not harvested timely and remain in poultry shade for prolonged periods suffer stressful events and even sudden death. Also, it is possible that the increased humidity and hot season favors the growth of mold and fungus in stored feeds increasing the risk of birds to mycotoxicosis. This incidence of sudden death syndrome in birds in Kathmandu Valley was reported for the first time and needs to be investigated further.

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Table: 2. Result of Microbiological Examination of samples.

No. of samples	Bacteria isolated	Fungi isolated	Positive no	negative no
111	*E.coli, Streptococcus spp.*, *Staphylococcus* spp.		70	41
111		*Aspergillus spp., Penicillium spp.*, *Candida spp.*	80	31
222	Total		150	72

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Veterinary Events

International Meeting on Emerging Diseases and Surveillance (IMED 2009)

ProMED-mail, the Program for Monitoring Emerging Diseases invites all to the International Meeting on Emerging Diseases and Surveillance (IMED2009), which would be held from 13-16 February, 2009 at Hotel Hilton, Vienna, Austria. The organizers hope that the conference will bring together the public health community, scientists, health care workers, and other leaders in the field of emerging infectious diseases. More details about the conference is available at the website www.imed.isid.org.

International Society for Animal Hygiene Congress 2009

The next congress of ISAH will be organised in Vechta, Germany from 19 to 23 July 2009. All the information about the congress topics, venue, progam, registration and submission of abstracts are available at www.isah2009.info. All information about the International Society for Animal Hygiene can be found on the website: www.isah-soc.org. Young scientists of developing countries (Latin America, Africa, Asia and Eastern Europe) can opt for financial support. Application for this financial support has to be sent in before 15 December 2008. For more details, contact e-mail: martiel@planet.nl.