

Incidence of Marek's Disease in poultry farms of Hyderabad district

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Abstract

Three years data (1999000-2001) on the occurrences of Marek's disease were collected from five taluka of Hyderabad's commercial poultry farms. During the period of study over all affected birds were 0.18%, the over all mortality percentage was 0.14 in all taluka, while 20.68% birds survived on all the commercial poultry farms of five taluka of Hyderabad district. It is concluded that Marek's disease occurred in all poultry birds but their rate increased at early and mid age of rearing. However, disease infection rates increased in all months of the years.

Keywords: Morbidity, Mortality, Broiler chickens, incidence

Introduction

Marek's disease is highly infectious and contagious disease of household chickens, which is found throughout poultry producing areas of the world. Marek's disease is characteristically a disease of young chicken between 12-24 weeks of age and may also occur in birds of 6 weeks of age but the older birds can also be infected. The acute form is usually more explosive and birds appear very depressed, some show paralysis and many die without any signs. Birds may become blind due to tumors of the eye (Bagust, 1986; Calnek and Witter, 1984). This disease is caused by a virus belonging to the herpes virus group. Various stages of the viral life cycle have been described in detail by Calnek (2001). The disease causes significant problems with poultry health and welfare and a heavy financial burden on the poultry industry. It causes economic losses in the flocks which may vary from 10-25 % but sometimes mortality exceeds up to 34%. (Powell, 1986). Marek's disease (MD) was first described by József Marek in 1907 as fowl paralysis caused by mononuclear infiltration into the sciatic nerve plexi (Marek, 1907). Till early 1950's the disease was apparently fairly mild. More virulent forms were described in the 1960's, the pattern of disease changing from one of mainly paralysis (classical) to

gross tumors involving many organs (acute forms). Witter (1997) classifies these strains of virus as virulent Marek's disease viruses (vMDV). The first evidence was provided for a naturally occurring malignant tumour controlled by an anti-viral vaccine (Epstein, 2001).

The characteristics clinical signs of disease are partial paralysis and later complete paralysis of peripheral nerves leading to paralysis of wings and legs. Aydin *et al.* (1995) observed clinical features characterized by paralysis of wings, legs and neck with lameness, depression and death occurred in 45 days old imported gees. In case of wing involvement there is drooping of wings but in case of wing and legs, birds are unable to stand and lie with one leg stretched forward and the other behind. The cervical nerves may result in torticollis, respiratory symptoms like gasping along with intestinal diarrhea and loss of weight, sometimes the iris is involved which can lead to blindness. The specific gross lesions are the enlargement of bronchial and sciatic plexuses about 2-3 times more than the normal thickness and have lost their glistening appearance. In addition to nerve lesions, grayish white lymphoid tumors are frequently found in visceral organs. The visceral tumors are found more in acute form of the disease.

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This study has never been carried out under climatic conditions of Hyderabad district of Sindh. It was therefore planned to investigate the natural incidence of Marek's disease.

Materials and Methods

Source of Data

Three years data (1999-2001) was collected from 25 commercial broiler farms of Hyderabad district, i.e. Hyderabad, Hala, Tando Mohd. Khan, Tando Allayer, and Matyari. Five farms were selected from each taluka, from where total no. of 445800 birds were examined. Data was recorded for following parameters: -

- Number of birds examined for Marek's disease
- Number of birds affected with Marek's disease
- Number of bird deaths due to Marek's disease
- Numbers of bird survivors from Marek's disease

The data was collected by regular survey of these farms and official record of the Project Director Diseases Diagnostic Laboratory, Directorate of Poultry Production, Hyderabad, Sindh. The data was statistically analyzed to study the year wise occurrence of Marek's disease in commercial poultry farms of Hyderabad Distt. The following formula was used for calculating percentage, number of birds affected, dead and survivors according to the method suggested by Halpin 1975 to document the different bacterial and viral diseases.

No: of birds affected

$$1\text{-Percentage of birds affected} = \frac{\text{No: of birds affected}}{\text{No: of birds Examined}} \times 100$$

No: of birds dead

$$2\text{- Percentage of birds dead} = \frac{\text{No: of birds dead}}{\text{No: of birds affected}} \times 100$$

No: of birds, survivors

$$3\text{-Percentage of birds survived} = \frac{\text{No: of birds, survivors}}{\text{No: of birds affected}} \times 100$$

Characterstic of the disease

- 1- Paralysis of bird
- 2- Depressed bird
- 3- Tumors on different organs like Heart, Liver, Kidneys
- 4- Blindness due to tumors.

Table: 1 Number Of birds examined, affected, dead, survivors and over all percentage of mortality rate due to Marek's disease in commercial broiler farms of Hyderabad, district during 1999-2001.

Name of city	No: of birds Examined	No. of Birds infected	% of Birds infected	No. of Bird survivors	% of Bird survivors	No. of Bird deaths	Mortality %
Hyderabad	113500	140	0.12	41	29.28	99	0.087
Hala	54200	167	0.30	30	17.96	137	0.25
T. Mohd Khan	114700	172	0.14	27	18.62	145	0.12
T.Allayar	100900	177	0.17	42	31.11	135	0.13
Matyari	62500	185	0.29	34	18.37	151	0.24
Total=	445800	841	0.18	174	20.68	667	0.14

Results and Discussion

In this study total 445800 birds were examined for Marek's disease in five talukas of Hyderabad district. According to statistical analysis highest mortality rate (0.25%) was recorded from commercial broiler farms of Hala taluka, while lowest mortality rate was from Hyderabad (0.087 %), while highest number of birds were infected in Hala taluka (0.30%), lowest were in Hyderabad taluka (0.12%). The highest percentage of birds which survived from Marek's disease was from Tando Allayar taluka (31.11%) while lowest were from Hala (17.96%). Marek's diseases is highly infectious diseases in many house hold flocks causing losses in both layer and broiler chickens in almost all poultry producing areas of the world. This disease is common with high rate of incidence among un-vaccinated chickens. These values are less than the findings of Haq *et al* (2001). It was lesser who recorded

the rate of incidence of (20.7%) in the birds of 13-30 weeks of age and 2-10 in broiler flocks of 4-7 weeks of age (Glavits *et al*, 1990). Birds infected with Marek's disease at different commercial flocks during present study were not specific but included depression paleness of comb and wattles, emaciation and weakness in some of the cases. Generally depression, locomotion disturbances along with paralysis of legs and wings and to stand and reach for food and water were the characteristics signs in most of the cases. In some of the cases gasping, blindness and diarrhea associated with dehydration and emaciation were observed. These findings are similar to those indicated by Salim *et al* (2001) in addition to torticollis and prostration. The poultry in Pakistan in general and Sindh in particular faces many problems including disease control. However, disease problems in commercial poultry farms are probably due to many reasons that could produce high mortality in birds. This may include

This may include management, bacterial, viral, parasite disease, cost of medication, labor, feed and balanced market supply. The control and treatment of disease cannot be successfully achieved until sufficient data on disease occurrence is available. The gross pathological lesion in dead / slaughtered birds affected with Marek's disease were observed, at necropsy and the pathological changes observed were recorded. Post-mortem examination revealed that the liver and spleen were affected in almost all the cases and the other visceral organs affected were kidneys, heart, gonads, lungs in most cases but the nerve plexus in few cases. Sharma (1991) reported similar lesions lymphoid tumors in liver, spleen, heart, lungs, kidneys, proventriculus, gonads, nerves intestine and skin of chickens.

Glavit *et al.*, (1990) also recorded some neoplastic growths in brain, kidneys and spleen with paresis in nerves region. Similar findings were described by Stephen *et al* (1980), Ficken *et al* (1991), Lin and Lee (1996), Hafaz (1997) and Narring *et al* (2003).

Prevention and Control

As the disease is highly contagious in the field, contact with infected birds should be avoid, and it is of particular importance to keep chicks isolated from adult stock.

The following principles of hygiene are recommended for the control of this disease: -

- 1- Hatch, hold, transport, and brood chickens in facilities, which have been completely disinfected.
- 2- Hatch and maintain chickens of different ages and of different origins in separated, isolated areas.

- 3- Avoid rearing chickens in areas where the disease is enzootic and where there is a high chicken population.

References

- Aydin, P., H. Girgin; and S. Oflu, (1995) Clinical bacterial and histopathological studies on a disease resembling Marek's disease in geese. *Etlik. Vet. Mic. Derg.* 8 (1/2); 264-270.
- Bugust, T. J. (1986) "Poultry Health" Proceedings 92, Postgraduate Committee in Veterinary Sciences. pp. 710-711
- Calnek, B.W., (2001) Pathogenesis of Marek's disease virus infection. In: Hirai, K. (Ed.), *Current Topics in Microbiology and Immunology*. Springer, Berlin, pp. 25-55.
- Calnek, B.W. and R. L. Witter, (1984) *Diseases of Poultry*, 8th Ed.
- Epstein, M. A. (2001) Historical background. *Phil. Trans. R. Soc. Lond. Ser. B: Biol. Sci.* 356, pp. 413-420.
- Ficken, M.D., M.P. Nasisse, G.D. Boggan, J.S. Guy, D.P. Wages, R.L. Witter, J. K. Rosen Berger and R.M. Nordgren, (1991) Marek's disease virus isolated with unusual tropism and virulence for ocular tissues, clinical findings, challenge studies and pathological features, *Av. Path.* 20(3): 461-74.
- Glavits, R., V. Playa, J. Povazsan, B. Markos, E. Szabo, F. Ralz and M. Meder, (1990) Diagnosis of Marek's disease with transient lytic paralysis in Hundry. *Hag. Allat.lapja.* 45 (11): 675-83
- Hafaz, H.M., (1997) Field investigation on Marek's disease in commercial pullet and layer flocks. *Archiv. Fiir.Gefliget.* 61 (5): 215-217.

Haq, A. U., M. Siddique and Z. Iqbal, (2001) Epidemiological study of Marek's disease in commercial layer flock in Toba Tak Singh District. Pak. Vet. J. 21(4): 298-201.

Lin, J. A. and Z. Lee, (1996) Genetic susceptibility to Marek's disease virus of local chickens in Taiwan. Av. Dis. 40 (3): 576-581.

Marek J. (1907) Multiple Nerventzündung (polyneuritis) by Hunan. Deutsche Tierarztzeitung Wschr 15, pp. 417-421.

Nrang, G., N. Jindal and S. Kumar, (2003) Occurrence of Marek's disease in vaccinated layer flocks in Harya. Ind. Vet. J. 80 (6): 590.

Powell, P. C. (1986) Marek's disease: a worldwide problem. World's Poult. Sci. 42, pp. 205-218

Salim, A. I., M. Eisa and S.A.M. Kheir, (2001) Studies on Marek's disease in Sudan. Bull.Ani. H. Prod. 49(3): 187-193.

Sharma, R. N. (1991) Acute Marek's disease in local non-desript chickens in Iran. Ind. J. vet. Path. 15(1): 45-46.

Staphen, E. A., R. l. Witter, K. Nazorion and J. M. Sharma, (1980) Development and Characterization of Marek's disease transplantable tumor in inbredlin 72 chickens. Av. Dis. 24(2): 358-374

Witter, R. L. (1997) Avian Diseases 41:149-163.