

ORIGINAL ARTICLE

Incidence of Marek's Disease in a Native Chicken Farm in Theni District of Tamil Nadu

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ABSTRACT

An outbreak of Marek's Disease in 9 week old native chicken was recorded in a private farm in Uthamapalayam, Taluk of Theni district. Desi chicken is found to be highly resistant to many infectious diseases causing major economic loss when compared to commercial broiler and layer. From the total flock of 250 birds, daily 5 to 8 birds died especially after 9th week of its age with the clinical symptoms of dullness, depression, sudden mortality, stunted growth, bloody diarrhoea and incline to move. On post mortem examination, enlargement of liver, spleen and kidney with various sized white foci on the surface, multiple white coloured nodules in heart and thickening of proventriculus with ulceration on the mucosa were observed. Histo-pathological examination revealed that the presence of Marek's Disease and same was confirmed by Polymerase Chain Reaction as a primary cause as the presence of meq gene of MDV serotype 1 by amplified fragment size of 583 bp. A comprehensive strategy in management, bio-security and vaccination need be focused (especially on disease free flocks) in native chicken also to overcome the recurrent and complication caused by Marek's Disease virus.

Key words: Native chicken, Marek's Disease, PCR and Bio security.

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INTRODUCTION

Native desi chicken are well known for their adaptability to local agro-climatic condition and high disease resistance [10] that made farmers to rear native chicken in backyard and intensive on their own traditional methods. Much study has been investigated in India, focusing mainly on the survival rate of native chicken reared for meat purpose. Focusing on the survival rate, the main reason quoted by the farmers on mortality causes is predation of desi chicken and diseases. Even though desi chicken found to be highly resistant to many of the disease, MD is the one which causes more economical loss to the farmers. MD is a lympho-proliferative disease of chicken caused by herpes virus (MDV) and is characterized by multiple T-cell lymphoma formation in visceral organs, muscles, skin and lesions in peripheral nerves [3]. Outbreaks of MD have been reported recently throughout the world including India [1]. The present study describes the gross lesions, histopathological lesions and molecular diagnosis of Marek's disease in a native chicken farm in Tamil Nadu.

MATERIAL AND METHOD

History

A farmer brought five native desi chickens at the age of 9th week for post mortem examination to Farmers Training Centre, Theni on May, 2017. The farm had flock strength of 250 birds and was reared under semi intensive system of management. The birds were vaccinated for Newcastle Disease alone. The affected birds showed the clinical symptoms of dullness, depression, sudden mortality of 5 to 8 per day, stunted growth, bloody diarrhoea and inclination to move.

Sample collection

Post mortem examination was carried out and organs like liver, spleen, heart and kidney samples from the dead birds collected in ice and 10 per cent formalin were sent to Central University Laboratory, Madhavaram for histopathology and detection MD virus by PCR respectively.

Histopathology

These tissues were fixed in 10% formalin and then processed and stained with haematoxylin and eosin (H & E) for observing microscopic changes [2].

DNA extraction and PCR examination

DNA was extracted from the organs by conventional method [9] and used as template for PCR reaction. PCR was performed for *meq* gene of MDV serotype 1 by using the primer MR-S (5'-AGTTGGCTTGTCATGAGCCAG-3') and MR-AS (5'-TGTTCCGGGATCCTCGGTAAGA-3') for 35 cycles of 94° C for 45 sec, 55° C for 45 sec, 72° C for 1.5 min (Chang et al., 2002). The amplified fragment was separated and visualized on 1.5% agarose stained with ethidium bromide.

RESULTS

On post mortem examination, enlargement of liver, spleen and kidney with various sized white foci on the surface, multiple white coloured nodules in heart, proventriculus mucosa was thickened with ulceration. On section, these white foci in the liver, spleen and kidney were extended into the parenchyma of the organs. Histopathological examination showed severe pleomorphic lymphocytic infiltration in the liver, spleen, kidney, heart and proventriculus suggestive of MD. PCR amplification confirmed the presence of *meq* gene of MDV serotype 1 by amplified fragment size of 583 bp.

DISCUSSION

The present outbreak of MD in desi chicken in the age group of 9 week old was recorded. Clinical manifestation, gross and histo-pathological examination were studied. The same was identified and confirmed as *meq* gene of MDV serotype 1 by Polymerase Chain Reaction. Chicks aged more than nine weeks old are heavily affected by MD virus infection. The same trend were noticed [8] and reported that the percentage of mortality due to Marek's disease was higher in the younger age group (9-20 weeks) than that of older birds (above 20 weeks) and peak mortality was encountered between 16-26 weeks of age. Higher mortality due to Marek's disease was reported [7] during 21- 40 weeks of age and lower mortality rate in 9-20 weeks. The clinical manifestation and post mortem lesions observed in the present study are very similar when compared with the earlier reports [5]. However there are some mild variation were noted because of severity and duration of illness. Multiple white coloured nodules (lymphoma) were noticed in heart. Similarly white multifocal necrotic area with varying size of liver noticed in some case while others did not show noticeable enlargement. The histo-pathological examination revealed that, the presence of severe pleomorphic lymphocytic infiltration observed in the liver, spleen, kidney, heart and proventriculus. Histopathological findings were in accordance with the findings of previous studies [3]. PCR amplification confirmed the presence of *meq* gene of MDV serotype 1 by amplified fragment size of 583 bp [6]. The incidence of MDV has been increasing because of the intensive use of vaccination to control the disease in broiler and layers [11].



Fig 1:Desi chicken - Mareks Disease – Enlargement of liver

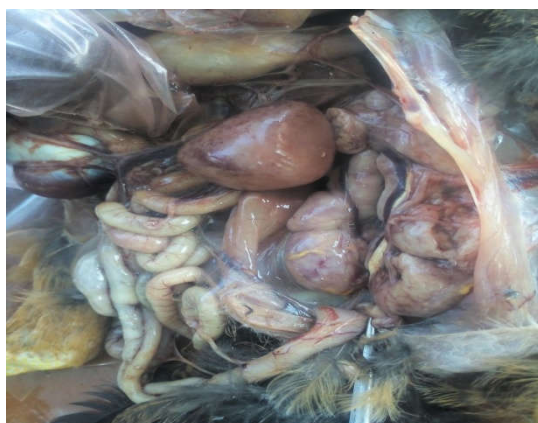


Fig 2:Desi chicken - Mareks Disease – Enlargement of kidney and spleen

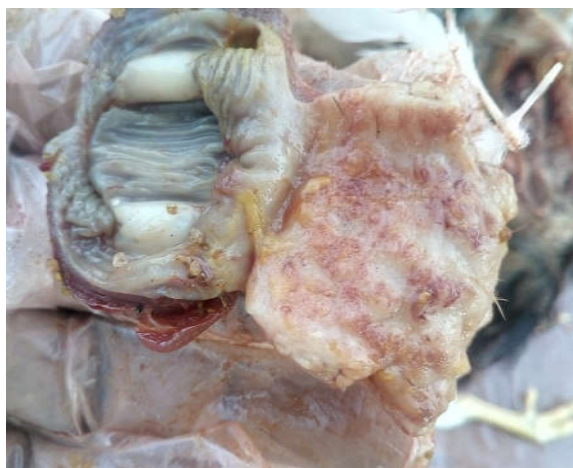


Fig 3:Desi chicken - Mareks Disease – Thickening of Proventriculus



Fig 4:Desi chicken - Mareks Disease – Enlargement of spleen with multifocal white foci

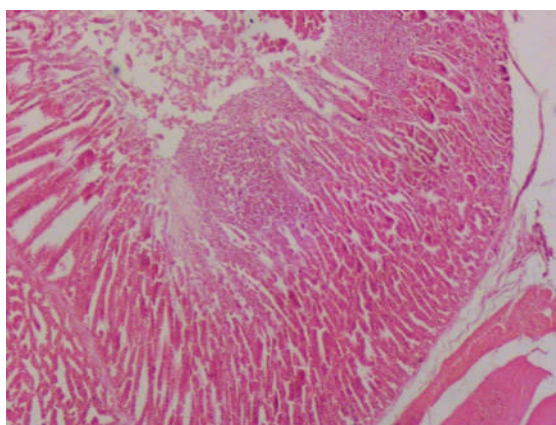


Fig 5:Desi Chicken- Liver- Marek's disease- Pleomorphic lymphocytic infiltration in the liver (10x)

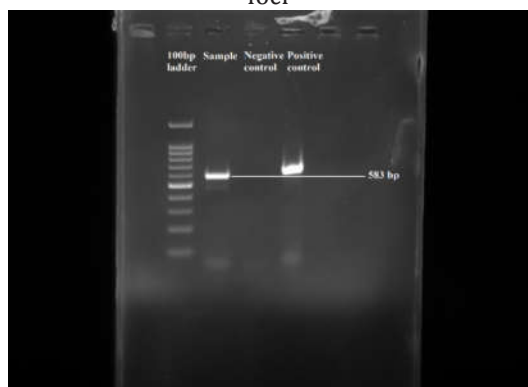


Fig 6:Desi chicken – Mareks Disease – PCR amplification confirmed the presence of *meq* gene of MDV serotype 1 by amplified fragment size of 583 bp

CONCLUSION

In this study, we found that flock was not vaccinated with MD vaccine which leads to no immunity against MDV to the birds. This virus is highly infectious and ubiquitous in nature; it is often difficult to maintain the birds free from disease without vaccination programme. Nowadays, even native chicken have immuno-compromised to infectious disease, because of commercial rising of poultry, though the native chicken believed to be immune competent to infectious disease. Timely and proper vaccination need to be addressed in rural area or packages of practices need to be formulated in the aspect of disease control and vaccination in desi chicken farming as followed in commercial broiler and layers.

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