



SHORT COMMUNICATION

## Recurrent Incidence of Marek's Disease in Native Breed Chickens

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### ABSTRACT

The present paper is a report on outbreak of visceral (acute) form of Marek's disease (MD) in 12 week-old non-descriptive chickens reared for meat purpose on two occasions in two different flocks. Economic losses due to visceral form of MD caused by very virulent MD virus are very huge due to mortality despite preventive vaccination carried out at hatch. Chickens of native breeds are believed to be resistant for various diseases including MD. Desi chicken flock comprising 2000 birds which was not vaccinated showed sudden mortality upto four to five birds a day after 12 weeks of age on both occasions. Gross and histopathological lesions were suggestive of MD and nucleic acid of serotype 1 of MD virus was identified by PCR. It can be concluded that resistance expressed by native breeds of chicken to various diseases could be compromised even if they are properly housed. It is recommended to administer bivalent vaccination at hatch together with biosecurity at farm for prevention of MD in desi chickens. Such occurrences also underline the need of adoption of 'all-in-all-out' system of management for effective disease prevention in desi chickens.

**Keywords:** Marek's Disease, Native chicken, Mortality, PCR, Histopathology

Marek's disease (MD), a lymphomatous and neuropathic disease of domestic fowl is caused by *Mardivirus* – an alphaherpesvirus of *Herpesviridae*. Clinical signs like paralysis of leg and wing with enlargement of peripheral nerves common in 4 weeks and above old chickens are characteristic. However, visceral form of MD which involves tumour development in visceral organs like liver, spleen, kidney, gonads, proventriculus, heart, muscle etc., without involvement of peripheral nerves is not uncommon in commercial chickens despite vaccination with bivalent strains at hatch (Arulmozhi *et al.*, 2011). Many breeds of chickens are susceptible for MD including native breeds (Grehwal *et al.*, 1977; Sah *et al.*, 1982). In the present study, outbreaks of MD in unvaccinated 12 week-old flocks of native chicken on two occasions with a gap of 15 months in multiple-age farm located in Perambalur district, south India have been reported.

There was a sudden mortality of 4 to 5 birds per day in 12 week-old desi chicken flock of 2000 birds on

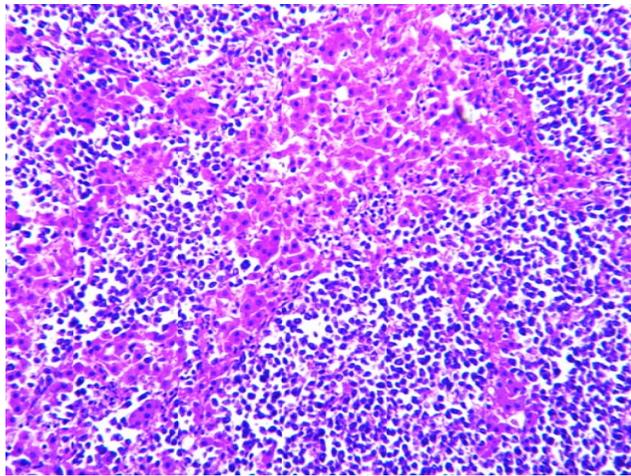
both occasions i.e. November 2015 and January 2017. The affected flocks were visited and post-mortem was conducted on both occasions. Part of liver and spleen showing lymphoma from two dead birds on ice were sent to Department of Animal Biotechnology, Madras Veterinary College, Chennai where presence of MD virus nucleic acid was analysed by PCR. Primer used in PCR was as follows. FP -5'GGGCGCTATGCCCTACAGT3' and RP - 5'TCAGGGTCTCCCGTCACC3' targeting 856 bp of serotype 1 MD virus *meq* gene of MD virus (Handberg *et al.*, 2001). Those organs were also collected in 10% formalin for histopathology and sent to Department of Veterinary Pathology, Veterinary College and Research Institute, Namakkal, India.

All the findings were similar on both occasions. Clinically, there was depression with pale comb in 15 to 20 birds with no neurological signs. On post-mortem, there was lymphoma in liver (Fig. 1), spleen, kidney and proventriculus.



**Fig. 1:** Lymphoma in liver

Outbreak of visceral MD which is considered as acute form in chicken could have occurred due to the effect of stress arising out of housing. The flocks were vaccinated with neither HVT nor bivalent vaccine at any point of time. Similarly, the incidence of classic MD was recorded in desi chicken by previous reports (Grehwal *et al.*, 1977; Sah *et al.*, 1982). In histopathology, affected organ (liver) showed infiltration of pleomorphic lymphocytes (Fig. 2).



**Fig. 2:** Liver showing the replacement of liver parenchyma with neoplastic pleomorphic lymphoid cells (H&E  $\times$  40)

Infiltration of mononuclear lymphocytes in viscera was also reported by Singh, *et al.* (2012). Current finding reveals that predilection of the virus is completely shifted to visceral organs with longer incubation period than usual (4 to 5 weeks). Mortality percentage could not be assessed, as both the flocks which meant for meat purpose

were lifted within one week after the outbreak. There was no incidence of MD for one year in the subsequent replacement flocks reared after a gap of three months in the same farm. This emphasised that the efforts, as advised, taken by the farmer to eradicate the virus from farm premise was fruitful. However, the disease reappeared after a gap of 15 months. There may be either lacunae in administering bivalent vaccine after hatch or perpetuating MD virus which could be a perennial problem in multiple-age flock farm complex. It is suggested that stringent biosecurity measures along with bivalent vaccination at hatch are essential to prevent MD in chickens including native breeds. This finding also vindicates the need for 'all-in and all-out' system of management in a farm housing native chicken. Awareness among native chicken farmers has to be created for prevention of infectious diseases (Sharma, *et al.*, 2015).

## CONCLUSION

It can be concluded that vaccination in native chicken is essential and is not the ultimate solution for prevention of MD. Strict biosecurity procedures to avoid exposure during early part of life and the presence of genetic resistance are essential adjuncts to a successful prevention programme for MD in poultry including native chickens.

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