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Histopathological, Serological and Molecular Confirmation of APMV- 1 Infection

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INTRODUCTION

Avian paramyxovirus type 1 (APMV-1) is an enveloved, single stranded and non segmented RNA virus belong to sub family paramyxovirinae. Infection of virulent APMV-1 in poultry causing serious disease is known as Newcastle disease (ND). ND cases in village chickens are regular and frequent in Indonesia since small flock were scattered and raise in free ranging system. The possibility contact with water fowl (duck and geese) as reservoir of the virus, might maintain NDV in nature and also have a chance to threat farm poultry industry. ND cases are found in Bali every year (3). The ND along with highly avian influenza (AI) infection are the most common viral disease found in poultry farm in Indonessia especially in Bali. For diagnostic purposes, microscopical characteristic of field ND cases is important to distinguish with other viral infection. Morover, serological and molecular confirmation of virus should be performed for more accurate diagnosis. This research was conducted to find out variation of microscopic lesion of field ND cases in Bali.

MATERIALS AND METHODS

ND suspected chickens were obtained from commercial and back yard farm in 9 regencies and city of Bali Province. As AI still endemic in Bali, the ND suspected chickens were tested by rapid test for AIV antigen detection. Only AI negative samples were necropzied. For histopathological examination, brain, lungs and intestines were collected and fixed in 10% neutral buffered formalin. For viral isolation and propagation, samples tissue of brain, lung, spleen and intestine were taken aseptically. then were mix and ground to prepare a 20% (w/v) inoculum. The inoculum were then inoculated in chicken embryonated eggs. Finally, infected allantoic fluid was collected and tested by HA and HI test by the conventional method as previously described by OIE(4). Viral ribonucleic acid was isolated by standard Trizol method and subsequently reverse transcribed by reverse transcription reaction then followed by polymerase chain reaction (PCR) to multiply the cDNA. The PCR were performed to follow the method that previously done (1). The PCR products were separated by gel electrophoresis in 2% (w/v) TAE agarose gel.

RESULTS AND DISCUSSION

APMV-1 can be isolated from twenty ND suspected chickens obtained from commercial and back yard farm in 9 regencies and city of Bali Province. Twenty NDV isolates were confirmed serologically and molecularly. Moreover PCR results showed that 80% of its amplicon showed a single band and 20% still require some optimizations to get single good bands. Histopathologically the lesion in the brain were perivascular cuffing (20%), endoteliosis (75%) and gliosis (75%). In the lung, there were interstitialis pneumonia (50%), lobar pneumonia (5%) and proliferation of pneumosit type 2 (100%. The most prominent intestinal lesions were catarrh enteritis (75%) and hemorrhagic necrotizing enteritis (10%). The type of lesion were typical of those caused by

viscerotropic velogenic NDV and mesogenic NDV (2). These brain lesions are invariably observed in the chickens infected with the neurotropic velogenic pathotype and commonly with viscerotropica and mesogenic pathotypes. Though in Asean countries including Indonesia the viscerotropic velogenic and mesogenic pathyotypes are commonly circulate in the field, the possibility of the introducing new virus pathotype should not be neglected. Thus sequence analysis of twenty isolate should be performed.

CONCLUSION

Twenty ND suspected chickens obtained in this study microscopically showed neuronal, respiratory and intestinal lesion. The causative agent can be detected serologically and molecularly.

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