Pathogenicity of a Malaysian Infectious Bronchitis Virus Isolate in Specific Pathogen Free Chickens

Mardiyah M. Nasir & [1]Mohd Hair Bejo
[1]Department of Veterinary Pathology and Microbiology
Faculty of Veterinary Medicine, Universiti Putra Malaysia

Abstract

Infectious bronchitis (IB) is one of very important diseases in chicken. It is caused by IB virus (IBV) from the Coronaviridae family. This disease is a worldwide, acute and highly contagious disease. The virus easily changes in nature and emerges as a new strain and causes problems. In Malaysia, the nephrogenic strain was detected in 1995 and the new variant QX strain was reported recently in 2009. These 2 strains caused high mortality and loss of production. Hence, the objectives of this study were to isolate and identify IBV from chickens during field outbreaks of the disease in 2009 and determine the clinical signs, gross and histological lesions of specific pathogen free (SPF) chicken infected with the IBV isolate. Samples of lungs, kidneys and trachea from suspected IB birds were tested by reverse transcriptase polymerase chain reaction (RT-PCR) assay and then inoculated to 10-day old SPF embryonated chicken eggs via allantoic route for virus isolation, propagation and preparation of the IBV inoculum. The allantoic fluid and chorioallantoic membranes (CAM) from the inoculated eggs were then tested for the presence of IBV before inoculated into SPF chicken. Seventy-two day old SPF chicken were divided into 3 groups known as Groups A, B and C. Groups A and B were inoculated with IBV inocula 0.1 mL via intranasal route while group C remained as uninoculated and served as control group. Four chickens were sacrificed prior to IBV inoculation. At days 1, 3, 5, 7, 14 and 21 post-inoculation (pi), four chickens from group A and C were sacrificed. The bodyweight was noted prior to sacrifice. On necropsy, gross lesions were recorded and samples of trachea and kidneys were collected and fixed in 10% buffered formalin for histological examination. Mortality and any abnormal clinical signs were recorded at least twice a day. Feed and drink were given *ad libitum*. The results showed that IBV was successfully detected from the trachea, lung and kidney samples of the chickens by RT-PCR. Infectious Bronchitis Virus was successfully isolated and propagated in SPF embryonated chicken eggs and detected in the allantoic fluids and CAM. The pathogenicity study showed that the IBV isolate caused severe respiratory signs and high mortality (60%) up to day 14 pi. Mild to severe gross and histological lesions were recorded in the trachea and kidneys up to day 14 pi. However, signs of recovery with mild respiratory signs, absence of mortality and mild kidney lesions were recorded at day 21 pi. It was concluded that the IBV isolate is highly pathogenic and might be a new or variant strain of IBV.

Keywords: IBV isolate, new strain, SPF chicken, RT-PCR.