

**COMPARISON OF SUSCEPTIBILITY AND
PATHOLOGY OF VELOGENIC NEWCASTLE DISEASE
VIRUS IN PIGEONS AND PULLETS**

OKEJA THADDEUS OFILIBE

Newcastle disease (ND) is a highly contagious disease of chickens. It affects a wide variety of other avian species including domestic pigeons and doves (*Columbiforme*). Newcastle disease is a major viral disease of economic importance in poultry and is rated as one of the greatest constraints to the development of the poultry industry in Nigeria and other developing countries. It is caused by Newcastle disease virus which is a member of the avian paramyxovirus type-1. The existence of ND virus (NDV) in feral pigeons poses a potential threat to the poultry population since there is the opportunity for the pigeons to mingle with poultry under the open housing management. Studies on the pathology of the velogenic NDV Kudu 113 have been carried out in various avian species but there is limited information on the susceptibility, clinical signs, distribution and persistence of lesions, and the haematological changes associated with velogenic ND in pigeons. Sixty pigeons acclimatized for two weeks and 60 pullets of 10 weeks were used. The birds were randomly assigned into four groups of 30 birds each (A, B, C and D). The velogenic NDV strain Kudu 113 was used as the inoculum for the study. Groups A and C were infected pigeons and pullets respectively while groups B and D were the uninfected control respectively. Birds in groups A and C were inoculated with 0.1ml of the inoculum intramuscularly (IM), while birds in groups B and D were given 0.1ml of phosphate buffered saline (PBS) IM as control. Morbidity of pullets started on day 2 post infection (PI) and reached 100% on day 4 PI. Morbidity of pigeons started on day 3 PI and progressed up till day 15 PI with a cumulative morbidity of 46.7%. The cumulative morbidity of the infected pigeons was significantly ($p < 0.05$) lower than that of the pullets from day 4 PI. Mortality of pullets started on day 3 PI with 26.7% of the pullets dead and progressed to 100% on day 5 PI. Mortality in pigeons started on day 3 PI at 3.3% and progressed to a cumulative of 20% on day 13 PI. The cumulative mortality of the infected pigeons was significantly ($p < 0.05$) lower than that of the infected pullets. There was a significant ($p < 0.05$) reduction in the body weight of the infected pullets when compared with the uninfected group, but there was no significant ($p > 0.05$) changes in the body weight of pigeons. Congestion of skeletal muscles and intestinal mucosal haemorrhage persisted in both infected pigeons and infected pullets throughout the experiment but lesions were more severe

in pullets than pigeons. There was atrophy, lymphocytic necrosis and depletion in lymphoid organs in both infected pigeons and pullets. On day 21 PI the eosinophil count of the infected pigeons was significantly ($p < 0.05$) higher than that of the uninfected but there were no significant differences ($p > 0.05$) between the infected and uninfected pullets. On day 4 PI the mean serum proteins of the infected pullets was significantly ($p < 0.05$) higher than that of the uninfected, but there was no significant difference ($p > 0.05$) between the infected and uninfected pigeons. There was no significant difference ($p > 0.05$) in the red blood cell count, haemoglobin count, total white blood cell count, absolute heterophil count, absolute lymphocyte count, absolute monocyte count, absolute basophil count and serum albumin between the infected and uninfected pigeons and pullets. The virus was re-isolated from the brain, intestine, proventriculus and lymphoid organs of both infected pigeons and pullets. It is concluded that pigeons are less susceptible to velogenic ND than pullets and could also spread the NDV to the poultry farms.