SUSCEPTIBILITY OF DAY-OLD CHICKS AND DUCKLINGS, GOSLINGS AND QUAILS TO PIGEON HERPES ENCEPHALOMYELITIS AND PIGEON HERPESVIRUSES

H.H. TANTAWI, Y.I. YOUSSEF, M. BASTAMI, J.M. AL-ABDULLA and N. AMINA
Faculty of Veterinary Medicine, University of Cairo, Giza (Egypt)

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ABSTRACT


Day-old chicks were susceptible to pigeon herpes encephalomyelitis virus (PHEV) by intracerebral (i/c) inoculation. Infected birds developed neurologic signs starting from 2 to 15 days post-infection, and 85% died. The virus was recovered from the brains of diseased chicks in titers ranging between 10^4 and 10^5.5 EID_{50}/0.2 ml. Inoculated birds shed the virus in their droppings throughout the 2-weeks observation period. Day-old chicks given the virus by the intranasal (i/n) or oral routes did not develop any specific signs but shed the virus also in their droppings throughout the observation period. Ducklings and goslings inoculated intravenously (i/v), i/n or orally were resistant. Day-old chicks and ducklings, goslings and quails inoculated by different routes with pigeon herpesvirus (PHV) did not show respiratory or nervous signs.

INTRODUCTION

Pigeon herpes encephalomyelitis is a recently discovered, highly destructive, viral disease of pigeons characterized by nervous signs and high mortality (Tantawi et al., 1979). The disease is now widespread in Iraq and Egypt as well as in other countries in the Middle East, causing economic losses to pigeon breeders and fanciers. The mortality rate under natural conditions ranges between 90% and 100%. The causative virus was established as a member of the family Herperviridae, genus Alphaherpesvirus "pigeon herpesvirus 2" (Tantawi et al., 1982). Pigeon herpes encephalomyelitis virus shares a common antigenic determinant with pigeon herpesvirus (Tantawi et al., 1982). The latter virus induces a mild respiratory disease in pigeons (Cornwell and Weir, 1970; Vindevogel et al., 1977).

In a previous report, we described the resistance of 4 to 6-week-old chicks, ducks and turkeys to PHEV (Tantawi et al., 1979). The present work was initiated
to ascertain the host range specificity of PHEV and to find suitable and simple laboratory biological criteria for differentiation between PHE and PH viruses.

MATERIALS AND METHODS

Viruses

**Pigeon herpes encephalomyelitis virus**

PHEV strain "MT 80", isolated and identified by Tantawi and Hassan (1982), was used throughout these investigations. The virus was propagated in the CER cell line (which is a mixture of chicken embryo fibroblast and baby hamster kidney cells) and has a titer of $10^7$ EID$_{50}$/0.2 ml.

**Pigeon herpesvirus**

PHV strain "633" was kindly supplied by Professor Dr. E. Kaleta, Institute of Poultry Diseases, Hanover. The virus was propagated in chicken embryo fibroblast cell culture and has a titer of $10^6.5$ EID$_{50}$/0.2 ml.

**Embryonating chicken eggs**

Eleven to thirteen-day-old embryonating chicken eggs were obtained from the General Poultry Company and used for virus re-isolation and titration. The titrations were carried out by chorioallantoic membrane (CAM) inoculation and the virus titers calculated according to the method of Reed and Muench (1938).

**Chickens, ducklings, goslings and quails**

One hundred and ninety day-old chicks that had not been vaccinated against Newcastle disease were obtained from the General Poultry Company.

Forty 3-day-old ducklings and forty 3-day-old goslings were obtained from the local market.

Forty adult quails (10–12 weeks old) were obtained from a private quail farm in the Giza district.

**Experimental design**

**Experiment I**

Eighty day-old chicks were divided into four equal groups. Groups A, B and C were inoculated with PHEV by different routes, while Group D was left uninoculated as negative controls (Table I). In addition, five chicks from the same hatch were raised with each of the inoculated groups as contact controls. Each group of birds was kept in separate isolation. Inoculated and control birds were observed for clinical signs and deaths for a period of 15 days, after which