بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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التوثيق الإلكتروني والميكروفيلم

قسم

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Studies on the Epidemiology of Respiratory Diseases in Chicken Farms with Relation to Biosecurity and Vaccination Regimes Adopted

A thesis presented by

Mahmoud Fawzy Ragab Abou Rawash

(B.V.Sc., Cairo University, 2016)

For The Master Degree of Veterinary Science
(Poultry diseases)

Under supervision of

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SUPERVISION SHEET

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ABSTRACT

Poultry production in Egypt is in jeopardy due to respiratory diseases outbreak. In this study, the prevalence of Avian Influenza Virus (AIV), Infectious Bronchitis Virus (IBV), Newcastle Diseases Virus (NDV) and Mycoplasma Gallisepticum (MG) was investigated in chickens suffering from respiratory manifestations. Trachea and lung tissues were collected under hygienic conditions from 70 chicken flocks (66 broiler flocks, 3-layer flocks, 1 breeder flock) (10 samples per flock), between November 2018 and April 2019. Collected samples were subjected to nucleic acid (RNA& DNA) Extraction, real-Time RT-PCR (rRT-PCR), virus isolation sequencing and phylogenetic analysis. Out of 66 commercial broiler flocks, 23 (34.8%) flocks were suffered from single respiratory infection while the mixed infections were reported in 6 flocks (9.1%).The incidence of single infection with IBV, velogenic NDV (vNDV), AIV-H9N2 and MG was 10/66 (15.2%), 3/66 (4.5%), 4/66 (6.1%) and 6/66 (9.1%), respectively. Meanwhile, AIV-H9N2 and IBV mixed infections were the most observed cases [3/66 (4.5%)], other mixed infections reported including AIV-H5N8/MG, IBV/MG and vNDV/IBV/MG [1/66 (1.5%) each].Out of three commercial layer flocks, 1 (33.3%) was only infected with vNDV. AIV-H9N2 and vNDV were successfully isolated in embryonated chicken eggs (ECE).The phylogeny of molecularly characterized viruses revealed that the two AIV-H9N2 viruses were closely related to each other and also related to recent Egyptian and Middle East circulating strains that are belonging to G1- like lineage. The phylogeny of IBV revealed that (IBV/CK/EG/Sharkia/2018)and (IBV/CK/EG/Sharkia/2019) were clustered into Egyptian variant 1 and Egyptian variant 2 subgroups respectively that are belonging to GI-23 genotype. The phylogeny of vNDV showed that the two vNDV strains were classified as genotype VII1.1 with close relatedness to each other and with other recent Egyptian strains. In comparison with other recent Egyptian strains, molecularly characterized viruses showed that no novel mutations recorded indicating a minor antigenic variations. Twenty-eight-day old commercial layer chickens was experimentally infected via intranasal inoculation with 0.2 ml containing 10^6 EID_{50} of NDV genotype VII and exhibited clinical signs at 3 days post infection (dpi) and lasted for the 6^{th} dpi represented by obvious greenish droppings at 5^{th} dpi, leg paralysis and torticollis at the 4^{th} and 5^{th} dpi with total mortalities (95%) from 4^{th} to 6^{th} dpi. Grossly, enlarged mottled spleen, proventriculus hemorrhages, severe muscle congestion, hemorrhagic ulcers on cecal tonsils and severe congestion with hemorrhages on the thymus gland at 4^{th} and 5^{th} dpi. Detection of NDV nucleic acid by rRT-PCR showed highest detection rate (80% and 100%) in respiratory tissues (pooled trachea and lung), moderate detection rate (60% and 66.7%) in spleen and lowest detection rate (30% and 33.3%) in liver at 4 dpi and 6 dpi respectively. Histopathological investigation of different organs revealed pneumonia, tracheitis, spleenitis with lymphoid depletion, hepatitis and moderate proventriculitis. Further investigations should be applied to identify the interference between these pathogens in terms of pathobiology and its relationship to molecular evolutions with considering the role of immunosuppressive agents in this interference. Also, strict biosecurity practices and matching between circulating field strains and vaccines should be applied to control these outbreaks..

Key words: Egypt; Experimental infection; Genotype VII; Phylogeny; Respiratory pathogens; rRT-PCR.

Dedication

To my Great Father and Mother

My Beloved brothers

all of my family

And everyone supported me

during my work

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