臺灣 2.3.4.4 分支 H5 禽流感病毒及其特性分析以及赴韓國參訪 QIA 禽流感診斷實驗室及技術交流

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摘要

臺灣於104年1月起爆發多種重組H5N2、H5N3及H5N8 AIV感染，截至今(105)年11月30日為止，禽場共送檢1,169場次，其中1,054場次確診為H5禽流感病毒感染，確診動物中以鵝占最大宗。此次之H5Nx禽流感病毒株經基因序列分析係屬於2.3.4.4分支之H5病毒株，目前發現共有五種基因型存在，分別為H5N2，H5N3及三種H5N8。若以感染病毒血清型區分，以H5N2最多，其次為H5N8，另H5N3病毒株於104年3月後則無新病例發生。為了解新型H5N2病毒株對於不同禽種之病原性，將病毒株 (A/Goose/Taiwan/a4/2015) 以10^6 EID_{50} 病毒鼻腔接種至雞、菜鴨、北京鴨、正番鴨及土番鴨。結果顯示，雞及正番鴨具75%及50%的死亡率外，其餘品種之鴨隻均100%存活。除耐過雞隻外，其餘耐過鴨隻均能產生抗體。臺灣的病毒株與近來歐洲發生的H5N8及日韓發生之H5N6雖同屬2.3.4.4分支，但係屬於不同群，顯示2.3.4.4分支H5病毒的演化及傳播速率極快。此外，抗體的存在將加速病毒的演化壓力。因此必須加強禽場的自衛防疫，嚴防新的病毒入侵，並建議對於可能為帶原者的水禽進行抗體監測及更積極作為，以杜絕病毒演化及重組的可能。本組於11月期間應韓國QIA禽病實驗室邀請前往參訪禽流感診斷實驗室，並與該實驗室討論:禽流感動物試驗設備、流程及操作；診斷體系的分工及家禽及野鳥監測計畫等主題。

Characterization of clade 2.3.4.4 H5 avian influenza viruses in Taiwan and visiting QIA avian influenza diagnosis laboratory in Korea

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Abstract

Taiwan has reported outbreaks caused by the introduction of novel reassortants of H5N2, H5N3 and H5N8 avian influenza viruses since January 2015. By November 2016, 1,054 cases of the novel H5 HPAI were confirmed, and goose was the major affected species. Our phylogenetic analysis indicated that the H5 viruses belonged to the clade 2.3.4.4 of H5 influenza virus and five genotypes of the H5 viruses were identified during this epidemic: H5N2, H5N3 and three H5N8. Most of the infected farms were attacked by the novel H5N2 viruses. The novel H5N3 viruses have not been identified since March, 2015. To investigate the pathogenicity of the novel H5N2 virus in different duck breeds, the breeds of ducks were inoculated with an H5N2 strain, A/Goose/Taiwan/a4/2015, by intranasal route. The experimental infection showed mortality of 75% and 50% in chickens and Muscovy ducks, respectively. The survival rates of Tsaiya duck, Pekin duck and Mule duck were 100%. Except one survival chicken, the other survival animals were seroconverted. The H5Nx in Taiwan, the H5N8 in several European countries and the H5N6 in Korea and Japan are clustered in the clade 2.3.4.4. It showed that the H5 viruses within the clade 2.3.4.4 have a strong tendency to spread. In addition, the presence of antibodies may give evolutionary pressure to the H5 viruses. Therefore, it is necessary to strengthen the disinfection of poultry farms to prevent new virus invasion. Serological surveillance in ducks should be more vigorous to prevent the possible reassortment of influenza viruses.

Invited by the Avian Disease Department of Animal and Plant Quarantine Agency, of Korea government, two of staff members of the Division of Epidemiology visited the Agency in November, 2016. The purpose of the technical visit was to share experiences of how animal experiments of avian influenza were conducted in biocontainment facilities, how diagnosis of avian influenza was performed, and how surveillance programs for domestic bird and wild bird were planned.