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Location

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Research

Ducatez, M. F., Pelletier, C., & Meyer, G. (2015). **Influenza D virus in cattle, France, 2011-2014.** *Emerging Infectious Diseases*, 21(2), 368-371. doi: 10.3201/eid2102.141449.

BACKGROUND: Recent studies in the United States have identified a new genus within the family *Orthomyxoviridae*, tentatively named *Influenzavirus D*. The new pathogen, C/swine/Oklahoma/1334/2011 (C/OK), was first identified in pigs with influenza-like illness and was only moderately related to previously characterized influenza C viruses. Like human influenza C virus, C/OK harbored 7 genomic segments, whereas influenza A and B viruses have 8. The host range and geographic distribution of C/OK-like viruses (influenza D virus) needs to be investigated.

PURPOSE: Because cattle have been suggested as the reservoir for this novel influenza virus, the purpose of this study was to screen bovine samples in France for influenza D virus and characterize the virus from positive specimens.

RESULTS: The virus genome in France is 94%–99% identical to its US counterpart, which suggests intercontinental spillover.

CONCLUSIONS: The authors concluded that the time of emergence and evolutionary rate of influenza D viruses need to be examined as more data become available. A puzzling question raised by this study is the geographic origin of influenza D strains: were cattle in France contaminated by their North American counterparts or vice versa? Did co-evolution occur? Did the pathogen originate from a distinct location or from a distinct host? The pathogen may have spread to swine and cattle in recent years only; efforts should be made to find the virus host range and its reservoir species and to evaluate the public health relevance of this new pathogen. Finally, surveillance projects with larger cohorts, as well as experimental infections, need to be conducted before 1) the causality between respiratory symptoms and influenza D virus infection in cattle can be established, 2) recommendations on samples to collect can be given, and 3) prevalence can be compared in different geographic areas.

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Ran, Z., Shen, H., Lang, Y., Kolb, E. A., Turan, N., Zhu, L., ... Ma, W. (2015). **Domestic pigs are susceptible to infection with influenza B**

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viruses. *Journal of Virology.* Advance online publication. doi: 10.1128/JVI.00059-15

BACKGROUND: Influenza B virus (IBV) causes seasonal epidemics in humans. Although IBV has been isolated from seals, humans are considered to be the primary host and reservoir of this important pathogen. It is unclear whether other animal species can support the replication of IBV and serve as a reservoir. Swine are naturally infected with both influenza A and C viruses.

PURPOSE: The purpose was to conduct a swine serological survey and an experimental challenge study in pigs using two representative IBVs: B/Brisbane/60/2008 and B/Yamagata/16/1988 viruses.

RESULTS: Results showed that antibodies to IBVs were detected in 38.5% (20/52) of sampled farms and 7.3% (41/560) of tested swine serum samples were positive for IBV antibodies. Furthermore, swine herds infected with porcine reproductive and respiratory syndrome virus (PRRSV) showed a higher prevalence of IBV antibodies. In addition, IBV was detected in 3 nasal swabs collected from PRRSV seropositive pigs by real-time RT-PCR and sequencing. Finally, an experimental infection in pigs, via intranasal and intratracheal routes, was performed using one representative virus from each of the two genetically and antigenically distinct lineages of IBVs. Pigs developed influenza-like symptoms, lung lesions, and seroconverted post virus inoculation. Pigs infected with B/Brisbane/60/2008 virus successfully transmitted the virus to other sentinel animals.

CONCLUSIONS: The authors concluded that their data further confirmed that pigs are another animal species that supports successful replication and transmission of IBVs. Susceptibility of pigs to IBVs indicates that the viruses may be a swine pathogen and shall allow for further investigation and better surveillance. In addition, pigs may be used as an animal model to study IBV replication and test for anti-IBV therapeutics and vaccines.

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Phillips, C. J., Oevermans, H., Syrett, K. L., Jespersen, A. Y., & Pearce, G. P. (2015). **Lateralization of behavior in dairy cows in response to conspecifics and novel persons.** *Journal of Dairy Science.* Advance online publication. doi: 10.3168/jds.2014-8648

BACKGROUND: Lateralization occurs when one side of the brain controls the cognitive processing of a specific situation and it is displayed as a behavior such as right/left handedness in people. A better understanding of lateralization in cattle may assist in understanding the emotions they experience and what stimuli they perceive to be threatening and stressful. The right brain hemisphere, connected to the left eye, coordinates fight and flight behaviors in a wide variety of vertebrate species.

PURPOSE: To investigate whether left eye vision predominates in dairy cows' interactions with other cows and humans, and whether dominance status affects the extent of visual lateralization.

RESULTS: Although they found no overall lateralization of eye use to view other cows during interactions, cows that were submissive in an interaction were more likely to use their left eye to view a dominant animal. Both subordinate and older cows were more likely to use their left eye to view other cattle during interactions. Cows that predominantly used their left eye during aggressive interactions were more likely to use their left eye to view a person in unfamiliar clothing in the middle of an alleyway by passing them on the right side. However, a person in familiar clothing was viewed predominantly with the right eye when they passed mainly on the left side. Cows predominantly using their left eyes in cow-to-cow interactions showed more overt responses to restraint in a chute compared with cows that predominantly used their right eyes during interactions.

CONCLUSIONS: Subordinate cows were more likely to use their left than right eye to view other cows during interactions. This suggests a heightened flight-or-fight response. Cows that predominantly used their left eye in all types of interactions had a more fearful

temperament, as indicated by heightened responses to confinement in the chute, indicating that these individuals perceived this as more stressful. The authors concluded that the eye that dairy cows use in interactions with other cattle and humans can provide valuable information on their temperament.

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Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

Ohio Dairy Health and Management Certificate Program

Module 4 – Advanced Dairy Cattle Nutrition
March 19-21, 2015

The *Ohio Veterinary Newsletter* began in October of 1974 as a way for Veterinary Extension to relay relevant information to practicing veterinarians in Ohio. The aim is to communicate pertinent news from the Veterinary Extension Unit; unbiased, research-based information with practical relevance for veterinary practitioners working in food animal, equine, and shelter medicine; and a calendar of upcoming opportunities. Please feel free to provide your feedback and let us know what information is most helpful to you and your practice.

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