



Mutated H5N1 Bird Flu Detected in Human Patient

Description

The Centers for Disease Control and Prevention recently reported genetic sequences of H5N1 bird flu viruses collected from a severely ill patient in Louisiana. These sequences revealed mutations believed to enhance the virus's capability to bind to cells in the human upper respiratory tract. This development raises concerns as bird flu viruses typically attach to cell receptors rare in human upper airways, which is why H5N1 infections in humans remain infrequent and do not spread easily among people.

An additional mutation was observed in a virus sample from a critically ill teenager in British Columbia, suggesting that these changes could help the virus adapt to humans. Although Scott Hensley, a microbiology professor from the University of Pennsylvania, cautioned against over-interpreting data from only two severe cases, the report made him raise an eyebrow. "It's not great news," he told STAT.

Angela Rasmussen, a virologist specializing in emerging infectious diseases, noted that the absence of mutations in birds is somewhat relieving. However, she warned that the uptick in human cases paints a grim picture, stressing the importance of reducing human infections to avoid creating opportunities for a pandemic virus to emerge.

The CDC's study found that mutations in the Louisiana patient developed during the infection rather than being transmitted from birds. Similarly, British Columbia health officials couldn't trace the source of the teen's infection.

Despite over 65 human H5N1 cases in the U.S. this year—60% linked to infected dairy cows—the virus has not shown an ability for human-to-human transmission. Both severe North American cases involved genotype D1.1 viruses, and no secondary cases have been reported, offering a glimmer of hope amidst the concern. Hensley's laboratory is currently investigating if these mutations indeed facilitate better binding to human cells.

Vocabulary List:

1. **Mutations** /mju:'teɪʃənz/ (noun): Changes in the structure of a gene or chromosome.
2. **Infections** /ɪn'fekʃənz/ (noun): The process of being infected by a pathogen.
3. **Capabilities** /,keɪpə'bɪlɪtiz/ (noun): The ability to do something or the potential for development.
4. **Adapt** /ə'dæpt/ (verb): To adjust or modify in response to changing conditions.
5. **Transmission** /trænz'mɪʃən/ (noun): The act or process of transmitting something commonly diseases or infections.
6. **Emerging** /ɪ'mɜ:rdʒɪŋ/ (adjective): Becoming apparent or prominent; arising in the context of new developments.



Comprehension Questions

Multiple Choice

1. What did the genetic sequences of H5N1 bird flu viruses from Louisiana reveal?
Option: Mutations enhancing binding to human upper respiratory tract cells
Option: Mutations reducing binding to human cells
Option: No mutations
Option: Mutations making the virus less infectious
2. How did Scott Hensley from the University of Pennsylvania react to the report on the mutations in the H5N1 viruses?
Option: He was optimistic
Option: He was concerned
Option: He was indifferent
Option: He was skeptical
3. Which statement is true about the mutations found in the Louisiana patient according to the CDC's study?
Option: They were transmitted from birds
Option: They developed during the infection
Option: They were not significant
Option: They were similar to mutations in the British Columbia patient
4. What is Angela Rasmussen's main concern regarding the mutations in the H5N1 viruses?
Option: The mutations are harmless
Option: Reducing human infections
Option: The mutations are beneficial
Option: Creating opportunities for a pandemic virus to emerge
5. What percentage of human H5N1 cases in the U.S. this year were linked to infected dairy cows?
Option: 40%
Option: 50%
Option: 60%
Option: 70%
6. What is the genotype of the viruses involved in both severe North American cases according to the



information provided?

Option: D1.0

Option: D1.1

Option: D2.0

Option: D2.1

True-False

7. The genetic sequences of H5N1 viruses indicated a reduced capability to infect humans.
8. The mutations found in the H5N1 patient in Louisiana were transmitted from birds.
9. There have been secondary cases reported from the severe North American H5N1 cases.
10. Angela Rasmussen is relieved by the absence of mutations in birds.
11. The British Columbia health officials could trace the source of the teen's H5N1 infection.
12. The H5N1 virus has shown a significant ability for human-to-human transmission.

Gap-Fill

14. Scott Hensley's laboratory is investigating if these mutations facilitate better binding to human cells, offering a _____ of hope.
15. Angela Rasmussen warned about reducing human infections to avoid creating opportunities for a _____ virus to emerge.
16. The virus has not shown any ability for _____ transmission despite numerous cases.
17. The mutations in the Louisiana patient developed during the _____ of the infection.
18. There was an uptick in human cases, painting a grim picture of the potential for a _____ outbreak.



Answer

Multiple Choice: 1. Mutations enhancing binding to human upper respiratory tract cells 2. He was concerned 3. They developed during the infection 4. Creating opportunities for a pandemic virus to emerge 5. 60% 6. D1.1

True-False: 7. False 8. False 9. False 10. True 11. False 12. False

Gap-Fill: 14. glimmer 15. pandemic 16. human-to-human 17. course

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. What can lead to genetic variations in living organisms?

Option: Infections

Option: Capabilities

Option: Adapt

Option: Transmission

2. Which illness is caused by a viral infection affecting the respiratory system?

Option: Contagion

Option: Tragic

Option: Vigilance

Option: Influenza

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

3. Living organisms _____ to their environment over time.

4. In order to prevent the spread of diseases it is important to maintain _____ and follow health guidelines.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

5. The _____ of the virus was traced back to a particular location.

6. The doctor performed various tests to confirm the _____ of the disease.



Answer

Multiple Choice: 1. Infections 2. Influenza

Gap-Fill: 3. Adapt 4. Vigilance

Matching sentence: 1. Transmission 2. Diagnosis

CATEGORY

1. Health - LEVEL4

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