Scientists find another flu virus in Chinese chickens

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Scientists studying the H7N9 bird flu virus that has killed more than 40 people since March said Wednesday they had discovered another H7-type virus lurking in chickens in China.

Dubbed H7N7, the virus was able to infect mammals in a lab experiment, said the team, warning H7 viruses "may pose threats beyond the current outbreak".

"The continuing prevalence of H7 viruses in poultry could lead to the generation of highly pathogenic variants and further sporadic human infections," they wrote in the journal *Nature*.

According to the World Health Organisation (WHO), there have been 135 confirmed cases of people contracting H7N9 bird flu, of whom 44 died. All the cases were in China, except for one in Taiwan.

Earlier this month, Chinese scientists reported the first likely case of direct person-to-person transmission, but stressed the H7N9 virus, which jumps from birds to people, was not yet able to spread easily between humans.

The new work points to yet another viral threat.

"If (we) let this H7N7 continue circulating in chickens, I am sure that human infection cases will occur," study co-author Yi Guan from the University of Hong Kong told AFP by email.

"This virus could cause more severe infection than... H7N9, based on our animal experiment."

H7N7 spreads easily in birds. It caused one human death and more than 80 cases of mild disease in the Netherlands in 2003.

For the new study, Yi and a team took the H7N7 virus they had found in poultry and tested it on ferrets in the lab. The animals, considered a good human model, developed severe pneumonia, suggesting the virus is potentially also infectious for us.

"We think it is scary for humans," said Yi.

"Our entire human population almost has no antibodies against the H7 subtype of influenza virus. Thus, if it causes pandemic outbreak, it will kill many people."

Among a sample of 150 chickens tested, 36 carried the H7N7 virus, said Yi. Many birds had both H7N7 and H7N9.

Avian flu viruses have been around for a very long time in wild birds but do not generally cause disease in humans, though in rare cases they mutate and jump species.

Strains of the H5, H7 and H9 avian influenza subtypes have caused human infections, mainly following direct contact with infected poultry. None of the strains have mutated to become easily transmissible from person to person—the epidemiologist's nightmare.

The best-known strain is the H5N1 virus that has caused 633 confirmed flu cases in humans in 15 countries from 2003 to July this year, of whom 377 died—a death rate of about 60 percent.

Yi and a team used genetics to determine that H7 precursor viruses were first introduced to southeast China by migratory birds to domestic ducks, where they circulated from 2010 and were then transferred to chickens.

The viruses then mixed with endemic chicken viruses to create the H7N9 and H7N7 variants, which could spread to humans at live poultry markets.

Yi said the study highlighted the need for better surveillance.

"We need to take samples from different types of poultry regularly to see what kinds of viruses are circulating in these birds," he said.

"The operation should be maintained for a very long period of time. This allows us to find the emergence of any new viruses in all kinds of animals."

Commenting on the study, University of Reading virology professor Ian Jones said the new strain was not of "immediate public concern".

"Surveillance programmes can now focus on key strains in the adaption process and eradicate them before they complete the jump to people," he said in a statement issued by the Science Media Centre.

More information: Lam T et al. The genesis and source of the H7N9 influenza viruses causing human infections in China. *Nature*. DOI: 10.1038/nature12515 (2013).