

Housing Quails and Chickens Together is the Possible Cause of Newcastle Disease's Spread: An Overlooked Measure Taken to Prevent the Disease

Uçkun Sait UÇAN

Selçuk University, Veterinary Faculty, Department of Microbiology, Kampüs, 42031, Konya - TURKEY

Osman ÇATALOLUK

Selçuk University, Veterinary Faculty, Department of Virology, Kampüs, 42031, Konya - TURKEY

Received: 21.09.2001

Dear Editor

The first Newcastle Disease (ND) outbreak in Turkey was in 1984 (1). From that time until the beginning of the 1990s, the number of ND outbreaks per year has gradually been in decline. However, starting from the mid 1990s, there has been a notable increase in the number of ND outbreaks (2) in Turkey.

Parallel to this increase, 2 months ago an ND outbreak occurred in 3200 layers at the Research Plant of the Veterinary Faculty's Poultry Unit, of Selçuk University in Konya, Turkey. Although the recommended schedule for the vaccination of layers was followed, the sudden manifestation of ND caused high mortality rates in the flock. All the vaccinations were carried out properly according to manufacturer's instructions. Moreover, the serum antibody titres were observed to be just over the protective level 7 days post vaccination. Erganis and Ucan (2) proposed that the possible reason for such a case could be contamination from a more virulent strain of ND virus in the flock. However, the point that we want to make is that the breeding of layers and quail in the same location has been observed increasingly in recent years in Turkey. The same breeding fashion was also followed in the Poultry Research Plant of the Veterinary Faculty of Selçuk University. In the same house, 3200 layers (Babcock 380; age 18 weeks) and 750 quail (age 8 months) were kept at the time of the outbreak. In a serological investigation made just after ND outbreak occurred in the layer flock, 45% of individuals had anti-NDV antibodies detected by micro-HI test from the sera

of 100 quail. The presence of anti-NDV antibodies suggests the existence of an infection that might have affected the quail subclinically previously. Moreover, the quail seemed to be healthy throughout their life, though the layers were caught by the virus and the mortality rate was high. It was not known whether the direction of the contamination was from quail to chickens or from chickens to quail. However, transmission from quail to chickens is most likely. The reason to make us to consider this comes from an in vitro study by Islam and co-workers (3). Their study showed that the enhanced pathogenicity of the mesogenic NDV isolate from quail for chickens was induced by acquiring the properties of neurotropism and pantropism through intracerebral passage in chickens. Therefore, several replication processes of a mesogenic NDV strain originally isolated from a chicken might have changed the virulence prior to its access to the chickens' bodies. The critical level of anti-NDV antibodies in the layer flock could not protect them sufficiently from NDV.

If our proposal is the case, the NDV strain(s) might have used the quail tissues so as to acquire velogenicity. On the other hand, the replication of the virus strain several times to achieve this goal might have lead to a change in tropism and pathogenesis, thus developing a new strategy for chicken tissues, although this process should take place completely in quail tissue. In that case, although NDV replicates in quails, it does not cause an infection in this species, whereas layers placed in a unit nearby could become infected due to a strain already transformed into a more virulent NDV strain by

replicating in a totally new and alien environment, and gaining pathogenicity and tropism for another bird strain.

In conclusion, in developing countries, the breeding of chickens and quail together in the same house could be a

way of exposing chickens to the threat of NDV outbreaks possessing more virulent character through the replication processes obtained in quail tissue. Therefore, breeders should take the required measures against the problem as stated above.

References

1. Ozdemir I. Current Newcastle Disease Situation in Turkey. Workshop on Avian Paramyxoviruses, 27-29 July, 1992, Rauschholzhausen, Germany.
2. Erganis O, Ucan US. Vaccination Strategies against Newcastle and Gumboro Diseases in Turkey, 10th European Poultry Conference, June 21-26, 1998, Jerusalem, Israel.
3. Islam MA, Ito T, Takakuwa H, Takada A, Hakura, C, Kida H. Acquisition of pathogenicity of a Newcastle disease virus isolated from a Japanese quail by intracerebral passage in chickens. Jpn J Vet Res 1994; 42 (3-4): 147-156.