

SEROLOGICAL SCREENING OF FREE LIVING BIRDS FOR NEWCASTLE DISEASE

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Abstract: Newcastle disease (ND) is one of the major viral diseases of poultry causing great economic losses to the poultry industry. Sera samples numbering 57 were collected from various categories of free living birds including desi chicken (40), pigeons (12), turkeys (3) and geese (2). They were subjected to haemagglutination inhibition (HI) test for identifying seroprevalence of Newcastle disease. The range of HI titres in these birds was from a low of <2 to high of 1024. In desi chickens, of the 40 samples, 15 showed positive HI titre of ≥ 8 . A greater number of samples showed a titre of < 2 and in case of pigeons, the highest titre of >512 was observed in only one sample. In case of turkeys and geese all samples showed a titre of < 2. Serological positivity to ND in free living birds indicates that these birds may act as healthy carriers in spread of ND to commercial chicken.

Introduction

Newcastle disease remains a constant threat to the poultry industry and is a limiting disease for poultry producers worldwide (Cattoli *et al.*, 2011). It may represent a bigger drain on the world economy than any other animal viral disease of poultry (Alexander, 2003). Apart from commercial poultry, a wide range of captive and free living birds are susceptible and can act as primary source of ND infection to chicken (Kouwenhoven, 1993; Alexander and Senne, 2008). Apart from commercial domestic poultry, a wide range of captive and free living birds including pigeons, geese, ducks, turkeys, caged pet birds and migratory waterfowl are susceptible and can act as primary source of infection to domestic chicken (Kouwenhoven, 1993). Only limited work has been done on the occurrence of ND in birds other than commercial chicken. Hence, this study is aimed to assess the seroprevalence of ND in free living birds.

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Materials and Methods

A total number of 57 serum samples from various categories of free living unvaccinated birds including desi chicken (40), pigeons (12), turkeys (3) and geese (2) were collected for assessing the seroprevalence of ND. The samples were collected from apparently healthy birds. Haemagglutination inhibition (HI) test was carried out as per the protocols recommended by Hanson, (1972).

Results and Discussion

Newcastle disease has been a devastating disease of poultry and in many countries the disease remains one of the major problems affecting existing or developing poultry industries (Alexander, 2000). Haemagglutination inhibition titres in the various categories of birds in this study was from a low of <2 -1024. In desi chickens, of the 40 samples, 15 showed a titre of ≥ 8 . A greater number of samples showed a titre of < 2 . The highest titre of 1.1024 was found in only one sample. In case of pigeons, the highest titre of 512 was found in only one sample. The seropositivity in case of turkeys was nil. In geese one sample had the highest titre of 256 while another sample in the same category showed a titre of < 2 . It is reported that in unvaccinated birds, positive serology may be considered as a strong diagnostic evidence of the disease for ND (Alexander, 1990). All the birds serologically positive were apparently healthy as was also the observation of Mushi *et al.* (2001) who detected 57.3 per cent positivity for NDV in apparently healthy indigenous chicken. Moreover, Alexander (1990) reported that HI titres of 1:8 considered as positive for ND (Alexander, 1990). Free living birds having seropositivity to ND may also excrete virulent viruses without showing the clinical signs. Westbury *et al.* (1984) reported that immune birds with serum antibody titre of 2^4 to 2^7 , although protected against clinical ND can excrete virulent virus for atleast 14 days after challenge. Hence, it is concluded that the seropositive free living birds may act as a source of infection to commercial chicken for ND. In this situation, strict biosecurity protocols should be designed and adopted in the commercial poultry farms for prevention of spread of ND from free living birds to commercial poultry.

References

[1] Alexander, D.J. 1990. Newcastle disease and other avian paramyxovirus infections. In: Diseases of poultry, (Eds.,) B.W. Calnek, H.J. Barnes, C.W. Beard, L.R. McDougald and Y.M.Saif. 10th Edn., Ames, Iowa, USA.pp.541-570.

- [2] Alexander, D.J. 2000. Newcastle disease and other avian paramyxoviruses. *Rev. Sci. Tech.*, **19**: 443-462.
- [3] Alexander, D.J. 2003. Newcastle disease and other avian paramyxoviruses and pneumoviruses, in: Saif, Y.M. (eds), Diseases of poultry, Ames: Iowa State University Press, Blackwell, Oxford, UK, pp: 75-116.
- [4] Alexander, D.J. and Senne, D.A. 2008. Newcastle disease and other avian paramyxoviruses and pneumoviruses, in: Saif, Y.M. (eds), Diseases of poultry, Ames: Iowa State University Press, Blackwell, Oxford, UK, Pp: 75-116.
- [5] Cattoli, G., Susta, L., Terregino, C. and Brown, C. 2011. Newcastle disease: a review of field recognition and current methods of laboratory detection. *Journal of veterinary diagnostic investigation*, **23**:637-656.
- [6] Hanson, R.P., 1972. Newcastle disease virus. In: Diseases of Poultry, (Eds.) M.S. Hofstad, Iowa State University Press, Ames, Iowa, USA. Pp. 619-656.
- [7] Kouwenhoven, B. 1993. Newcastle disease, in: McFerren, J.B. and McNulty, M.S. (editors), Virus Infection of Birds., Elsevier science publishers, Amsterdam and New York, pp. 341-361.
- [8] Mushi, E.Z., M.G. Binta, R.G. Chabo, J.M.K. Hyera, K.M. Thibanyane, J. Mkaria, 2001. Antibodies to Newcastle disease virus in the sera of indigenous chickens in Oodi, Kgatleng, Botswana, *Onderstepoort Journal of Veterinary Research*, **68** : 69-70.
- [9] Westbury, H.A., G. Parsons and W.H. Allan. 1984. Duration of excretion of virulent Newcastle disease virus following challenge of chickens with different titres of serum antibody titre. *Aust. Vet. J.*, **61**: 44-46.