**SEROLOGICAL EVIDENCE OF INFECTIOUS BURSAL DISEASE VIRUS
INFECTION IN GREY BREASTED HELMET GUINEA FOWLS
(*Numida meleagris galeata* Pallas) IN AN ARID ZONE OF NIGERIA.**

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ABSTRACT

A survey of guineafowl sera from Maiduguri area of Borno State for antibody to infectious bursal disease (IBD) virus was carried out between the months of January to April, 1991. agar gel diffusion precipitation test (AGDT) was the serological method employed for the investigation. Out of the total of 196 sera tested, only 16 were found to contain precipitating antibody to IBD. This represents 9.1% infection rate.

INTRODUCTION

Viral diseases have been suggested as a significant limiting factor in the production of guineafowls in Nigeria (Durojaiye and Adene, 1988). In an attempt to overcome this obstacle, preliminary investigations have either been carried out or suggested on a number of viral infections of chickens which may possibly be of great economic importance in this species (Nawathe *et al.*, 1978; Durojaiye and Adene, 1988). One of such viral infections is infectious bursal disease (IBD).

Infectious bursal disease is a viral infection of young chickens characterised by trembling, ruffled feathers, high morbidity, diarrhoea, low productivity, varying degree of mortality and increased susceptibility to a number of other diseases such as Newcastle disease, *Escherichia coli* infection, infectious bronchitis and mycoplasma infections (Allan *et al.* 1982; Okoye, 1984; Russel and Edington, 1985). The disease has a short incubation period of about 2 days, during this period, the affected birds often have high temperature but drop to below normal just prior to death (Okoye, 1984). Since the first report of the disease from Gumboro district of Delaware, in the United State of America (Cosgrove, 1962),

its been reported in chickens from other parts of the world including Nigeria (Ojo *et al.*, 1973; Onunkwo, 1975 and Okoye, 1984).

However, the disease is yet to be reported in guineafowls, (Nawathe *et al.*, 1978; Durojaiye and Adene, 1988). This paper presents the finding of serological investigation of guineafowl sera for antibody to IBD virus in Maiduguri area of Borno state, Nigeria.

MATERIALS AND METHODS

Serum samples

A total of one hundred and seventy six serum samples were collected from apparently healthy adult guineafowls kept on free range in Maiduguri area of Borno state. The samples were collected between the months of January and April, 1991 and analysed for presence of precipitating antibody to IBD virus.

IBD virus antigen

The IBD virus antigen was prepared as described earlier by Nawathe *et al.*, (1978). Twelve bursae were collected from chickens naturally infected with IBD virus. These were pooled, ground with sterile sand using pestle and mortar. Few drops of normal saline containing penicillin and streptomycin sulphate was added to make a 10% suspension of the sample. This was used as the antigen.

Serological procedure:

Preparation of agar gel

The agar used for the agar-gel diffusion precipitation test (AGDT) was prepared following the standard procedure described by Davies (1984). Briefly, it involved the mixing of the fol-

lowing chemicals: 1g of sodium chloride, 1g of agarose and 0.5ml of methiolate all in 100ml of distilled water. The mixture was then autoclaved at 121 lbs for 15 minutes. The molten agar was divided into 15ml and each dispensed into a petri dish, allowed to solidify by keeping the dish on a flat surface. The dishes were then stored in the refrigerator (4°C till required).

Agar gel diffusion precipitation test (AGDT)

Agar gel precipitation test was the test method employed for the screening of the sera for antibody against IBD virus. The standard procedure for the test as described by Board (1980) was used. This involved the following steps, the cutting of cylindrical wells in the agar, using a template. The plug was aspirated with a pasteur pipette and the bottom of the wells sealed with few drops of molten agar to prevent the mixing of the reagents under the wells rather than diffusing through it. The plates were inoculated by placing the antigen in the central well while the peripheral wells were filled with the test sera together with positive and negative controls. The inoculated plates were then incubated in a moist chamber at 37°C read after every 3 hours before the final result of the test was read after 72 hours of incubation.

RESULTS

Out of the 176 serum samples examined for the presence of antibody against IBD virus, 16 were found to be positive. This number represents 9.09% infection rate.

DISCUSSION

This study has demonstrated that unvaccinated guinea fowls within Maiduguri area were exposed to IBD virus, even though only a prevalence rate of 9.09% was observed. Nevertheless the finding is in agreement with the report of Adewuyi *et al.*, (1989) where up to 44.3% of the birds tested were found to contain IBD precipitating antibodies. The detection of IBD precipitating antibodies in guinea fowls in this investigation however, contradicts those reported by some earlier workers from some parts of the

country namely Nsukka (Okoye, 1988), Vom and Jos areas (Nawathe *et al.*, 1978). This may be attributed to the sample size analysed by the various workers. The prevalence rate of IBD virus infection recorded in the present investigation could be higher if the study is repeated during the rainy season. The seasonal variation in the prevalent rate of IBD virus infection has been documented earlier in chickens by Abdul *et al.*, (1985) where they reported the highest prevalence rate during the rainy season.

In view of the fact that vaccination against IBD is not routinely carried out in this species of poultry, it is therefore assumed that infection resulted from field exposure. The source of the virus could be infected chickens as both chickens and guinea fowls are sometimes reared together under free range system and also in some semi-intensive farms (Abdul *et al.*, 1985).

It is possible that guinea fowls are affected by a variant of the IBD virus. The role of this species in the epidemiology of IBD is yet to be determined.

REFERENCES

- ABDUL, P. A., ABDULLAHI, S. U. and ADESIYUN, A. A. (1985). Infectious bursal disease virus antibody in chicken from Fulani nomads around Zaria. *Nigerian Veterinary Journal*, 14: 61-62.
- ADEWUYI, O. A., DURÒJAIYE, O. A. and ADENE, D. F. (1989). The status of guinea fowls (*Numida meleagris*) in the epidemiology of infectious bursal disease (IBD) of poultry in Nigeria. *Journal of Vet. Med.* 36: 43-48.
- ALLAN, W. H., ALEXANDER, D. J., BIGGS, P. M., GORDON, R. F., JORDAN, F. T. W. and McFERRAN, J. B. (1982). *Viral diseases. In Poultry Diseases*. Edited by GORDON, R. F. and JORDAN, F. T. W. Publ. Bailliere Tindall. London.
- BEARD, C. W. (1980). Serological procedures. In: *Isolation and identification of avian pathogens*. Ed. S. B. HITCHNER, C. M.

- DOMERMUTH, H. G. PURCHASE and J. E. WILLIAMS. American Association of Avian Pathologists, College Station, Texas pp 129-135.
- COSGROVE, A. S. (1962). An apparently new disease of chickens avian nephrosis. *Avian Diseases*, 6: 385-389.
- DAVIES, E. T. (1984). *Manual of Veterinary Investigation. Laboratory Techniques*, Vol. 1. Publ. Ministry of Agriculture, Fisheries and Food, London, Her Majesty's Stationery Office.
- DUROJAIYE, O. A. and ADENE, D. F. (1988). Newcastle disease and Egg drop syndrome in guinea fowls (*Numida meleagris galeata pallas*). *Journal of Vet. Med. Infect. Diseases, Immunology, Food and Hygiene & Public Health*, 35: 152-154.
- NAWATHE, D. R., ONUKWO, O. and SMITH, I. M. (1978). Serological evidence of infection with the virus of IBD in wild and domestic birds in Nigeria. *Vet. Rec.*, 102: 444.
- OJO, M. O., ODUYE, O. O., NOIBI, L. M. and IDOWU, A. L. (1973). Gumboro disease in Nigeria. *Trop. Anim. Health Prod.* 5: 52-56.
- OKOYE, J.O.A. (1984). Infectious bursal disease of chickens: A review. *Veterinary Bulletin*, 54: 425-435.
- OKOYE, J.O.A. (1988). Absence of serological evidence of infectious bursal disease virus infection in geese, ducks and guinea fowls in Nsukka, Nigeria. *Zariya Veterinaria*, 3: 40-41.
- ONUNKWO, O. (1975). An outbreak of infectious bursal disease of chicks in Nigeria. *Vet. Rec.* 97: 433.
- RUSSEL, P. H. and EDINGTON, N. (1985). IBD: In *Veterinary Viruses*. Ed. RUSSEL, P. H. and EDINGTON, N. The Burlington Press (Cambridge) Ltd. Foxton, Cambridge. 209-211.