

cases of AHS should be investigated fully to determine which, if any, of the other eight AHSV serotypes are circulating in Nigeria.

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ADEYEFA (C.A.O.), HAMBLIN (C.) Continuing prevalence of African horse sickness in Nigeria. *Revue Elev. Méd. vét. Pays trop.*, 1995, 48 (1) : 31-33

Equine sera collected from 10 widely separated regions throughout Nigeria were tested for antibodies against African horse sickness viruses (AHSV) using a competitive enzyme-linked immunosorbent assay (ELISA). The animals sampled included imported, exotic horses, indigenous and locally cross-bred (local) horses and African donkeys. A high percentage of the sera (79.8 %) were positive, confirming the continued prevalence of AHSV antibodies in Nigerian horses and donkeys.

Key words: Ass - Horse - African horse sickness virus - Epidemiology - Antibody - ELISA - Nigeria.

Effect of three different routes of administration on the immunogenicity of infectious bursal disease vaccine

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KEMBI (F.A.), DELANO (O.O.), OYEKUNLE (M.A.). Effet de trois voies différentes d'administration sur le pouvoir immunisant des vaccins contre la bursite infectieuse. *Revue Elev. Méd. vét. Pays trop.*, 1995, 48 (1) : 33-35

Les auteurs ont comparé la réponse immunitaire de trois groupes de 10 poussins vaccinés à l'âge de 2 semaines contre la bursite infectieuse (maladie de Gumboro) par voie orale, intramusculaire et oculaire, à l'aide d'un vaccin préparé par le NVRI (Vom, Nigeria). Tous les poulets sont restés séronégatifs 3 semaines après la primovaccination. Cependant, des anticorps précipitants étaient présents sur ces volailles après un rappel à l'âge de 6 semaines. Chez les poulets vaccinés par voie oculaire, cette séroconversion a été observée sur 70 p. 100 des sujets à l'âge de 7 semaines ; ce taux s'est élevé à 80 p. 100 dans les 2 semaines suivantes puis abaissé à 55,6 p. 100 à la 10e semaine. Dans les groupes vaccinés par voies orale et intramusculaire, ces taux étaient respectivement de 30 et 33,3 p. 100 à la 7e semaine mais ils s'élevaient pour les deux groupes jusqu'à 87,5 p. 100 à la 10e semaine. Si l'on considère le facteur âge dans la sensibilité des poulets à la bursite infectieuse, la voie oculaire semble être la plus efficace.

Mots clés : Poussin - Volaille - Maladie de Gumboro - Vaccin - Nigeria.

Introduction

Infectious bursal disease (IBD) was first reported in birds about 3-7 weeks old in Nigeria (5). Since then the disease has been a major threat to the Nigerian poultry industry.

If chicks can be protected against the disease, especially in the first 4 weeks of life, the economic returns will be satisfactory. At present the majority of vaccines used in Nigeria are being produced by the National Veterinary Research Institute (NVRI), Vom, Nigeria. Although the NVRI recommended that the vaccine could be administered through the oral, ocular and intramuscular routes, owners and veterinary staff often use the oral one. But despite vaccination of flocks, persistent field outbreaks have occurred (1). This is of great economic importance because of the mortality and morbidity it causes. Various factors such as poor vaccine storage, transportation and interference of maternal antibodies have been alleged (4).

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Communication

This study compares the routes of administration recommended by NVRI, in order to determine which one might be a factor in the vaccine's failure.

Materials and Methods

Experimental birds

Day-old cockerels were obtained from a hatchery with no history of vaccination of their breeding stocks against Gumboro disease. They were divided into four groups of 10 chickens each (A, B, C and D). Individuals were tagged and housed in their groups. They were kept under an intensive system of management with well-aerated cages and were supplied with water and a commercial chick mash *ad libitum*. The chicks were further assessed for infectious bursal disease antibody by means of the agar gel precipitation technique (AGPT).

Vaccines and vaccination

Two vials of life Fibrogumbovac vaccine® produced by the NVRI, Vom, Nigeria were used. The vaccines were reconstituted according to the NVRI recommendations and stringent cold-chain vaccination was maintained. Vaccination was through the ocular (group A), intramuscular (group B) and oral (group C) routes. The birds were vaccinated at the age of 2 and 6 weeks, using each of the two vaccines vials on each occasion. Group D served as unvaccinated controls.

Virus antigen

The virus antigen was obtained from the bursa of Fabricius of an infected chicken. It was homogenised in one in three (w/v) suspensions in phosphate buffered saline using a manual tissue homogeniser. The homogenate

was frozen and thawed three times and clarified by centrifugation at 2,000 r.p.m. for 10 minutes. The supernatant fluid was confirmed for IBD virus with known positive serum and stored at -25°C until used.

Serology

Chickens were bled by jugular venipuncture prior to the first vaccination to establish their immune status and were also bled at weekly intervals after the first and booster vaccinations. The blood samples were allowed to clot overnight at 4°C, the sera were separated by centrifugation at 1,500 r.p.m. for 10 minutes and stored at -20°C until tested. The agar gel precipitation test (AGPT) was used as described by Hirai *et al* (3).

Results

Infectious bursal disease (IBD) antibodies were not detected in the three groups of chickens after the first vaccination, but when the booster dose was administered, positive serum samples were obtained (table I). All the controls remained seronegative.

In group A, 70 % of the chickens were positive at 7 weeks of age. This increased to 80 % in the 8th and 9th week. However on the 10th week the antibody production rate of some of the birds had decreased to trace levels and was not detected. Thus, only 55.6 % of the birds had detectable antibody.

In group B, 33.3 % of the chickens were positive at 7 weeks of age. This increased to 75 % in the 8th week and 87.5 % in the 9th and 10th week.

In group C, 30 % of the chickens were positive at 7 weeks of age. It increased to 62.5 % in the 8th and 9th week and 87.5 % in the 10th week.

TABLEAU I
Percentage serological response of birds using different routes of vaccination

Age (weeks)	Routes of vaccination			Control
	Ocular	Intramuscular	Oral	
1 (pre-vaccination sera)	0	0	0	0
2 Primary vaccination	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6 Booster vaccination				
7	70.0	33.3	30.0	0
8	80.0	75.0	62.5	0
9	80.0	87.5	62.5	0
10	55.6	87.5	87.5	0

Discussion and Conclusion

The fact that none of the vaccinated birds seroconverted three weeks after the primary vaccination shows the importance of the booster dose. It suggested that chicks could be susceptible to field virus during the period. Unfortunately it was discovered that many of the farmers only vaccinate their flock once, contrary to the manufacturer's guidelines which recommend a booster dose.

There is an advantage in vaccinating with the primary and booster doses of vaccine as demonstrated, although the routes used do not have a clear cut superiority over one another. The oral route which is commonly used is not necessarily the best because the number of birds that seroconverted when they were prone to infection was low, compared to the ocular route, where the seroconversion rate was highest by the 7th week when the birds were still prone to infection. However, since antibody has been detected in older birds (2), the intramuscular and oral routes could also be protective. Thus, further studies to determine the durability of the immune response are recommended.

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KEMBI (F.A.), DELANO (O.O.), OYEKUNLE (M.A.). Effect of three different routes of administration on the immunogenicity of infectious bursal disease vaccine. *Revue Elev. Méd. vét. Pays trop.*, 1995, 48 (1): 33-35

The immune response of three groups of 10 chicks, vaccinated at age of 2 weeks against infectious bursal disease (Gumboro disease) via the oral, intramuscular and ocular routes, is compared. The vaccine was prepared by the NVRI (Vom, Nigeria). All chicks in the three groups remained seronegative 3 weeks after primary vaccination. However, precipitating antibodies were present in birds which received a booster dose at the age of 6 weeks. Post-vaccination seroconversion was observed at the age of 6 weeks in 70 % of the birds vaccinated via the ocular route. This rate increased to 80 % during the two following weeks and then decreased to 55.6 % until the 10th week. In the groups vaccinated by the oral and intramuscular routes, the seroconversion rate in the 7th week was 30 and 33.3 %, respectively, but increased to 87.5 % in both groups at the end of the 10th week. Considering the age factor in the susceptibility of chicks to infectious bursal disease, the authors recommend the ocular route as the most effective for vaccination.

Key words : Chick - Poultry - Avian infectious bursitis - Vaccine - Nigeria.