ACTA VET. BRNO, 58, 1989: 91-96

THE PATHOGENICITY OF AN ISOLATE OF INFECTIOUS BURSAL DISEASE VIRUS IN GUINEA FOWLS

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Received March 28, 1988

A b s t r a c t

O k o y e J. O. A. , G. C. O k p e: The Pathogenicity of An Isolate of Infectious Bursal Disease Virus in Guinea Fowls. Acta vet. Brno, 58, 1989:91-96.

Five weeks old guinea fowls were inoculated intraocularly with a 20% bursal suspension containing a local Nigerian isolate of infectious bursal disease virus (IBDV) which had a bursal lesion titre of $10^{4.5}$ per 0.5 ml. No clinical signs were observed. Gross lesions were absent and microscopic lesions were not found in the bursa, spleen and kidney on days 3 and 5 post infection (PI). IBDV antigen was not detected in the bursa. Tests for IBDV precipitins in serum samples obtained on day 14 PI were also negative.

IBDV, Guinea fowl, experimental infection.

Infectious bursal disease (IBD) is mainly a disease of domestic fowl (O k o y e 1984). Turkeys have been observed to respond serologically to IBD virus (IBDV) infection without clinical signs (W e i s m a n and H i t c h n e r 1978; P e r e l m a n and H e l l e r 1981 and 1983). M c N u l t y et al. (1979) isolated IBDV from turkeys suffering from natural diarrhoea. Immunosuppression has also been reported in IBDV infection in turkeys even in the absence of any clinical or pathological changes (C h u i and T h o r s e n 1984). Serological evidence of infection has been described in village weaver and condonbleu (N a w a t h e et al. 1978). Pigeons have been found resistand (F r i t z s c h e et al. 1981) but natural IBD has been recorded in artificially reared pheasants (L o u z i s et al. 1979). E d g a r and C h o (1965) reported the death of English sparrows on a farm with an outbreak of IBD but provided no confirmatory data. Y a m a d a et al. (1982) failed to induce clinical IBD in ducks but the birds responded serologically. No antibody against IBDV was detected in egg yolk from quails, ducks, geese, bantams or pigeons by H i r o s e and H i r a i (1976).

However, there is still limited information on the susceptibility of some avian species to IBDV infection. This paper describes the pathogenicity of an isolate of IBDV in guinea fowls.

Materials and Methods

Flock history and IBDV

The IBDV was obtained as a 20% suspension, in phosphate buffered saline (PBS), of the bursa of chickens that died of outbreaks of IBD confirmed by methods already described by Okoye and Uzoukwu (1981). The suspension was found to contain bursal lesion (BL_{50}) titre of $10^{4.5}$/0.5 ml by method of Reed and Muench (1938).

The guinea fowls were obtained at one day of age and brooded by the deep litter system. At 5 weeks of age they were divided into 2 groups (A and B), placed in cages and housed separately. Group A fowls were each given a total of 0.05 ml of the bursal suspension in the 2 eyes. Group B birds were each similarly treated with 20% normal bursal suspension in PBD (uninfected control).

Examination for Clinical and Pathological Changes

Both groups were observed twice daily for clinical signs. On days 3 and 5 post infection (PI) 3 infected and 2 control birds were sacrificed and examined for gross lesions. The weights of the carcass and bursa were obtained for each bird and the bursal % of carcass weight was determined. The bursa, spleen and kidney of the birds were prepared for histopathology.

Examination for IBD antigen in the bursa

Bursas of birds sacrificed in both groups on days 3 and 5 PI were suspended with equivalent weight/volume of PBS to make a 50% suspension. The suspension was tested for IBDV antigen by agar gel diffusion precipitation test (AGDT) using the method and agar described by Okoye and Uzoukwu (1981).

Examination for IBDV precipitins

Blood was collected from 5 of the guinea fowls at day 0 before infection, from 5 infected and 5 uninfected 14 days PI. Sera were harvested and inactivated at 56 °C for 30 min. The samples were tested for IBDV precipitins in AGDT as described above.

Results

Clinical and Pathological changes

No clinical signs were observed in both groups of guinea fowls throughout the experiment. Neither gross nor micro-

scopic lesions were seen in the sacrificed birds. The weights of the carcass, bursa and bursal % of carcass weights are shown in Table I. The figures were statistically analysed using sample t-test and there was no significant difference between the 2 groups ($P > 0.05$).

Table 1

Bursal and carcass weights of IBDV infected and noninfected guinea fowls

Days Pl	Infection history	Carcass wt.	Bursal wt. (gm)	Bursal % of carcass wt.	Mean carcass wt.	Mean bursal wt.	Mean bursal % of carcass wt.
3	Group B (noninfected)	111.00	0.04	0.04			
		126.60	0.06	0.05	118.80	0.05	0.05
	Group A (infected)	143.20	0.06	0.04			
		122.20	0.06	0.05	128.27	0.06	0.04
		119.40	0.05	0.04			
5	Group B (noninfected)	132.20	0.06	0.05			
		101.10	0.04	0.03	116.65	0.05	0.04
	Group A (infected)	162.6	0.07	0.05			
		100.1	0.04	0.04	121.70	0.05	0.04
		102.4	0.05	0.04			

$P > 0.05$

AGDT

The test for IBDV antigen in the bursa of the birds sacrificed in the 2 groups gave negative results. The test for IBDV precipitins in pre-infection and post infection sera also gave negative results. In both tests positive controls gave positive results within 36 hr.

Discussion

Reports of experimental infection of guinea fowls with IBDV appear to be scarce. But N a w a t h e et al. (1978) and O k o y e (1988) after serological surveys of guinea

fowl farms by AGDT found no evidence of IBDV infection in the birds. The clinical and pathological results of this investigation indicate that IBDV may not be pathogenic to guinea fowls. AGDT has been found less sensitive than virus isolation, fluorescent antibody test, serum neutralization test and enzyme-linked immunosorbent assay in detecting IBDV infection (I d e 1975; M a r q u a r d t et al. 1980; H o w i e and T h o r s e n 1981; P h i l l i p s 1981). Hence more work is needed to determine if the birds are completely resistant to IBDV infection.

Guinea fowls exist in the wild and are often reared in the same premises or areas with susceptible chickens. It is therefore necessary to determine if they play any role in the spread of the disease to chickens.

Patogenita isolátu viru infekční bursitidy u perličky domácí

Kuřata perličky domácí byla ve věku 5 týdnů intraokulárně inokulována 20%ní bursální suspenzí s obsahem lokálního nigerijského isolátu viru infekční bursitidy (IBDV) s titrem bursálních lézí $10^{4.5}$ v 0?5 ml. Klinické známky onemocnění pozorovány nebyly. Patologické léze rovněž nebyly nalezeny, patohistologický nález na bursa Fabrizii, slezině a ledvinách byl 3. a 5. den po infekci negativní. IBDV antigen v burse nalezen nebyl, negativní byly i testy na detekci IBDV precipitinů ve vzorcích krevního séra, odebraných 14. den po infekci.

Tyto nálezy naznačují, že pro perličku domácí IBDV patogenní není.

Патогенность изолята вируса инфекционного бурсита у цесарки

Цыплят цесарки в возрасте 5 недель инокулировали 20% бурсалыной суспензией с содержанием местного нигерийского изолята вируса инфекционного бурсита

(IBDV) с титром бурсальных повреждений $10^{4.5}$ в 0,5 мл. Клинические признаки заболевания не наблюдали. Патологические повреждения не были также выявлены, патогистологический анализ на bursa Fabrizii, селезенке и почках 3 и 5 сутки после инфекции был негативным. Антиген IBDV в сумке не обнаружен, негативными были также тесты детектирования IBDV преципитинов в образцах кровяной сыворотки, взятых через две недели после инфекции.

Полученные данные дают возможность предположить, что IBDV для цесарки не является патогенным.

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