Letter to the Editor

INCIDENCE OF NEWCASTLE DISEASE ASSOCIATED LEG WEAKNESS CASES IN LAYERS AND BROILERS AROUND FAISALABAD

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SUMMARY: A total number of 36 broiler and 46 layer chicks of different ages were collected from field cases showing leg weakness. The overall incidence of leg weakness problems recorded was 5%. The N.D. virus isolated from broilers showing leg weakness cases was 72.2% and from layer cases was 73.9% while 27.8% cases of broilers and 26.1% cases of layers showed no N.D. virus involvement as no N.D. virus was isolated from these cases.

Among N.D. virus, the mesogenic strain (44.4% in broilers and 45.7% in layers) was the most common followed by lentogenic (27.8% in broilers and 21.7% in layers) and velogenic strain (0% in broilers and 6.5% in layers).

Key Words: Newcastle disease, mesogenic, lentogenic, velogenic.

INTRODUCTION

In recent years, poultry keeping has emerged as a profitable industry in Pakistan but diseases are causing a major set back in the intensive poultry farming system. Diseases, exhibiting leg weakness as a consequence, cause economic losses in terms of production and mortality.

Leg weakness may be caused by the deficiency of certain nutritional factors, Vitamin B-complex, minerals etc. Diseases like Reovirus infections, viral arthritis, Marek's and coccidiosis may also cause leg weakness (7). Apart from all these, Newcastle disease virus may also be responsible for this malady (6). The affected birds show leg weakness but the disease becomes fatal when the affected birds have no access to feed and water. They can not move and eventually die of the disease, starvation and supper infection of the commensals.

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Hence the project was designed to find out any relation of N.D. virus with leg weakness in poultry birds.

MATERIALS AND METHODS

During the survey period 82 cases of leg weakness in birds (46 layers and 36 broilers) were selected. The virus isolation was made from brain, spleen and lung tissues. These organs were triturated in Normal saline (0.89%) and centrifuged. Inoculum was prepared by collecting the supernatant and adding 100 μg streptomycin and 1000 I.U. penicillin per ml of saline. A volume of 0.1 ml of this was inoculated in duplicate in 9 days old fertile hen eggs through allantoic route. The embryonic mortality was recorded after 24 hours of incubation. This continued till 18 days of incubation. The eggs with dead embryos were removed daily, chilled overnight at 4°C and allantoic fluid was aspirated. The allantoic fluid was tested for the presence of chick RBC's haemagglutinating viruses by spot agglutination method. The Newcastle disease virus confirmation was made by using known specific homologous antiserum through haemagglutination inhibition test following the recommendations of Allan, *et al.* (1).

Table 1: The strains of viruses isolated from broiler/layer chicks and the antibody titre.

S.No.	Strain of virus isolated	Positive			H.I.Ab Titre
		Broiler	Layer	Total	
1.	Velogenic	0	3(6.5)	3(3.7)	1:64-1:128
2.	Mesogenic	16(44.4)	21(45.7)	37(45.1)	1:16-1:512
3.	Lentogenic	10(27.8)	10(21.7)	20(24.4)	1:8-1:256
4.	No virus isolated	10(27.8)	12(26.1)	22(26.8)	1:32-1:64
Total		36(100)	46(100)	82(100)	

RESULTS AND DISCUSSION

The present investigations were carried to find out the possible involvement of Newcastle disease virus in leg weakness cases of the birds.

The overall incidence of mortality in these cases was recorded as 10 to 15% (5). This incidence was relatively low in our study (5%) probably because the reported study was conducted on the outbreaks of ND in various flocks which has a high mortality in chicks, but in our study the birds showing only leg problems were picked up from various flocks.

The results regarding various isolates, its confirmation and HI antibody titre in the birds are presented in the Table 1.

The perusal of the data indicates that the mesogenic strain was the most common both in layers (45.7%) and broilers (44.4%) with respect to the leg weakness problems. The velogenic strain was the less common both in layers (6.5%) and broilers (0.0%). The velogenic strain was isolated from brain tissues. Beach (2) has reported velogenic strain as neurotropic. These neurotropic velogenic strains attack nervous system leading to paralysis of legs and wings.

The role of mesogenic strains in causing leg weakness has been reported by many workers (3,5,6). In all these studies there were either no clinical signs or exceptionally mild respiratory signs which were not recognizable, the only visible feature in later stages was the leg weakness leading to paralysis of legs. Shirai et al. (6) reproduced this problem in 6 months old specific pathogen free chicks by an experimental infection with an isolated strain of N.D. virus. The results indicated the existence of Newcastle disease virus infection, with obvious pathological changes in the Central Nervous System (CNS).

In 27.8% cases of broilers and 26.2% cases of layers no N.D. virus was isolated and these birds might have either some dietary deficiency or some other infectious problem leading to leg weakness.

The leg weakness is not only caused by the NDV but a number of infections and dietary factors are also responsible for this malady. The role of rheo-viruses, mycoplasma, staphylococci etc., is evident in relation to leg weakness (4,7). Among the dietary factors such as the deficiency of Vitamin A, B-complex, calcium, phosphorus, manganese, zinc etc., cannot be overlooked (4,7).

The problem of leg weakness is a multifactorial damage which requires a comprehensive study with respect to infectious agents and nutrition. Although this study is not very extensive it has put forth some efforts regarding leg weakness problems in Pakistan.

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