

## INCIDENCE AND GROSS PATHOLOGICAL CHANGES IN CHICKENS AFFECTED WITH SPIROCHAETOSIS

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### ABSTRACT

Study was conducted to determine the incidence and gross pathological changes in different visceral organs of naturally affected chicken layers with spirochaetosis from July to October 1997 in the surrounding of Hyderabad. Out of 73, 12 poultry farms were found affected with spirochaetosis which indicated 16.4 per cent infection. Gross pathological changes observed in spleen and liver were most consistently involved. Spleens were enlarged from 3-6 times of its normal size with mottling appearance. Enlargement, congestion and discolouration were the main gross lesions in livers. In some cases kidneys were congested and swollen slightly and intestinal mucosa with haemorrhagic patches in few of the cases.

**Keywords:** Spirochaetosis, layers, gross pathological lesions

### INTRODUCTION

Spirochaetosis is septicaemic and highly fatal disease of many species of poultry and other including turkey, geese, ducks, pheasants and canaries. The causative organisms "*Borrelia anserina*" are transmitted by a vector *Argas persicus* (Hafeez, 1979). The disease is widely distributed in tropical and subtropical regions and has been reported throughout the world in the warm areas where the vector is commonly found. The infected birds are visibly sick with an elevation of temperature and specific clinical findings. The birds are depressed and refused to eat and show greenish white diarrhoea associated with reduction in egg production (Abdul, 1987; Dwars *et al.*, 1993). The most characteristic necropsy lesions included e. largement of visceral organs in general but liver and spleen in particular associated with mottling appearance of affected spleen. Present study, therefore, was undertaken to observe the natural source of infection along with gross pathological changes in affected organs of chickens with a view to determine diagnosis of the disease.

### MATERIALS AND METHODS

Seventy three commercial layer flocks were surveyed for the incidence of spirochaetosis in the surrounding of Hyderabad from July to October, 1997 and the suspected flocks for spirochaetosis were selected for detailed investigations. Efforts were made to examine thoroughly the birds for presence of ticks. The sick birds were examined for presence of

symptoms and elevation of temperature. Blood smears were prepared from the suspected birds for conformation of the disease. In case of dead birds postmortem was conducted at random and lesions observed in the affected visceral organs were recorded.

### RESULTS AND DISCUSSION

Survey was carried out to determine the incidence of spirochaetal infection in different layer flocks. Seventy three farms were visited during the study period and 12 farms were positive for spirochaetosis which indicated 16.4% of infection. Month wise incidence ranged 1.3-15% with an average 6.4% at different farms during study period (Table 1). Much higher rate of incidence (39%) has been reported in six weeks old Bebecock pullet chicks (Abdul, 1987). According to the findings of Dwars *et al.* (1993), 2.5% birds showed the incidence of spirochaetosis in broiler parent flock. The incidence was lower as compared to the findings of Bhatti *et al.* (1984) who reported an average rate of incidence as 13.1% in naturally infected birds. This variation in incidence could be due to difference in number of birds used, types of breed involved and moreover age factor of the birds could not be excluded.

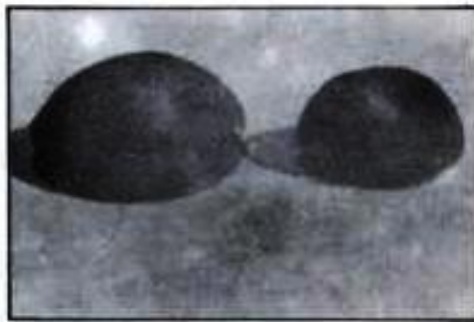
Variable degree of occurrence of gross lesions were observed in different organs (Table 2). The spleens were voluminously enlarged from 3 to 5 times of its normal size with characteristic mottling appearance (Plate 1) in almost all the infected birds. The livers were enlarged in all the cases but congestion was found in some of the cases whereas in some other

cases the livers were friable with necrotic foci and haemorrhagic spots were seen in few of the cases (Plate 2). Similar pathological changes were reported by Buriro, (1979), Hafeez (1979) and Soni *et al.* (1980). Shomein and Khogali (1974) reported the similar changes in addition to presence of lymphoid deposits and necrotic foci in liver. The kidneys were swollen, pale and anaemic in many cases but in few cases slight congestion was noticed during present study as were recorded by Tiwar *et al.* (1979). Cooper and Bickford

(1993) also recorded discolouration in kidneys and necrotic areas in few of the cases. Pathological lesions in small intestine indicated marked degree of catarrhal inflammation with haemorrhagic patches in intestinal mucosa and mucoid enteritis in the present study. Similar findings were recorded by Hafeez (1979). Anjum *et al.* (1982) reported that intestinal mucosa was denuded and ulcerative. Abdul (1987) also reported haemorrhagic patches in intestinal mucosa along with necrotic foci at the tips of intestinal villi.

**Table 1: Incidence of spirochaetosis at various poultry farms in Hyderabad.**

Farms	No. of birds at farms	July		August		September		October	
		Sick birds	%	Sick birds	%	Sick birds	%	Sick birds	%
A	2000	250	12.5	110	5.5	155	12.7	185	9.2
B	5000	500	10.0	215	4.3	500	10.0	200	4.0
C	9000	500	5.5	212	2.3	345	3.8	415	4.6
D	5000	300	6.0	590	11.8	150	3.0	320	6.4
E	6000	400	6.6	235	3.9	242	4.0	318	5.3
F	3000	290	9.6	435	14.5	388	12.9	234	7.8
G	10000	700	7.0	928	9.2	645	6.4	500	5.0
H	5000	270	5.4	150	3.0	137	2.7	120	2.4
I	2000	60	3.0	300	15.0	180	9.0	250	12.5
J	5000	430	8.6	140	2.8	200	4.0	100	2.0
K	3000	40	1.3	350	11.6	195	6.5	212	7.0
L	2000	225	11.2	180	9.0	225	11.2	137	6.8
Overall	57000	3965	6.95	3845	6.74	3362	6.90	2991	5.24



**Plate 1: Spirochaetosis: enlarged spleen with mottling appearance**



**Plate 2: Spirochaetosis: enlarged liver, discoloured and friable.**

Table 2: Gross pathological changes in visceral organs affected with spirochaetosis.

Symptoms/lesions	Spleen	Liver	Kidney	Intestine
Congestion	+	++	+	-
Enlargement/swelling	++	++	+	-
Mottling	++	-	-	-
Haemorrhages	-	+	+	+
Necrosis	-	++	+	-
Secretion of mucoid fluid	-	-	-	+
Caseous spots	-	+	+	-
Oedema	-	-	-	-

+ = slightly affected, ++ = highly affected, - = not affected

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