

## EXPERIMENTAL AUTOIMMUNE ORCHITIS IN CHICKEN

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Spontaneous autoimmune orchitis has been considered responsible for the destructive changes in the testis leading to subfertility and infertility in livestock. It has been described in different species of animals (Barbara and Spector, 1963; Brown patrica *et al.* 1963; Kenneth *et al.* 1970; Levine and Sowenski, 1970; Jankowic *et al.* 1973 and Fritz *et al.* 1976). Recently Ravindran *et al.* (1984) described the immunopathological features of autoimmune orchitis in the duck. An experimental study was designed to study the pathological features of autoimmune orchitis in chicken. The observations made are described in this paper.

### Materials and Methods

Twentyone healthy White Leghorn chicken were selected at random for the experiment. Testis for the preparation of the antigen was harvested from a healthy WL chicken. The testis (15 g) was triturated with 10 ml of normal saline. The suspension was filtered through a muslin cloth. Ten ml of complete freund's adjuvant was added to the filtrate. The emulsion was uniformly mixed well using a syringe and needle. Fourteen randomly selected chicken aged 5 to 6 months were administered 1 ml of the emulsion subcutaneously. Seven uninoculated chicken of the same age group were kept as control. Seven of the chicken out of the 14 originally inoculated with the antigen were administered 0.5 ml of the antigen subcutaneously as booster dose on the third day. One bird each from the control, single dosed and booster dosed were sacrificed at weekly intervals. Testes were collected for histopathological examination and preserved in 10% formalin. Paraffin sections cut at 4 to 5 micron thickness were stained with haematoxylin and eosin.

### Results

During the first week post inoculation there was no significant change in the testis of experimental chicken. Spermatozoa were seen in the lumen of the seminiferous tubules in large numbers indicating active spermeogenesis with little loss of function.

By the second week changes were evident in the testis characterised by dense lymphocytic infiltration, particularly in the interstitial tissue (Fig-1). These lymphocytes and a few macrophages were seen surrounding the vessels in the interstitium. There was reduction in the size of the seminiferous tubules, with desquamation of the spermatogonial cells. (Fig-2). In the lumen of some of the tubules scattered lymphocytes and macrophages were seen.

By the third week the changes were much more pronounced and the cellular components in the infiltrate were mainly macrophages. The lymphocytes were few in number. There was no evidence of any sperm in any of the tubules. From the fourth to seventh week changes were similar but there was almost complete degeneration of the tubules. The lumen of the tubules contained large number of macrophages.

In the control chicken there was no reaction and there was active spermeogenesis.

### Discussion

Autoimmune orchitis was induced in chicken using testicular extract as the antigen in Freund's complete adjuvant. During the first week postinoculation the histological changes were very minimal. From the second week onwards the reaction became more prominent and it was

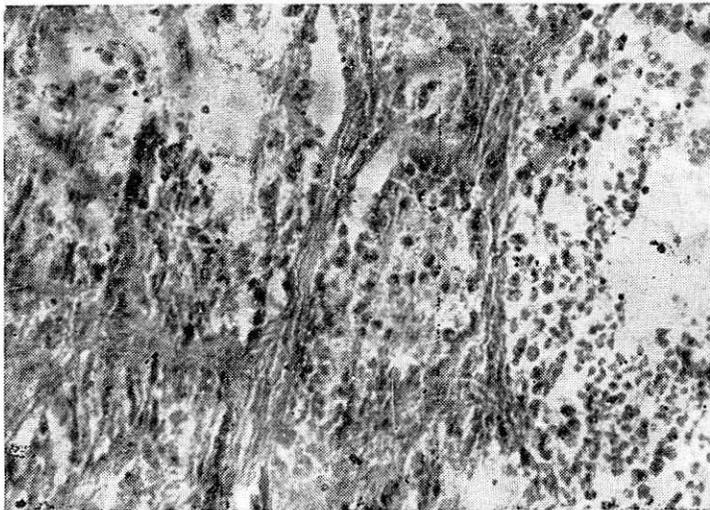


Fig. 1

Testis: Infiltration of lymphocytes in the interstitium and lumen of the tubules. H and E x 200

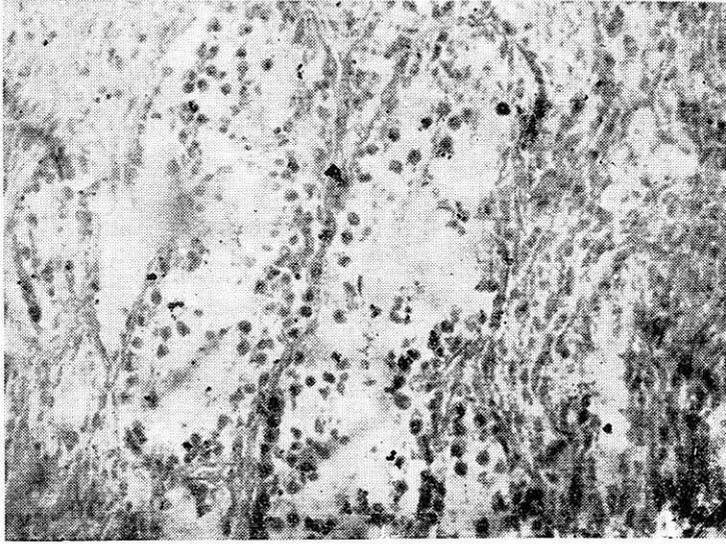


Fig. 2

Testis: Infiltration with lymphocytes and macrophages and no spermeogenesis. H and E x 200.

characteristic of an autoimmune reaction characterised by lymphoid infiltration. As the lesion progressed there was reduction in lymphocytic response and increase in macrophage reaction. These histological changes are comparable to that reported in autoimmune reactions in dogs (Rajan and Mohiyuddeen, 1973) Guinea pigs (Brown Patrica *et al.* 1973) Pigs Rajan and Nair (1976) and in ducks (Ravindran *et al.* 1984). The perivascular location of lymphocytes and macrophages particularly in the interstitium is an indication of the recruiting of the cells from the general circulation. Similar observations were made in ducks by Ravindran *et al.* (1984). It was concluded that the autoimmune reaction induced will cause subfertility and infertility since there was severe damage to the testicular parenchyma.

### Summary

Autoimmune orchitis was induced in chicken using homologous thyroid extract in Freund's adjuvant. The degenerative changes in the testis was associated with infiltration of lymphocytes and macrophages. Earliest change was evident after the first week.

## സംഗ്രഹം

കോഴികളിൽ വൃഷണങ്ങളുടെ ഹോമളോഗസ് എക്സ്ട്രാക്ടും ഫ്രൂണ്ടസ് അഡജവൻടും ഉപയോഗിച്ചു വൃഷണങ്ങളിൽ ക്ഷതികൾ ഉണ്ടാക്കി വിശദമായി പഠിച്ചു. വൃഷണങ്ങളും ക്ഷേപരുന്നതായും ബീജങ്ങളും ഇല്ലാതാകുന്നതായും കണ്ടു. ഇത് പ്രത്യുൽപാദനശേഷി നശിപ്പിക്കുന്നു.

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