Structural aspects of bursa Fabricii in broiler chickens vaccinated with an intermediate Gumboro vaccine strain

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SUMMARY

Vaccination is still a topical issue because there is no direct relationship between pathogenicity of the vaccine strain, the quality of immune response and post immunization changes in the immune competent organs. The aims of this study were to observe the structural changes induced by a mezogenic Gumboro vaccine strain on bursa Fabricii in broiler chickens.

The study was conducted on 15 broiler chickens vaccinated at 12 days of age. Bursa Fabricii was collected from 5 chickens each 24 hours prior to vaccination, 7 and 14 days post vaccination, fixed in Stieve solution and processed histologically by paraffin embedding. Five µm thick bursal sections were stained by trichrom Goldner method. In 11 days old chicks the bursa Fabricii showed a normal morphology, undergoing the growth and maturation processes. On day 7 postvaccination (19 days of life) bursal follicles were larger than on day 11, with cortical and medullar area well developed and cortical and medullar segments obviously delimited. In some follicles lymphocyte lyses was observed, with the emergence of apoptotic bodies. The cortical region appeared thinner and in the medullar area, due lymphocyte lyses, the reticular cell network became apparent. In restricted areas, both perifolicular and cortical, a granulocyte infiltrate accompanied by a slight edema was seen. At 14 days post vaccination (26 days of life), stock size of the follicles was somewhat larger than at 19 days of life, although it should have been much larger. In most follicles, lymphocyte lyses was marked, and it took place at a high intensity. Lymphocytes of cortical were small, while in medullar area they were almost missing. Because of lymphocyte lyses, some medullar follicles appear as cysts. On the surface of the section, the follicles had numerous apoptotic bodies and showed aspects of protein degeneration. In many blood vessels, generally of small caliber, an influx of cells from monocytic and granulocytic lineage could be seen. Vascular phenomena were accompanied by both perifollicular and intrafollicular edema. The edema within the conjunctive septa from the perifollicular tissue was pronounced, causing laceration. The presence of eosynophilic infiltrate in the bursal epithelium and small amounts of fibrin in the lumen were observed containing scattered cells with different degrees of degeneration.

The tested Gumboro vaccine caused structural changes of the bursa Fabricii with a relatively low intensity at 7 days post vaccination, progressively increasing their gravity and including by day 14 all the bursal follicles.

Keywords: vaccination, infectious bursal disease, Fabricii bursae lesion