THE HISTOLOGICAL MODIFICATION IN TISSUES OF BURSA OF FABRICIUS IN CASES OF INFECTIOUS BURSITIS.

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Abstract. The article includes the dynamic histological modification in bursa of Fabricius in chickens the age 4-5 weeks. It describes the structural modification in dependence of period after contamination and in chicken after disease. In severe cases of infectious bursal disease all the follicules are affected simultaneously. Factors that determine the severity of infection include virulence of infectious bursal disease virus, concentration of virus, level of immunity and management factors.

INTRODUCTION.

Infectious bursal disease (IBD) is an acute, contagious viral disease of young chickens characterized by diarrhea, trembling, inflammation of bursa of Fabricius and immunosuppression. IBD viruses target the bursa of Fabricius- the primary organ involved in the development of the chicken’s immune system. However, IBD may occur in chickens as long as they have a functional bursa of Fabricius (1-18 weeks of age). Usually the variant strains of IBD virus which have major antigenic differences from the “standard” strains, cause immunosuppression but not clinical disease in older chickens. Infection before 2-3 weeks of the age are usually sub clinical. Chickens are most susceptible to clinical disease of the age 3-6 weeks. More severe infections have occurred in layer chickens than broilers up to 18 weeks old.

Early sub clinical infectious are important because of economic losses. They cause severe long lasting immunosuppression which due to destruction of immature lymphocytes in the bursa of Fabricius, thymus and spleen. The humoral (B-cell) immune response is most severely affected. Chicken do not respond well to vaccination, secondary bacterial, viral and protozoon infections.

The clinically infectious chicken will exhibit severe prostration, incoordination, and watery diarrhea. The presence of maternal antibody can modify the clinical course of the disease.

In the Republic of Moldova, since 1991 the very high virulent strains of the virus circulated, causing high morbidity and mortality of chickens. Mortality can go from 25 to 60% and more. Usually the disease was detected in the private sectors where no vaccination was used. The IBD was a big risk for poultry industry.

The subject of our investigation was detection of histological modification in the bursa of Fabricius tissues in case of the diseases and dynamics after contamination.
MATERIAL AND METHODS

The investigations were effectuated in the veterinary sector "Ciorescu", at the department of Epizootology, ASUM, and in Republican Veterinary Diagnostic Center. The disease was detected in two individual chicken farms where there were 1020 and 2000 chicken, “cross Adler”. Blood was collected from the contaminated chickens as well as samples from the bursa of Fabricius. Preservation of the bursa of Fabricius was done with 10% solution of formalin. The histological samples from the bursa of Fabricius was made by the known methods. The modifications in the tissue of bursa of Fabricius was examined by images of biological microscope 10x40.

RESULTS AND DISCUSSIONS

The results of histological examinations are demonstrated in the picture 1,2,3,4.

Figure 1 presents the normal structure of the tissue bursa of Fabricius, were it clearly shows the lymphoid follicles, interfollicular connective tissue and interfollicular lymphocytes.

Figure 2 and 3 were from chickens 25-27 days of age. The bursa of Fabricius shows that the affected lesion has spread to all of the follicles. Most of the follicles were destroyed. In interfollicular connective tissue there is serohemorrhagic exudate.

Figure 4 shows structural modification in bursa of Fabricius of the chicken 5 days after the disease was present. This also shows atrophy of the bursa of Fabricius, as well as vacuoles, and cysts.

![Figure 1. The normal histological structure of bursa of Fabricius](image-url)
Figure 2. The histological modification in bursa of Fabricius on the chicken with 25 days age (2-3 days of clinical signs of the disease)

Figure 3. The histological modification in bursa of Fabricius on the chicken with 27 days age (3-5 days of clinical signs of the disease)
GROSS LESIONS. Initially, the BF is swollen (inflamed); appears edematous and hyperemic; and has a gelatinous yellowish transudate covering the serosal surface. Hemorrhage and areas of necrosis may be present in more severe cases. Five days after infection, the BF diminishes in size rapidly (atrophies). Necrosis and depletion of lymphocytes also occur in the secondary lymphoid organs, including the spleen, glands of Harder, and cecal tonsils. These organs are typically affected less severely than the BF and may recover following infection. Hemorrhage may be present in the thigh and pectoral muscles, because the IBD virus interferes with the normal blood clotting mechanism. The kidneys may appear swollen in birds that die that are in the advanced stages of the disease. Such lesions probably result from severe dehydration, not direct viral damage.

MICROSCOPIC LESIONS. Microscopically, lymphocyte necrosis is present in the BF within 36 hours after infection. By 48 hours, few lymphocytes are present. Edema, hyperemia, and inflammatory cell infiltration are evident, which account for the enlarged BF during the initial days following IBD virus infection. By 8 to 12 days after infections, the BF is shrunken to less than one-fourth of its original size. The lymphoid follicles are cystic and depleted of lymphocytes. The epithelium lining the BF is irregular and infolded. Fibroplasia is present in the interfollicular connective tissue. In severe cases of IBD, all the follicles are affected simultaneously. In less severe cases, only scattered follicles are affected, and the lesions spread to other follicles. Typically, the follicles in the tips of bursal folds are affected first. Factors that determine the severity of an infection include virulence of the IBD virus, concentration of IBD virus exposure, level of immunity against IBD virus, and management factors.

CONCLUSION

The histological modification in bursa Fabricius can describe the immunological status of the chicken and the immunosuppression in the chicken.
BIBLIOGRAPHY


