BULLETIN of Armenian National Agrarian University
International Scientific Journal
ISSN 1829-0000
Reg. № 211.200.00169
Journal homepage: https://www.anau.am/en/teghekagir

UDC: 636:[619:616.98](479.25)

Epizootiological and Pathological Features in Case of Respiratory Mycoplasmosis of Poultry in Jrashen Community

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ARTICLE INFO

Keywords:
poultry,
infection,
microclimate,
antibiotics,
prevention

ABSTRACT

Poultry farmstead provides citizens with fresh eggs and meat, as well as funds family budget at the expense of income from the sale of poultry products. However, violation of veterinary and sanitary rules and unsatisfactory maintenance and feeding conditions contribute to the emergence of infectious mycoplasmosis, leading to a decrease in productivity, and often, to the birds diseases. The aim of our work is to conduct complex epizootiological, clinical, pathological and bacteriological studies in private poultry farms of the community Jrashen at Yerevan city. To prevent further development of respiratory mycoplasmosis by farmers, we have proposed a comprehensive plan for veterinary and sanitary measures.

Introduction

Poultry farmstead not only provides citizens with fresh eggs and meat, but also funds family budget at the expense of income from the sale of poultry products (Mukhin, 1989). The prevalence of respiratory mycoplasmosis of poultry is due to asymptomatic bacteria-carrier, the contagiousness of the disease, the uncontrolled movement of breeding poultry and hatching eggs and the lack of routine for preventive measures in private poultry farms (Barisovich, 1987). Violation of veterinary and sanitary rules and unsatisfactory feeding and caretaking conditions contribute to the emergence of a number of infections and invasions, leading to a decrease in productivity, and, often, to the death of diseased birds (Barisovich, 1987). It is also known that the causative agent of respiratory mycoplasmosis is capable of staying in the organism demonstrating long-term asymptomatic persistence in the body of birds, namely on the mucous membranes of the respiratory tract, and under the influence of stressors (shortage or abrupt change of feed, late drinking, immunization with live vaccines) the disease is manifested upon the development of an infectious process leading to a decrease in productivity, depletion and also promotes growth decline of infected birds (Bakulov, 1987). According to the literature, the pathogen often enters the poultry farms when the uncontrolled import of poultry takes place, especially import of chickens-carriers and the infected eggs for incubation. Once detected, the disease remains in the farm forever and can be eradicated only by complete replacement of poultry stock to the pre-disinfected poultry houses and yards (Bakulov, 1987).

Materials and methods

The aim of our work is to carry out complex epizootiological, clinical, pathoanatomical and bacteriological studies in one of the private poultry farms of Jrashen community in Yerevan. The research lasted from April to May 2018, the epizootiological and clinical examination was carried out in the farm, while pathological changes and microscopic data of bacteriological smears were studied in the laboratory of the Chair of Epizootiology and Parasitology at the National Agrarian University of Armenia. The investigated farm specializes in the maintenance of agricultural poultry from the order of chicken: turkeys, pheasants, peacocks and chickens of Indian, Malaysian, Chinese breeds. The total number of birds in the farm at the time of the study reached 250 items from the chicken order at the age of one to five years. From the anamnestic data it became known that in previous year the number of clinically ill birds with signs of respiratory system damage (rhinitis, conjunctivitis, cough) was 150 at the age of 6 months, 80 of which died out. In 2018 clinical disease was manifested only sporadically, because of the lack of young animals

up to the age of six months, the decrease in the intensity of the epizootic process, which transformed into postepizootic stage of development, weakening of the virulence of the pathogen on the background of antibiotic therapy and the transition of acute form of the disease into sluggishly flowing chronic.

Result and discussions

In the course of clinical and epizootiological studies, it was revealed that the farm does not observe the basic veterinary and sanitary rules in poultry keeping. The way of livestock acquisition is the uncontrollable import of the poultry purchased on various poultry farms located in different regions of the country; the farm does not have any system of quarantine for imported poultry; poultry is kept on a deep irreplaceable litter consisting of urea-soaked straw; in the poultry house there is no system of supply and exhaust ventilation, that is why there is a sharp smell of ammonia; the diet of birds consists only of a grain mixture (oats, millet, sunflower), which surely does not contribute to the formation of a resistant immune system to infectious agents.

Among 20 clinically ill birds the following symptoms were observed: mucous discharge from the nostrils, swelling of the eyelids and narrowing of the eye slit, tracheal wheezing and coughing, sneezing and head shaking. In turkeys and pheasants there was a change in the head shape due to edema of the infra-orbital sinuses (Fig. 1).

Figure 1. Edema of the infra-orbital sinuses

As a measure to combat infection in the farm all poultry have been periodically treated with chemotherapy drug "Tilan" since last year, which includes antibiotics erythromycin and oxytetracycline. The drug was given with water/1 ml/; the preparation was diluted in 1 liter of water and the birds were treated with it for 10 days. In total, 3 treatment courses are held annually with a weekly interval. Also the drug Iodinol /1 ml/ was used, which was dissolved in 5 liters of water and the resulted solution fed birds for 5 days (Chervyakov, 1977, Mejlumyan, 1986). The treatment helped to reduce the intensity of the epizootic process, but did not eliminate the disease as a whole. The most exhausted chickens-"crackers" /five items/ were selected for pathological and bacteriological research. As a result of pathoanatomical autopsy the following changes have been identified in the 5 slaughtered birds with a pronounced symptom of respiratory Mycoplasmosis: catarrhal inflammation of the mucous membranes in the nasal cavity, sinuses infra-orbital, larynx and trachea with accumulation of serous-mucous fluid; the walls of pneumatic sacs are thickened and coated with yellowish-white mucous layer on the inner side, and the cavity of sacs contains muddy viscous liquid; the lungs have motley appearance due to diffuse hyperemic and compacted areas, and on the surface of the liver and heart pale-yellowish fibrin flakes are visible (Fig. 2,3).

Figure 2. Larynx and trachea with accumulation of serous-mucous fluid

Figure 3. Larynx and trachea with accumulation of serous-mucous fluid

As a result of microscopic investigations on smears prepared from scrapings of the mucous membranes of the trachea, content of pneumatic sacs, exudates of infra-orbital sinuses stained through Romanovsky-Giemsa method small coccobacilli were found. The

same bacteria were found by microscopy of smears prepared from 10 percent suspension of the affected tissues treated with penicillin (500 thousand units per 1 ml. of suspension). The availability of epidemiological, clinical, pathoanatomical data characteristic of Mycoplasmosis and detection of micrococci gives us grounds for suspicion in respiratory mycoplasmosis of birds, which in the investigated sector is characterized by the stationarity, chronic course, respiratory form of the disease and low intensity of the epizootic process (Fig. 4).

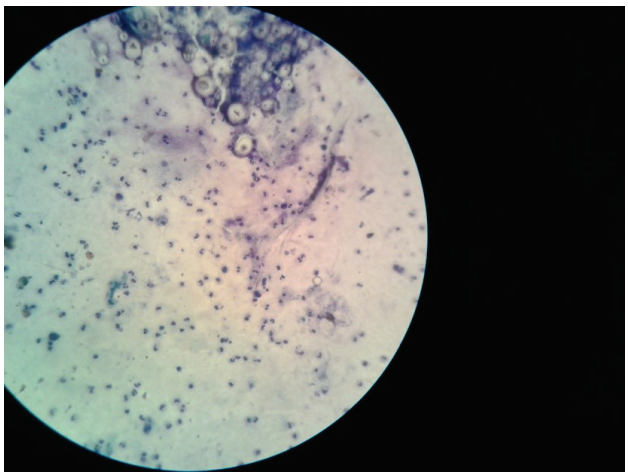

Figure 4. Agent of Mycoplasmosis

Conclusion

In conclusion it should be stated that at this stage of the disease, when there is a low intensity of the epizootic process, the treatment of birds with chemotherapy drugs and even the improvement of zoohygenic conditions and parameters of the microclimate are not able to eliminate the mycoplasmosis. As the only effective method, forced slaughter of all birds in the farm, mechanical cleaning and sanitation of premises, followed by the introduction of a new batch of birds (Korovin, 1990) can be proposed. To prevent undesirable consequences of respiratory mycoplasmosis by poultry farmers, we have proposed the following plan of veterinary and sanitary measures:

1. To fill up farms with poultry and hatching eggs from regions safe from infectious diseases, to place the imported batch of birds in the quarantine building for a month before replacing them to the poultry house;
2. To use eggs from chickens of the second year use for incubation, providing more resistance towards mycoplasmosis offspring;
3. Vaccination with live vaccines should be carried out only in special cases and with great caution considering their immunosuppressive effect on the body of birds;
4. To balance the diets of birds on vitamins, macro and microelements, taking into account the fact that the presence of herbal cutting or flour with the amount of 10% and above in the feed contributes to the increase of natural resistance of the birds' body to infectious agents;
5. To improve the keeping conditions of poultry: to carry out regular mechanical cleaning and disinfection of premises, to provide ventilation and optimal microclimate parameters in poultry houses;
6. To give preference to the maintenance of local or crossbreeds of poultry throughout the selection in homestead farms taking into account that egg producing breeds are more sensitive to respiratory infections.

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