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PATHOANATOMICAL CHANGES OBSERVED IN MIXED INFECTION OF MYCOPLASMOSIS, COLIBACTERIOSIS AND ORNITHOBACTERIOSIS IN POULTRY

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Abstract:
This article investigates the pathoanatomical changes observed in poultry during the concurrent course of mycoplasmosis, colibacteriosis, and ornithobacteriosis. During the study, macroscopic pathological alterations in the respiratory system and internal organs of diseased poultry were analyzed. Necropsy findings revealed catarrhal-fibrinous tracheitis, aerosacculitis, pneumonia, pericarditis, perihepatitis, and dystrophic changes in internal organs. The formation of fibrinous exudate and caseous masses in the air sacs was identified as one of the characteristic pathological signs.
It was established that the combined course of these diseases intensifies inflammatory processes in the organism and leads to more severe pathological manifestations. The obtained results are important for the diagnosis of mixed respiratory infections in poultry, deeper understanding of their pathogenesis, and the development of effective preventive and therapeutik measures.

Keywords: Poultry, mycoplasmosis, colibacteriosis, ornithobacteriosis, pathoanatomical changes, aerosacculitis, pneumonia, respiratory infection.

Introduction:

Poultry farming is one of the rapidly developing branches of agriculture and plays an important role in providing the population with high-quality food products. In

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recent years, the increasing incidence of respiratory diseases in poultry has caused significant economic losses in this sector. In particular, the concurrent course of infections such as mycoplasmosis, colibacteriosis, and ornithobacteriosis leads to more severe clinical manifestations of the disease, reduced growth and development of poultry, decreased productivity, and increased mortality rates.

Mycoplasmosis primarily affects the epithelial cells of the respiratory tract, weakening the local defense mechanisms of the organism. As a result, favorable conditions are created for secondary microflora, including pathogenic Escherichia coli and Ornithobacterium rhinotracheale. The combined effect of these infections contributes to the development of severe inflammatory and dystrophic changes in the organs of the respiratory system.

In mixed infections, catarrhal and fibrinous inflammations are commonly observed in the trachea, lungs, and air sacs. In addition, pathological processes also develop in the heart, liver, and other internal organs, leading to disruption of the general functional state of the organism. Therefore, the study of pathoanatomical changes occurring in mixed respiratory infections is of great scientific and practical importance.

The main purpose of this study was to identify and analyze the pathoanatomical changes observed in poultry during the concurrent course of mycoplasmosis, colibacteriosis, and ornithobacteriosis.

Etiology and Epidemiology:

Mycoplasmosis. The causative agent of the disease is Mycoplasma gallisepticum, which adheres to the epithelial cells of the respiratory tract and induces a chronic inflammatory process.

Colibacteriosis. The main causative agents of colibacteriosis are pathogenic strains of

Escherichia coli. The disease often develops as a secondary infection.

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Ornithobacteriosis. Ornithobacterium rhinotracheale causes the development of aerosacculitis and pneumonia in the respiratory system.

The development and spread of these diseases are influenced by the following factors:

high stocking density;

poor microclimatic conditions;

stress factors;

failure to comply with sanitary and hygienic requirements.

Pathogenesis: The pathogenesis of mixed infections is a complex and multistage process. Initially, mycoplasmas adhere to the epithelium of the respiratory tract, where they release toxins, disrupt protective mechanisms, and consequently cause epithelial degeneration due to inflammatory reactions.

Subsequently, favorable conditions are created for the proliferation of Escherichia coli and Ornithobacterium rhinotracheale. As a result, fibrinous aerosacculitis, bronchopneumonia, pericarditis, pleuritis, and septic processes develop.

Under conditions of mixed infection, oxidative stress is intensified, cytokine production increases, and immunodepression develops.

Pathoanatomy:

In poultry, the mixed course of mycoplasmosis, colibacteriosis, and ornithobacteriosis leads to severe pathoanatomical changes in the respiratory system and internal organs.

Respiratory system: catarrhal and fibrinous inflammation of the trachea (tracheitis); bronchitis and diffuse or focal pneumonia in the lungs; thickening of the air sacs with accumulation of fibrinous exudate; in severe cases, aerosacculitis accompanied by caseous masses; hyperemia and edema of the mucous membrane of the respiratory tract.

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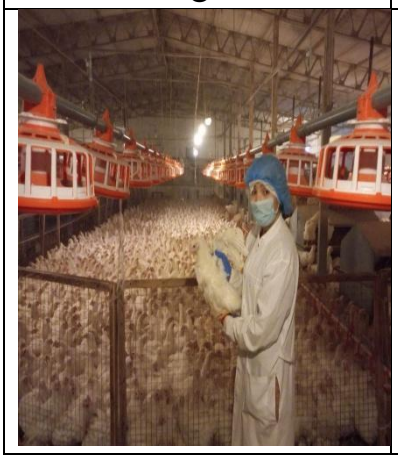		

Thoracic cavity and serous membranes: fibrinous pericarditis; fibrinous or serofibrinous pleuritis; accumulation of turbid or fibrinous fluid around the heart. Internal organs: enlargement of the liver (hepatomegaly) with dystrophic changes; perihepatitis (fibrinous inflammation of the liver capsule); enlargement of the spleen (splenomegaly); necrotic foci in internal organs during septic processes.

General Pathoanatomical Findings: General intoxication of the organism; hypoxia and dystrophic changes in tissues; and possible development of septicemia are characteristic features of mixed infections. Under conditions of mixed infection, pathoanatomical changes are considerably more severe and widespread compared to single infections, simultaneously affecting multiple organ systems.

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Discussion:

Analysis of the reviewed literature and pathoanatomical observations demonstrated that the concurrent course of mycoplasmosis, colibacteriosis, and ornithobacteriosis in poultry leads to severe pathological processes accompanied by profound structural changes in the respiratory system.

In such mixed infections, the main pathoanatomical processes are represented by catarrhal-fibrinous and fibrinous inflammations developing in the trachea, bronchi, lungs, and air sacs. Damage to epithelial cells caused by mycoplasmas disrupts the protective mechanisms of the organism and creates favorable conditions for the rapid development of secondary bacterial flora, particularly Escherichia coli and Ornithobacterium rhinotracheale. As a result, aerosacculitis accompanied by the accumulation of fibrinous exudate and, in some cases, caseous masses develops in the air sacs.

In addition, bronchopneumonia, interstitial edema, and necrotic foci are observed in the lung tissue. Fibrinous pericarditis, pleuritis, and perihepatitis also develop in the serous membranes. These pathological changes contribute to the septic nature of the disease and involvement of internal organs.

Overall, mixed infections are characterized by more extensive, severe, and destructive pathoanatomical changes compared with individual infections.

Conclusion:

The concurrent course of mycoplasmosis, colibacteriosis, and ornithobacteriosis in poultry causes severe pathoanatomical damage to the respiratory system. The main morphological findings include catarrhal-fibrinous tracheitis, severe aerosacculitis, bronchopneumonia, and fibrinous inflammation of the serous membranes.

As the causative agents progress, dystrophic and septic changes develop in the internal organs, leading to increased general intoxication of the organism.

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Consequently, this results in growth retardation, decreased productivity, and increased mortality in poultry.

Therefore, comprehensive investigation of pathoanatomical changes in such mixed infections is of great importance for early disease detection and differential diagnosis.

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