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SEASONAL AND AGE-RELATED SPREAD OF PULLOROSIS AND STREPTOCOCCOSIS IN POULTRY FARMS

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Annotation: This article presents the seasonal dynamics and age dependence of the incidence of pullorum and streptococcosis among chickens in poultry farms of the Samarkand region.

Key words: Poultry farming, chickens, bacteria, pathogens, pullorum disease, streptococcus, dispensary examination, diagnostic injection, dystrophy, bacteriological, microbiological, serological.

Annotatsiya: Ushbu maqolada Samarqand viloyati parrandachilik xo'jaliklarida jo'jalar orasida pulloroz va streptokokkoz kasalliklarining mavsumiy dinamikasi va yoshga bog'liq holda uchrash holati bayon qilingan.

Kalit so'zlar: Parrandachilik, jo'jalar, bakteriya, qo'zg'atuvchilar, pulloroz, streptokokkoz, dispenser tekshiruv, tashxis quyish, distrofiya, bakteriologik, mikrobiologik, serologik.

Аннотация: В данной статье изложена сезонная динамика и возрастная зависимость заболеваемости пуллорозом и стрептококкозом среди цыплят в птицеводческих хозяйствах Самаркандской области.

Ключевые слова: Птицеводство, цыплята, бактерии, возбудители, пуллороз, стрептококк, диспансерное обследование, диагностическая инъекция, дистрофия, бактериологическое, микробиологическое, серологическое.

Introduction. The widespread nature of pullorosis and streptococcosis in poultry, especially among young chicks, causes significant economic damage to many farmers involved in poultry farming. Due to the high prevalence of these diseases, the mortality rate of poultry can reach 30-35%. Large sums of money are spent on treating sick birds and implementing disease control measures. Chicks that recover from the disease fall behind in growth and development and become carriers of the infection. In our country, a specific comprehensive method with modern tools (vaccines, diagnostics, etc.) has not been developed for the diagnosis, treatment, and prevention of these diseases. The use of biopreparations produced in foreign countries requires a lot of time and foreign currency.

Poultry farming holds a special place in the agricultural economy of our Republic, and our government is paying great attention to developing this sector. The development and profitability of poultry farming, a key branch of animal husbandry, depend on factors such as increasing the number of birds in limited liability companies, farms, and private auxiliary farms, enhancing their productivity, obtaining healthy chicks, proper care, and protecting them from various diseases. Pullorosis disease in poultry is a major threat to poultry farming.

Pullorosis is an extremely dangerous infectious disease caused by the bacterium *Salmonella pullorum*, which primarily affects young chicks. Pullorosis causes significant economic losses. The mortality rate in infected chicks is very high, potentially reaching up to 80-90%. This means huge financial losses for poultry farms. Due to the disease, chicks grow slowly, feed efficiency decreases, and consequently, meat and egg production also decline. Therefore, studying the seasonal and age-related dynamics of pullorosis and streptococcosis among chicks in poultry farms is a pressing issue today.

Objective of the Research. The objective of this study is to conduct dispensary examinations of chicks in various poultry farms in the Samarkand region and to study the seasonal and age-related dynamics of pullorosis and streptococcosis.

Research results. The scientific research was carried out during 2023-2024 at the "Osiyo Maroqand" farm in the Narpay district, "Kattaqurg'on-parranda" farm in the Kattakurgan district, and "Afrosiyob-Parranda" farm in Samarkand city. The study also included chickens brought from these farms to the vivarium of the "Microbiology" laboratory at the Veterinary Research Institute.

The "Osiyo Maroqand" poultry farm raises 400,000 laying hens of the Lohmann Brown Classic breed. The farm is free from infectious diseases and implements a regular group vaccination schedule against Newcastle, Gumboro, and Marek's diseases. The microclimate parameters in the poultry houses, including air temperature, humidity, air movement speed, and the amount of toxic gases, are regularly monitored. Over a 6-month period in 2023, dispensary examinations were conducted on over 3,500 laying hens at these poultry farms.

Table 1.

Clinical condition of poultry infected with pullorosis, streptococcosis, and mixed infections at "Kattaqo'rg'on-parranda" poultry farm

Indicators	Poultry with Pullorosis	Poultry with Streptococcosis	Poultry with Pullorosis and Streptococcosis
Number of heads	130	70	40
Body Temperature, °C	44.5	43.6	44.9
Heart Rate	136	134	133
Respiration Rate	34	32	34
Diarrhea	+	+	+

As a result of dispensary examinations, a number of 1-8 week old chicks with clinical signs of illness were selected for testing. It was found that during the disease, the average body temperature of chicks with pullorosis was 44.5°C, with streptococcosis it was 43.6°C, and with a mixed infection it was 44.9°C. The respiration rate was found to be 34 breaths per minute for pullorosis, 32 for streptococcosis, and 34 for the mixed infection. The average heart rate was 136 beats per minute for pullorosis, 134 for streptococcosis, and 133 for the mixed infection. These clinical indicators suggest that the disease is in its acute phase (Table 1).

Table 2.

Clinical condition of poultry infected with pullorosis, streptococcosis, and mixed infections at "Osiyo Maroqand" poultry farm

Indicators	Poultry with Pullorosis	Poultry with Streptococcosis	Poultry with Pullorosis and Streptococcosis
Number of heads	950	320	150
Body Temperature, °C	45.9	44.6	46.6
Heart Rate	137	133	139
Respiration Rate	35	33	35
Diarrhea	+	+	+

As a result of dispensary examinations at the **Osiyo Maroqand** farm, 1-8-week-old chicks with clinical symptoms were separated for testing. The study found that during the disease, the average body temperature of chicks with **pullorosis** was 45.9°C, with **streptococcosis** it was 44.6°C, and with a mixed infection it was 46.6°C. The respiration rate was found to be 35 breaths per minute for pullorosis, 33 for streptococcosis, and 35 for the mixed infection. The average heart rate was 137 beats per minute for pullorosis, 133 for streptococcosis, and 139 for the mixed infection. These clinical indicators suggest that the disease runs an acute course, and that a mixed infection of pullorosis and streptococcosis in poultry leads to a relatively more severe condition (Table 2).

Table 3.

Clinical condition of poultry infected with pullorosis, streptococcosis, and mixed infections at "Afrosiyob-Parranda" farm

Indicators	Poultry with Pullorosis	Poultry with Streptococcosis	Poultry with Pullorosis and Streptococcosis
Number of heads	535	223	140
Body Temperature, °C	42.0	44.1	46.8
Heart Rate	140.0	130	133
Respiration Rate	32	30	35
Diarrhea	+	+	+

At the "Afrosiyob-Parranda" farm, dispensary examinations of 1-8-week-old chicks with clinical signs of illness were conducted. The study found that during the disease, the average body temperature of chicks with **pullorosis** was 42.0°C, with **streptococcosis** it was 44.1°C, and with a mixed infection it was 46.8°C. The respiration rate was found to be 32 breaths per minute for pullorosis, 30 for

streptococcosis, and 35 for the mixed infection. The average heart rate was 137 beats per minute for pullorosis, 133 for streptococcosis, and 139 for the mixed infection (Table 3).

Pathomorphological examinations of the internal organs of poultry that died from pullorosis and streptococcosis in a natural environment revealed changes depending on the age of the chicken and the form of the disease. In chicks with pullorosis, hemodynamic disturbances, degenerative changes, necrosis, and subsequent granuloma formation were observed in the liver, kidneys, and heart. Additionally, hyperemia and edema in the lungs, and catarrhal enteritis were noted. In chicks with a mixed infection of pullorosis and streptococcosis, additional changes such as cuticulitis, catarrhal-fibrinous colitis, splenic hyperplasia, and hyperemia and degeneration of nerve cells in the brain were observed. In older chickens, damage to the ovaries and oviducts, peritonitis, cloacitis, the presence of gray-white necrotic foci, and the development of dystrophic changes were noted.

The diagnosis was established based on bacteriological, microbiological, serological, IFA, and PCR tests, as well as bioassay methods. Timely vaccination of chicks with an inactivated vaccine against pullorosis and streptococcosis was effective in preventing the disease. For treating or preventing the disease, antibacterial agents containing enrofloxacin, such as **Enrotim**, **Trienrokol**, **Enrofilon**, and **Enrogen**, were found to be highly effective against both pullorosis and streptococcosis.

Conclusions. Pathomorphological examinations of the internal organs of poultry that died from pullorosis and streptococcosis in natural conditions revealed changes that varied based on the age of the chicken and the form of the disease. Timely vaccination of chicks with an inactivated vaccine against pullorosis and streptococcosis was effective in preventing the disease.

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