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PHYSIOLOGY AND PREVENTION OF AVIAN FLU

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ABSTRACT:
the article discusses the physiology and prevention of avian influenza, as well as effective methods for diagnosing, preventing and controlling avian influenza.

Keywords: bacterial diseases, avian influenza, prevention, immunity.

Introduction

One of the promising sectors of agriculture in the Republic of Uzbekistan (RT) is poultry farming, the development of which is largely hampered by bacterial diseases that cause direct (poultry mortality, reduced productivity, low feed conversion, deterioration of the biological qualities of embryos, reduced hatchability, etc.) and indirect (immunosuppressive effect on the body, resulting in a decrease in post-vaccination antiviral immunity) economic damage.

For the prevention and treatment of these diseases, chemotherapeutic and biological agents are widely used. However, long-term and unsystematic use of antibiotics, sulfonamides, nitrofurans and other drugs has led to a decrease in the effectiveness of these antimicrobial agents due to the formation of resistance to them in pathogenic microorganisms, which determines the need for new effective drugs.

Avian influenza (influenza, classical fowl distemper, duck sinusitis, South African tern disease; Avium influenza , Influenza avium - lat.) - acute highly contagious disease characterized by damage to the respiratory and digestive organs, multiple hemorrhages and lethality.

The disease has been reported on all continents. It was first described in 1878 in Italy by Piranchito under the name "plague of chickens". At the beginning of the XX century. observed in almost all European countries, as well as in Egypt, China, Japan and the United States (Stubs , 1965). Over the past 20 years, according to the FLO, avian influenza has been established in 34 countries of the world.

According to Esterdey (1978), the appearance of influenza in the economy leads to catastrophic losses.

The causative agent of avian influenza is an RNA-containing virus, belongs to the family Ortomyxoviridae , genus Influenza A. Complement-fixing antigen (RNP) is related to human and animal influenza A viruses (horses, pigs). The pathogen is characterized by antigenic variability. By 1980 from of various bird species, 12 antigenic subtypes have been identified and described, differing in the structure of hemagglutinins and 8 in neuraminidase. Virions are characterized by spherical and filamentous shapes with a diameter of 80-120 nm . The surface of the virion is covered with spikes, which are oligomeric structural formations formed from glycoproteins and possessing either hemagglutinating or neuraminidase (NA) activity. The hemagglutinin "thorn" consists of three HA polypeptides with a molecular weight of about 80 thousand, which are organized into a rod-shaped structure approximately 14 nm long .

The epizootology of avian influenza is not well understood. There is no clear idea about the circulation of the virus in nature among wild birds, about the relationship and patterns of the appearance of influenza in poultry. Influenza viruses have been isolated from chickens, ducks, turkeys, quails, pheasants, terns and other bird species.

Birds are thought to play an important role in the spread of influenza viruses. It has been proven that attendants are capable of transmitting a pathogen from one flock to the birds of another flock.

The disease quickly spreads throughout the herd, then fades and may stop or become chronic. Cases are known when the outbreak of the disease is limited to only one age group, the herd.

Mortality among infected birds varies from 0 to 100%. Overcrowding of birds contributes to the spread of infection. Bird-to-bird transmission requires relatively close contact compared to, for example, Newcastle disease. There is evidence of vertical transmission of the virus from an infected turkey to its offspring through egg.

There are suggestions about the adaptation of avian influenza virus strains to humans or other animals, and vice versa. All strains of the virus, regardless of the animal species they affect, are capable of recombination in the process of reproduction in one system, resulting in the formation of new antigenically modified virus subtypes. In some cases, the strains isolated in poultry farms during the mass death of chickens turned out to be non-virulent under laboratory conditions. The latter testifies to the role in diseases of additional stresses: conditions of detention, the presence of secondary infections, such as mycoplasmosis, etc.

The source of the infectious agent is sick birds, with excretions and secrets of which a large amount of active virus is released. The route of infection is airborne. Virus transmission factors are infected exchange containers (trays for carcasses and eggs), feed, commercial products (carcasses of birds, eggs, feathers) received during the incubation period or from a sick bird. Wild birds (pigeons, sparrows, jackdaws and crows) can also play a certain role in the spread of the disease. Avian influenza occurs in the form of enzootic and epizootic.

The influenza virus can enter the body of a bird in various ways, according to mainly through the mucous membranes of the oral cavity, esophagus, respiratory tract and conjunctiva. Once in sensitive cells, the virus multiplies and after 6-12 hours inoculates all visceral organs.

Clinical signs of influenza vary greatly and depend on the biological characteristics of the strain of the virus and the background on which the disease proceeds (the age of the bird, its productivity, the presence of secondary infections). Depending on the clinical manifestation and course, influenza is divided into several forms: fulminant - a short incubation period (18-26 hours), rapid course and high mortality. This form of the disease is known as classical bird plague. It is characterized by: a sudden refusal to feed, the cessation of egg production, swelling of the head and cyanosis of the crest. Lethality 70-100% .

In an ill or vaccinated bird, intense immunity is formed only against an antigenically homologous subtype of the virus. The immune state is characterized by antibodies: neutralizing infectivity , hemagglutinating and neuraminidase activity, as well as complement-fixing and precipitating . A direct relationship has been established between the resistance of poultry to infection with the influenza virus and the titer of neutralizing and antihemagglutinating antibodies. The antibody titer in a dilution of 1:10 and above against 1000 ELD50 or 4 HAU characterizes intense immunity. The role of other types of antibodies in immunity is not well understood. It has been proven that antineuraminidase antibodies significantly reduce the release of the virus from infected cells and thus contribute to the protection of other uninfected cells.

It has been established that immune chickens transmit antihemagglutinins vertically through the egg. Chicks containing passive antibodies are immune to infection for 20-60 days after hatching . The level of passive antihemagglutinating antibodies can range from 0 to 1:128, depending on the antibody titer in laying hens.

Prevention and control measures. The main activities are aimed at preventing the disease. In the event of a threat of pathogen introduction, the bird is vaccinated with a killed embryonic vaccine in accordance with the instructions for its use. When the flu appears, the farm is quarantined. All sick birds are destroyed, and clinically healthy ones are vaccinated, midantan is fed with food for the first 7-10 days after vaccination . Due to antigenic variability, specific prophylaxis is significantly difficult. A high effect of immunization is achieved only with the complete antigenic compliance of the vaccine with the causative agent of the field strain.

Prevention of the development of resistance of pathogenic microflora to drugs, undesirable side effects, reduction of the course dose determine the effectiveness and efficiency of complex chemotherapeutic drugs in the prevention and treatment of independent and mixed bacterial diseases of birds.

One of the leading problems of modern veterinary physiology is the development of effective antibacterial agents, the search for which is carried out among synthesized and biologically active natural substances.

During the last decade, research in the region has expanded significantly. chemistry and biological activity of condensed derivatives of 1,3,4-thiadiazole, among which 1,3,4-thiadiazolo pyrimidines occupy a special place.

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