

Avian Zoonotic Diseases

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Article History

Received: 11. 07.2022

Revised: 24. 07.2022

Accepted: 28. 07.2022

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INTRODUCTION

‘Zoonosis’ is derived from Greek words zoon means animal and osis means ill. The 2008 Communicable Diseases Intelligence Report defines zoonoses this way: ‘A zoonosis is an infection or infectious disease transmissible under natural conditions from vertebrate animals to humans. Animals being hosts play vital role in spreading the infection in nature where humans are incidental hosts. Zoonosis can be defined as infestation or infection spread in nature either by man or other vertebrates.

TYPES OF AVIAN ZOONOTIC DISEASE

A. Viral Zoonoses

1. Avian Influenza (AI)
2. Newcastle Disease (ND)
3. West Nile Virus

B. Bacterial

1. Chlamydiosis /Psittacosis
2. Salmonellosis
3. Colibacillosis
4. Erysipelas
5. Pasteurellosis

C. Fungal

1. Histoplasmosis
2. Cryptococcosis
3. Aspergillosis

D. Protozoan

1. Sarcocystis

A. Viral Zoonoses

1. AVIAN INFLUENZA

Organism: Highly Pathogenic H5N1 avian influenza virus

Hosts: Birds, humans and other mammals such as pigs, tigers, leopards, ferrets, stone-marten and domestic cats.

Seasonality: Year round.

Transmission: Direct contact with infected birds, contact with surfaces contaminated with feces, oral or nasal discharge from infected birds. It eats raw or undercooked poultry and poultry products.

2. NEWCASTLE DISEASE

Organism: Avian paramyxovirus-1

Hosts: Birds

Seasonality: Generally March through September- breeding season

Transmission: Direct contact with affected birds, inhalation or ingestion of contaminated material. Survive in the environment, especially in feces.

3. WEST NILE VIRUS

Organism: Single-stranded RNA virus of genus Flavivirus; member of the Japanese encephalitis virus antigenic complex; arbovirus (arthropod-borne)

Hosts: Birds act as reservoir; humans, horses, most other mammals susceptible to infection but are dead-end hosts

Seasonality: Coincides with mosquito season (varies with geographic region/climate); peak incidence of human disease in North America occurs in late August and early September

Transmission: Transmitted by mosquito vector (*Culex* species)--Infectious mosquitoes carry virus particles in their salivary glands and infect susceptible animals/humans during blood-meal feeding.

B. Bacterial Zoonoses

1. CHLAMYDIOSIS /PSITTACOSIS

Organism: *Chlamydia psittaci*, intracellular bacteria excreted in the feces and nasal discharges of infected birds.

Hosts: Mammals (cattle, cats, goats, humans, pigs and sheep) and birds

Seasonality: Any time of year; active shedding increased by stress (shipping, crowding, chilling, breeding); important in colonial nesting birds

Transmission: Inhalation of aerosols, inhalation or ingestion of dry fecal contaminated materials (dust)

2. SALMONELLOSIS

Organism: Bacteria of genus *Salmonella* — *S. typhimurium* is the most common in wild birds in the US

Hosts: Birds, mammals and reptiles; bacteria living in intestinal tracts

Seasonality: Any time of year Transmission: Direct contact, contaminated food or water

3. COLIBACILLOSIS

Organism: *Escherichia coli* Gram-negative rod; serotypes 01, 02, or 078, but often untypeable Host: All avian species are susceptible to infection by *E. coli* including man.

Transmission: In Bird: The bacteria are shed from an infected bird in the fecal material as well as nasal and or ocular secretions. Outside of the host body, the organism is stable and may even become dusty which contaminates the air through aerosols. These aerosols are then inhaled by another possible host In Man: Eating poorly butchered and undercooked meat

4. ERYSIPELAS

Organism: *Erysipelothrix rhusiopathiae* is a Gram-positive, catalase-negative, rod-shaped bacterium. It grows anaerobically and aerobically and contains no endotoxin.

It is found largely in turkeys, budgies with eye disease and ducks, however, not limited to only this list. It can be contracted from the flesh of dead animals or contaminated soil around dead animals.

5. PASTEURELLOSIS

Organism: *Pasteurella multocida* is a Gram-negative, nonmotile, penicillin-sensitive coccobacillus belonging to the Pasteurellaceae family.

Transmission:

In Bird: All animals and birds may be colonized by this bacterium, especially throughout the respiratory tract and mouth.

In Man: Human *P. multocida* infection is generally associated with an animal scratch, bite, or lick, and may occur even without epidemiologic evidence of an animal contact.

C. Fungal Zoonoses

1. HISTOPLASMOSIS

Organism: Fungus *Histoplasma capsulatum*

Hosts: Grows in soil and material contaminated with bird or bat droppings; found in poultry house litter, caves, areas harboring bats, bird roosts (particularly starlings, grackles, red-winged blackbirds, and cowbirds).

2. CRYPTOCOCCOSIS

Organism: Cryptococcosis is a fungal disease caused by *Cryptococcus neoformans* or *Cryptococcus gattii*.

Transmission: The disease causing fungus, *Cryptococcus neoformans*, is usually found in

soil. It enters the body through lungs and cause infection. The infection once catch the body, may remain to the lungs or spread throughout the body.

3. ASPERGILLOSIS

Organism: A fungal infectious disease, caused by *Aspergillus fumigates*.

Diseases in Man: A fungus ball in the lungs may cause no symptoms and may be discovered only with a chest X-ray, or it may cause repeated coughing up of blood and occasionally severe, even fatal, bleeding. A rapidly invasive *Aspergillus* infection causes chest pain, cough, fever, and difficulty in breathing.

D. Protozoal Zoonoses

1. SARCOCYSTIS

Organism: Sarcocystis is a genus of protozoa. Species of the genus are parasitic in nature and infect mammals majorly however; some may infect reptiles and birds also.