

CHAPTER THREE

3. POULTRY DISEASES

I-BACTERIAL DISEASES OF POULTRY

AVIAN PASTEURELOSIS; Synonyms: fowl cholera

It is a peracute infectious disease that affect all poultry species and wild birds.

Etiology: caused by *pasteurella multocida*. It is a gram-negative bacteria.

Occurrence: it has worldwide distribution and notifiable in many countries. Adult birds are more frequently affected than younger stock.

Species affected: all species of bird are susceptible

Transmission: source of infection include carrier birds, clinically diseased poultry and their excretion and carcass of birds, which have died of the infection. It transmitted by inhalation and ingestion of contaminated feed and water. Infection also occur through conjunctival and wound

Clinical sign: the disease may occur in many forms: Per acute, acute, chronic and localized disease.

In per acute form: no premonitory sign, large numbers of birds in the flock found dead but in a good body condition.

In acute form: marked depression, anorexia mucus discharge from the orifices and fetid diarrhoea may be seen.

In chronic form depression, conjunctivitis, dyspnoea as well as lameness, torticollis and / or swelling of the wattles.

Post mortem finding: carcass congestion, petechation throughout the viscera, Necrotic foci in the liver and Oedema.

Diagnosis: based on history of the disease, clinical sign and gross lesion are helpful. Isolation of the organisms

Treatment: trimethoprim or sulphadiazine preparation in the feed and water Injection of affected individual with long acting oxy tetracycline.

Control: to eradicate infection, it is necessary to depopulate, to cleanse and disinfect building and equipments.

-Vaccination of animal also important.

SALMONELLOSIS

Salmonella pullorum and *salmonella galinarum* are highly host adapted to the chicken. Salmonella have major public health significance because contaminated food can be a source of infection to man.

FOWL TYFOID

Caused by *S. gallinarum*. It is egg-transmitted and produce lesion in chicks. Mortality at all age usually is high.

Transmission: by ingestion of contaminated food & water. Recovered birds remain carrier for long period of time.

Clinical sign: In acute cases, anorexia, drop egg production, depression, ruffled feather and their eyes closed, is a common finding. Respiratory distress with rapid breathing can occur but the most characteristic sign is a watery to mucoid yellow diarrhoea. In chronic progressive loss of condition and intense anaemia develops which produce shrunken, pale combs and wattle

Post mortem finding: have a swollen, friable and often bill-stained liver with or without necrotic foci. Enlargement of spleen and kidney may also occur.

Diagnosis: by isolation and identification of the organism

Treatment: furazolidone continuously in the feed for 10 days. Recently, Enrofloxacin has been used

Control: vaccination.

PULLORUM DISEASE: Synonym: bacillary white diarrhoea

Caused by *salmonella pulorum*. It usually cause high mortality in young chicken and occasionally in adult chicken

Transmission: is chiefly directly through the egg but also occurs by direct or indirect contact. Infection transmitted via egg or hatchery usually result in death during the first few days of life and up to 2-3 weeks of age.

Clinical finding: predominantly seen in chicken under 3 weeks of age. And the first indication is excessive number of dead-in-shell chicks and death shortly after hatching. Affected bird shows depression, respiratory distress, anorexia and white viscous dropping that adhere to the feather around the vent. A subacute form with lameness and swollen hock joints may be seen in growing birds and result in poor growth rate. Reduced egg production with lowered fertility and hatchability.

Post-mortem finding: in young birds, unabsorbed yolk sac; focal necrosis of the liver and spleen; and greyish nodules in the lung, heart and gizzard. In adult pericarditis, peritonitis or distorted ovarian follicles.

Diagnosis: based on post mortem finding, and isolation of the organism.

Treatment: no antibacterial are currently approved for the treatment of infected flock

Control: routine testing of breeding flock assure freedom from infection.

II-VIRAL DISEASES OF POULTRY

Marek's Disease

It is economically important neoplasms in poultry.

Etiology: caused by a *herpes virus*. Three genotypes are recognized & virus serotype 1 is the virulent chicken isolate.

Occurrence: Marek's disease is one of the most ubiquitous avian infections (worldwide)

Species Affected: Chickens are the only important natural host

Transmission: Marek's disease is highly contagious and is readily transmitted among chickens. The virus is released into environment from the epithelium of the feather follicle. It may survive for months or years in poultry house letter or dust. Infection usually occurs through aerosol exposure. Once infected chickens continues to be carriers for long periods and act as a source of infection.

Clinical Findings: Depression is noted prior to death. Sometimes transient paralysis is also noted. Chicken becomes ataxic for periods of several days, followed by recovery. This syndrome (transient paralysis syndrome) is rare in immunized birds,

Necropsy Finding: peripheral virus particularly the vagus, brachial and isciatic nerve become enlarged and lose their striations.

- ⇒ Diffuse or nodular lymphoid tumors may be seen in various organs, particularly in the liver, spleen, heart, lung, kidney, muscle, proventriculur and gonad.
- ⇒ The bursa is frequently atrophic.
- ⇒ Enlarged feather follicles (skin leukosis) may be noted in broilers.

Diagnosis: the disease occurs at any age over 3 weeks. Confirmation of a diagnosis may be made histologicaly (a mixture of tumor cells and reactive inflammatory cells) or by demonstrating the tumor-associated surface antigen on some of the individual cells by immuno fluorescence.

Control: Vaccination is the principal method of control.

NEWCASTLE DISEASE

An acute, rapidly spreading, viral disease of poultry in which the respiratory signs (coughing, sneezing and rales) are often accompanied or followed by nervous manifestations and infection with some strain, by diarrhoea and swelling of the head.

Etiology: caused by *paramyxo virus*. It has three strains: high virulent (Velogenic), intermediate (Mesogenic) and less virulent (Lentogenic).

Occurrence: The disease occurs worldwide in a variety of domestic and wild birds.

Transmission: Virus is shed during incubation, during the clinical stage and limited period during convalescence. Virus is present in exhaled air, in respiratory discharges, in faeces, in eggs laid during clinical disease and in all parts of the carcass during acute infection. Chickens are readily infected by aerosols and by ingesting water or food contaminated with the virus.

Clinical Findings: Respiratory or nervous signs or both occur in the most widespread forms of the disease. Signs appear almost simultaneously throughout the flock 2-15 days after exposure.

- Respiratory signs are gasping and coughing.
- Nervous signs include dropping wings, dragging legs, twisting of head and neck, circling, walking back ward (particularly after drinking water), depression, inappetence and complete paralysis. Laying flocks may have partial or complete cessation of production. Eggs become abnormal in colour, shape or surface and with watery albumen are produced.
- Viscerotropic signs are predominant in the peracute disease includes watery and greenish diarrhoea and swelling of the tissue around the eyes and in the neck.

Necropsy Findings: Petechiation may be seen on the serous membranes.

- ⇒ Haemorrhages of the proventricular mucosa and the intestinal serosa occur and are accompanied by necrotic areas on the mucosal surface.
- ⇒ Congestion and mucoid exudates may be seen in the respiratory tract, with opacity and thickening of the air sacs.

Diagnosis: Tentative diagnosis is based on history of rapidly spreading disease and signs associated with involvement of both the respiratory and nervous system. Confirmation by serology

Differential Diagnosis: Avian influenza.

Control: Live virus vaccines are widely used. Lentogenic strains, chiefly B1 and Lasota are administered in drinking water, nose or eye drops. Healthy chicks are vaccinated as early as the 4th or even the first day of life.

CHRONIC RESPIRATORY DISEASE (CRD); Synonyms: *infectious sinusitis*

CRD affects all parts of the respiratory tract and is characterized by being extremely responsive to stress factors.

Etiology: *Mycoplasma gallisepticum*.

Occurrence: It is prevalent in almost every tropical country.

Species Affected: The disease is economically important in chickens and turkeys.

Transmission: The major route is via the egg and the disease continues from generation to generation by embryonic transmission.. Air born transmission is also common and can occur rapidly among pen mats or between pens. The infection may be dormant in the infected chick for days to months, but when it is stressed, aerosol transmission occurs rapidly and infection spreads through the flock.

Live virus vaccination, natural virus infection, cold weather or crowding may initiate the spread. In addition, the infection may be carried by person, by fomites or by infected birds introduced into a clean flock.

Clinical Findings: Affected birds have varying degrees of respiratory distress, slight to marked rales, difficulty in breathing, coughing and sneezing. Morbidity is high and mortality low in uncomplicated cases.

Feed efficiency and weight gain are reduced. In laying flocks, birds fail to reach peak egg production and the production rate is lower than normal.

Necropsy Findings: uncomplicated CRD infection in chicken result in relatively mild sinusitis, trachitis and air sacculitis. E. Coli infection is concurrent and results in severe air sac thickening and turbidity, with exudative accumulations, fibrino-purulent pericarditis and per hepatitis.

Diagnosis: Because of many poultry diseases that produce lesions in the respiratory tract, accurate diagnosis of CRD from lesions alone cannot be made. It can be confirmed by isolation and identification of the organism.

Differential Diagnosis: Infectious coryza, laryngotrachitis, etc...

Treatment: In the field many cases of CRD infection are complicated by other pathogenic bacteria, thus, effective treatment must also attack the secondary invader. Most strains of the organism are sensitive to a number of antibiotics (such as oxytetracycline, streptomycin, etc) and tylosin. Twenty two

Control: Avoid stress of any kind

- Introduction of birds from endemic farms or areas has to be prevented.
- Workers and other personnel do not move from flock to flock on the same day.
- Vaccination is used to control the disease but not fully reliable.