

Newcastle Disease (ND)

Definition:

It is acute or subacute contagious disease of domestic and wild birds, characterized by respiratory symptoms, digestive symptoms and often with neurological signs.

Etiology:

*The disease is caused by **Paramyxo virus 1**, There are 9 types of paramyxovirus. single strand RNA.

According to virulence, the virus can be divided to:-

Lentogenic - mild

Mesogenic - moderate

Velogenic - highly virulent neurotropic or viscerotropic

Susceptibility:

1-Chicken and Turkey are very sensitive to infection.

2-Ducks, geese, Pigeon are sensitive.

3-Man can get infection causing conjunctivitis, headache, and fever.

Transmission of disease:

- The main route of infection transmission are **respiratory** and **orally** by direct or indirect way.

1-Movement of birds e.g pet bird, wild bird, game bird, commercial poultry.

(Infected bird shed virus for several day after infection).

2-Contact with other birds.

3-Movement of people (worker,visitor,veterinarian) and equipment,Vehicle,tools.

4-Contaminated poultry feed, water.

5-Vaccines.

Incubation Period: Vary from (2-15).

Clinical Signs: depend on many factors:-

1-Virulence of the strain: the more virulence strain, the more pathogenic and high mortality.

2-Age of bird: all age birds are susceptible but young birds are more susceptible than old one.

3-Immunity status of the bird: the more immune bird is the more resistance than non-immune one.

4-Healthy condition of the bird: healthy birds are more resistance to disease than non-health one.

5-Temperature of the environment: in winter the susceptibility to infection is higher than in summer.

The disease has three categories:

1-Acute: the mortality rate **90%** and duration of the disease (**3-8**) days.

2-Subacute: the mortality **50%** and duration of disease (**8-20**) days.

3-Mild: the mortality (**5-10%**) and duration of disease (**20-30**) days.

The main clinical signs:

1-Extremely virulent viruses, the disease may appear **sudden death**, with **high mortality**, in absence of clinical signs.

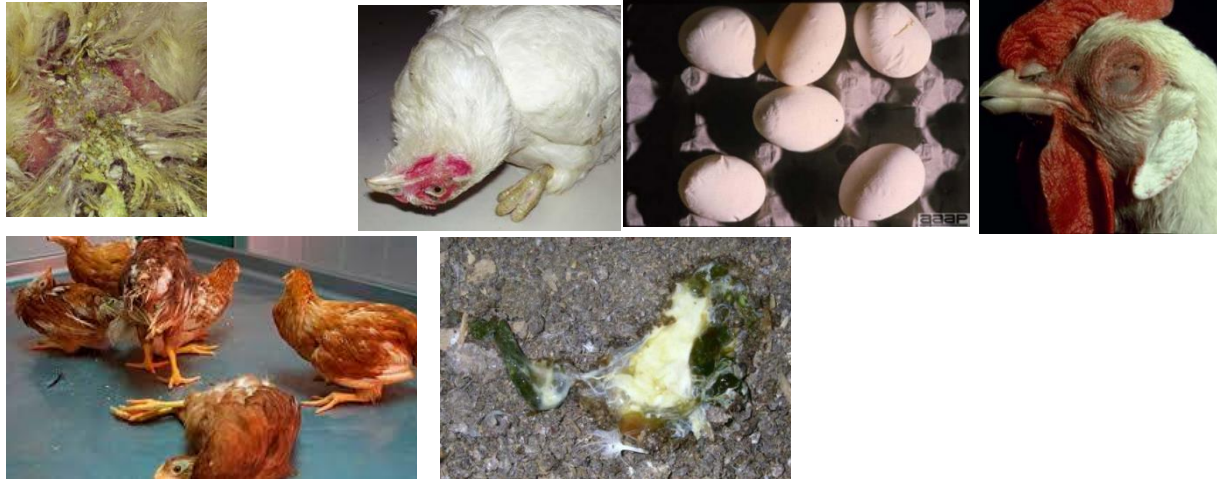
2-Respiratory form, this type characterized by gasping, coughing, nasal discharge, lacrimation, this form frequently followed (1-2) day by neurologic signs.

3- Neurological form, this type characterized by **paralysis** of legs and wings, torticollis, convulsion, tremor and moving in circle.



4- In addition to the above forms, **green diarrhea** , weakness and anorexia.

5-**In imature and mature birds:** there is **drop in egg production**, shell-less, pigmented eggs, thin shell.



Gross lesion of ND:

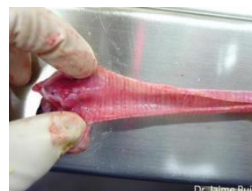
1-In **acute or subacute**, there is **Petechial hemorrhage** in **viscera**, air sac, serous membrane particularly in the **proventriculus**.



2-In **subacute**, there is **hemorrhagic ulcer** on the **mucous membrane** in intestine, and lymphoid tissue such as **cecal tonsils** and **peyer's patches**.



3-There is necrosis of visceral organ such as spleen which is **mottled**.



4-**catarrhal inflammation** of the digestive and respiratory tract.



Diagnosis of ND:

1-Clinical signs.

2-**P.M lesion** (gross lesion).

3-Serological test such as(**Haemagglutination inhibition test**, fluorescent technique, **ELISA, PCR**).

Control and prevention:

- 1- Good management and biosecurity
- 2-Burn the carcass.
- 3-**Emergency vaccination** by spraying vaccine.
- 4- For control the disease, we can vaccinate the birds using **different programs** according to epidemiology of the area or presence or absence of the diseases.

Types of Vaccination of ND:

1-Live attenuated vaccine:

- In **Broiler**, we can use **3-4** times vaccination.
- Layer and Breeders, we can use **7-8** times.
- The route of administration may be by **drinking water, eye drop and spraying.**

2-Killed vaccine:

We can use it at the age of **16-18** week.

- The route of administration is by two routes either Intramuscular (**I.M**) or Subcutaneous (**S.C**) route.

INFECTIOUS CORYZA

Definition:

An acute or subacute disease rapidly spreading respiratory of chickens, characterized by conjunctivitis, oculonasal discharge, swelling of infraorbital sinuses, edema of the face, sneezing, and sometimes by infection of the lower respiratory tract.

Etiology:

The etiologic agent is *Hemophilus paragallinarum* and *H. gallinarum*.

Incubation Period:

One to three weeks or may become chronic and persist for several months.

Age susceptibility:

All ages of chickens are susceptible although most natural outbreaks occur in chickens that are half grown or older.

Method of Spread (transmission):

- * Chronically ill or apparently healthy carrier birds are the major reservoirs of infection and readily transmit the agent to susceptible chickens.
- * Transmission probably occurs by inhalation of infectious aerosol coughed into the air or through ingestion of contaminated feed or water.

Morbidity and Mortality:

Infectious coryza is usually characterized by **low mortality** and **high morbidity**, but poor management and unsanitary condition as well as secondary infection will increase mortality.

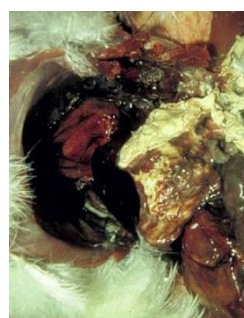
Clinical Signs:

1. Usually there is a rapid onset and morbidity is high in the flock. Feed consumption, egg production or growth are reduced .
2. There is oculonasal discharge, conjunctivitis , edema of the face (occasionally of the wattles), respiratory noises and diarrhea. Later, some of the birds may have swollen infraorbital sinuses .
3. Respiratory signs usually persist . Persistence of signs occurs when complicated by **fowl pox, M. gallisepticum, infectious bronchitis, or infectious laryngotracheitis** .



Postmortem Lesions:

1. There is catarrhal inflammation of nasal passages and sinuses .
2. There is conjunctivitis with accumulation of cheesy exudate in the conjunctival sac.
3. edema of the face and, occasionally, of the wattles.
4. In complicated cases there may be trachitis or airsacculitis.



Diagnosis:

1. Typical history, signs, and lesions are suggestive of coryza.
2. A smear of sinus exudate should be made and Gram stained. It should reveal Gram-negative, bipolar-staining rods .

3. PCR test specific for A. paragallinarum.
4. Hemagglutination inhibition can be used to detect A. paragallinarum antibodies in serum.

Differential Diagnosis:

Infectious coryza must be differentiated from other diseases such as **chronic respiratory disease, chronic fowl cholera, fowl pox, swollen head syndrome.**

Control:

1. Depopulate, if necessary, to eliminate all carrier birds.
2. vaccination can be used to immunize chickens and protect .

Treatment:

- 1/ Various sulfonamides and antibiotics have been used , usually in feed or drinking water.
- 2/ Erythromycin and oxytetracycline are commonly used in layer .