

NEWCASTLE DISEASE



This disease
is known to
occur in
Afghanistan.



1. Definition

Newcastle disease (ND) is a highly contagious systemic viral disease of poultry causing significant morbidity and mortality and often occurring in outbreak form.

2. Etiology

The causative agent is Newcastle disease virus (NDV), also known as avian paramyxovirus-1 (APMV-1), and is a member of the Genus *Avulavirus* in the Family Paramyxoviridae. Newcastle disease viruses are divided into two classification schemes, both are reflective of virulence. In the older classification, viruses were velogenic, mesogenic, and lentogenic, with the velogenic viruses being of most concern. In the newer system, NDVs are classified according to an intracerebral pathogenicity index (ICPI) and higher scores using this system are indications of virulence (>0.7 is considered virulent).

3. Transmission

Secretions and excretions from sick birds contain abundant virus. Disease is transmitted through contact and fomites. Insufficient cleaning of cages is a common means of transmission.

4. Species affected

More than 250 species of birds can be infected with NDV. The disease is recorded most commonly in domestic birds. NDV can infect humans

and will cause a self-limiting conjunctivitis, most commonly seen in poultry workers.

NDV can cause a mild zoonotic illness!

5. Clinical signs

The incubation period is 2-15 days. Morbidity is usually very high. With mild strains there may be a slight drop in production or mild respiratory disease. With the velogenic isolates, disease takes one of two forms - viscerotropic or neurotropic. In the neurotropic form, birds become progressively depressed and disoriented, with torticollis and opisthotonus preceding paralysis and inability to right themselves. In the viscerotropic form, which is more rapid than the neurotropic form, birds are very depressed, may have conjunctivitis, and develop diarrhea. Mortality with the velogenic strains is close to 100%.

6. Pathologic findings

Gross lesions are only seen with the viscerotropic velogenic strains. The most characteristic feature is an enlarged, friable and mottled spleen (necrosis), and hemorrhage in the cecal tonsils and other lymphoid patches in the intestines. Other possible lesions include pancreatic necrosis and pulmonary edema. With the neurotropic strains, even though neurologic signs may be dramatic, all tissues, including brain, may be grossly normal.

7. Diagnosis

Velogenic Newcastle disease cannot be reliably distinguished from highly pathogenic avian influenza on clinical and gross findings alone. Laboratory testing is required to confirm diagnosis, and involves hemagglutination and/or PCR. Differential diagnosis for velogenic Newcastle disease includes: avian influenza, fowl cholera, Gumboro

disease, lack of ventilation (heat stroke), or lack of water (severe dehydration).

8. Treatment

There is no effective treatment for birds infected with NDV.

9. Prevention and Control

The most reliable means is to prevent introduction of the disease into a flock. Vaccines are commercially available but protect against the milder strains primarily and will not completely protect against challenge with the velogenic isolates.



NDV - enlarged, mottled spleen



NDV - Hemorrhage seen through the wall of the intestine, cecal tonsils