



Immune efficacy of an infectious virus in old chicks caused by newcastle disease

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DESCRIPTION

A highly contagious and fatal form of Newcastle disease is known as Viscerotropic Velogenic Newcastle Disease (VVND). Newcastle disease was first discovered in Indonesia in 1926, but it was later named after the city of Newcastle, England, where the disease first broke out in 1927. Some virus strains attack the nervous system of infected birds. Others attack the respiratory and digestive systems. Lentogenic strains are the most common but cause the least disease. Severe Newcastle disease can lead to sudden death without any obvious symptoms, but the most common symptoms of newcastle disease are coughing, sneezing, runny nose, greenish/watery diarrhea, and depression. Mortality in unvaccinated birds can reach 100%, and birds may die without clinical signs of disease. Vaccination is recommended and widely used, but does not completely prevent it.

Birds affected by this disease include chickens, turkeys, geese, ducks, pheasants, partridges, guinea pigs, and other wild and captive birds, including raptors such as ostriches, emus, and rhea. Humans are usually unaffected, but humans who come into direct contact with infected birds can develop a very short-lived eye infection that goes away without treatment. It may be present in a very acute form with high hemoglobin, or as a mild disease with the only recognizable clinical signs of dyspnea and reduced egg production. Asymptomatic forms of newcastle disease and many intermediate forms of the disease can also occur. This disease is highly contagious. When the virus is introduced into a susceptible flock, virtually all birds become infected within 2-6 days. The disease is transmitted through direct contact with the bodily fluids of infected birds, especially their droppings. Control is aimed at strains with high virulence (the ability to cause severe disease). Newcastle disease can be transmitted to poultry indirectly through contact with infectious pigeons and other wild birds, or contamination of feed or objects.

Infected birds shed the virus in exhaled breath, respiratory debris, and feces. The virus is shed during a variable limited period of latency, clinical phase, and recovery. The virus may also be present in eggs laid during clinical manifestations and in all parts of carcasses during acute NDV infection. Hens are easily infected by aerosols or ingestion of contaminated water or feed. Infected chickens and other poultry and wild birds can be the source of NDV. Newcastle disease virus can severely damage the reproductive organs of laying hens, leading to reduced egg production and quality. However, the mechanisms of severe pathological damage in the oviducts of laying hens after NDV infection have not been fully elucidated.

There are vaccines for chickens, turkeys, and pigeons and they are used to induce antibody responses. Vaccinated animals must be exposed to large doses of NDV to become infected. Unfortunately, NDV vaccines do not provide sterile immunity and in many parts of the world, vaccines are used to prevent loss due to illness and death. Live lentogenic vaccines, mainly for strains B1 and LaSota, are widely used and are usually administered to poultry by bolus application or spraying in drinking water. The mucosal immunity induced in vaccinated birds by live vaccines administered in this manner was shed by vaccinated birds when infected with NDV compared to the immune responses induced by inactivated vaccines. NDV reduces the number of mass vaccination laws which are not labor intensive but can lead to <85% of the herd gaining immunity. This is necessary for herd immunity. Tracheal and cloacal swabs are usually taken from live birds, but fresh feces may be used instead of cloacal swabs if collecting cloacal swabs may harm the bird. Herbal medicines are used as immunomodulatory agents and have the potential to replace conventional treatments. Echinacea purpurea is one of the most promising botanical additives due to its immunostimulatory and enhancing properties.

Newcastle disease can be diagnosed by isolating the APMV-1 from live or recently dead birds. Tissues commonly collected at necropsy include the spleen, lungs, intestines (especially tonsils of the cecum), intestinal contents, liver, kidneys, heart, and brain.