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Duck hepatitis

Introduction

Duck hepatitis is a rapidly spreading fatal disease of ducklings. The main feature is hepatitis and the disease is caused by duck hepatitis virus. The disease was first seen in 1945 but it was not until an outbreak on Long Island, New York, USA, that the causal virus became known as duck virus hepatitis virus type 1. In this outbreak some 70 or more farms were severely affected. Typically 2-3 week old ducklings were affected and on some farms losses exceeded 95%.

The causal agent

Duck hepatitis type 1 virus is a picornavirus. This virus is quite resistant and is able to survive 2-3 months in the environment and up to 40 days in faeces. In cool temperatures the virus can survive longer periods, for example, at 4°C the virus can survive for two years or longer.

The disease

Duck viral hepatitis 1 typically occurs in young ducklings. Adult ducks on the same site are invariably unaffected. In the field, duck hepatitis type 1 spreads rapidly within a flock causing high mortality. Egg transmission appears not to occur and ducklings from breeders on infected farms remain clear of the disease if they are reared on a clean farm. Recovered ducks can excrete duck hepatitis virus for a couple of months post infection. Wild birds have been implicated in the spread of this disease but no evidence of infection has been found in wild waterfowl.

The clinical picture

This disease has a rapid onset and virtually all the mortality occurs within 3-4 days. Affected ducklings tend to squat and half close their eyes. The ducks then fall on to their sides, kicking spasmodically and die in opisthotonus (with their heads thrown back). Death is often within an hour of first seeing clinical signs. In very young ducklings morbidity and mortality approaches 100%, in birds aged 1-3 weeks old it is 50% or less and by 4-5 weeks of age morbidity and mortality are very low or non-existent.

Pathology

The main lesions of this disease are in the liver and comprise of hepatomegaly accompanied by small haemorrhages and discolouring of the liver's surface. Splenomegaly accompanied by splenic mottling is sometimes seen and the kidneys are often enlarged.

Immunity

Ducklings recovering from duck virus hepatitis type 1 infection acquire a robust immunity. If infection occurs in breeders they develop immunity and their offspring acquire a passive or maternal immunity. Unfortunately, blood testing has not been found to be of value in the diagnosis of acute outbreaks of this disease because, by the time antibodies develop, the diagnosis has usually been obtained by other means

Treatment

No successful treatment is available although the administration of serum from immune ducks can give protection. This approach was used in the Long Island duck industry for some time.

Prevention

Strict isolation of duck flocks for the first 4-6 weeks of their lives is critical in areas where this disease occurs. Vaccination is an effective means of preventing this disease and has been successfully used many times. Attenuated and inactivated vaccines have been used in breeders, while in ducklings live attenuated vaccines have been used successfully.

Duck hepatitis type 2

This disease is very similar to duck hepatitis type 1 but is caused by a totally different agent (an astro-like virus). The disease was seen in Norfolk, UK and disappeared in 1969 only to reappear on three farms in 1983-4. Losses were 50% in two week old or younger birds reducing to 10-25% in 3-6 week old birds. There have been no reports of this disease since 1984.

Duck hepatitis type 3

This disease has only occurred in the USA and was first seen in ducks that were immune to Duck hepatitis type 1 infection. This disease is thought to be also caused by a picorna virus. The disease is milder than the other two, although clinically the disease is very similar to duck virus hepatitis type 1.