



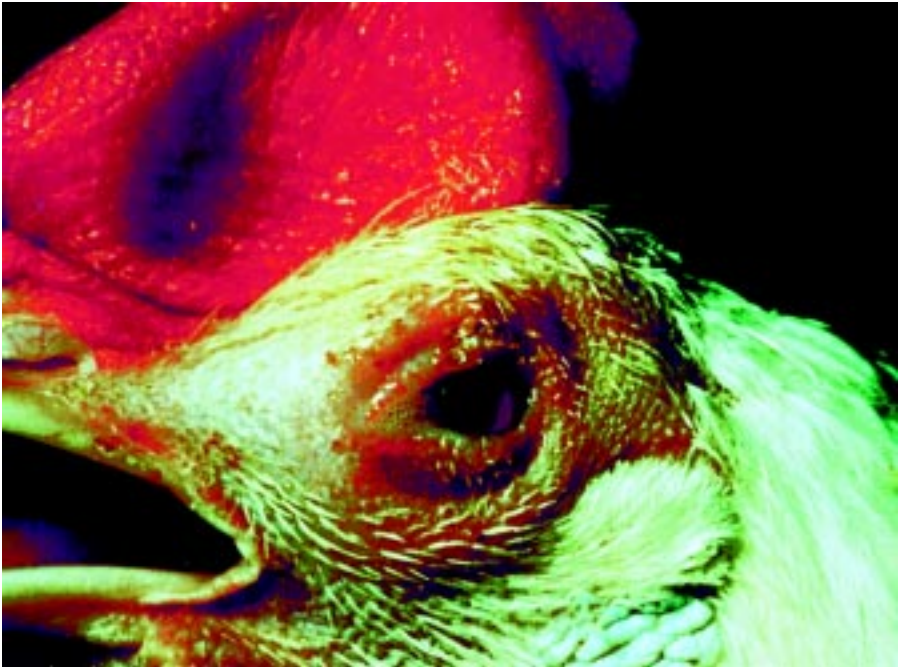
Animal Health
Advisory Leaflet **8**
1996

SOUTH PACIFIC COMMISSION

NEWCASTLE DISEASE

&

AVIAN INFLUENZA



Bird with Newcastle disease showing severe respiratory difficulty and conjunctivitis

NEWCASTLE DISEASE (ND) and **AVIAN INFLUENZA** (AI) are two viral diseases of poultry which can cause major economic losses. Although there have been outbreaks of AI in Australia (which were successfully eradicated), there is no evidence to indicate that the diseases are present elsewhere in the region.

Newcastle Disease

ND is caused by avian paramyxovirus type 1. A number of strains of the virus exist and although these strains cannot be differentiated serologically, they cause different disease syndromes. These syndromes vary from non-pathogenic with no detectable signs to extremely virulent with high mortality.

Clinical ND was last recorded in the region in 1932 in Australia.

Infection

Spread of the virus is largely by aerosol (virus suspended in droplets of moisture) from the respiratory systems of infected birds. Infection occurs following inhalation of virus. Mechanical spread is also known where virus is carried on objects (fomites). Infection can occur as a result of ingestion of virus but this is less common.

ND can infect humans and cause conjunctivitis.

Clinical Signs

Clinical disease is usually described as being neurotropic (exhibiting nervous signs), pneumotropic (respiratory signs) or viscerotropic (causing bleeding and ulceration of the intestines). However, most cases show a combination of all three types, but with one type predominating.

In most outbreaks, birds become depressed and reluctant to move. If a neurotropic strain is involved, there will be drooping of the wings, followed by inco-ordination followed by inability to stand and twitching of the head and neck. There is usually a greenish diarrhoea. In the respiratory form the birds may have extreme difficulty in breathing as they stand with their necks extended. Death from respiratory failure is usually rapid.

Post-mortem Findings

Although the lesions on post mortem may be quite variable, those seen in the pneumotropic form may be indistinguishable from other acute respiratory diseases. The main lesions are inflammation and the presence of mucous in the trachea (windpipe), clouding of the airsacs and small haemorrhages (petechiae) in the heart fat and pleural fat. Haemorrhagic areas are also present in the proventriculus, gizzard and intestine. In laying birds there may be haemorrhages in the ovary and soft, irregular egg follicles (yolks) in the ovary.

Infection with a strain which has low virulence may cause few clinical signs but will make the bird more susceptible to secondary infection which will present clinical signs that are not typical of ND.

Diagnosis

The widely varying clinical signs are never satisfactory for a definite diagnosis of ND. This can only be confirmed by serology (the haemagglutination inhibition test) and by virus isolation. This tests can only be carried out in laboratories specifically equipped for them.

Blood samples should be collected from affected birds and the serum separated. It is essential that information is obtained on the vaccinal status of the birds, because previous vaccination for ND may confuse the test.

For virus isolation, samples should be collected from the trachea, lung, spleen, bone marrow and intestine. These will be homogenised and injected into embryonated hen's eggs where the effects of the virus can be evaluated.

Differential diagnosis

Outbreaks of ND may resemble many other poultry diseases such as infectious bronchitis or infectious laryngotracheitis. In acute outbreaks there may be high mortality with few clinical signs, as in acute avian influenza, whereas milder strains complicated with secondary infection may present as *E.coli* septicaemia or mycoplasmosis.

Control

Although very mild strains of ND have been found in most countries, there is no evidence that the highly pathogenic (disease producing) forms are present in the region. It is very important to maintain quarantine measures to prevent the introduction of the disease. These involve preventing the importation of live birds and poultry products from countries where the disease is present.

If the disease is introduced and becomes established, some measure of control can be achieved by the use of vaccines. Vaccination is effective in controlling the losses associated with ND in commercial flocks, but losses are high at the village and smallholder levels because it is very difficult to carry out widespread vaccination programmes.

Treatment

There is no treatment for ND.

Avian Influenza

AI is caused by an *Orthomyxovirus*, a virus similar to the virus which causes human influenza. Like human influenza and

Newcastle disease, avian influenza has many strains which cause diseases of different severity. Most outbreaks of AI affect turkeys and ducks, with chickens less frequently affected. Outbreaks of AI have occurred occasionally in the region - the last reported case was in Australia in 1994 and was caused by migratory waterfowl. The outbreak was eradicated by a "stamping out" policy.

Infection

Infection of susceptible birds is by direct contact. The virus is excreted in the faeces and mucous discharges from the eyes and nasal chambers. Mechanical spread between farms is also important. The very pathogenic form of the disease now occurs only rarely.

Clinical Signs

In outbreaks of highly pathogenic forms of the disease, the first clinical sign could be the sudden death of a large number of birds. Other birds show respiratory distress, discharges from the eyes, sinuses, dark coloration of the wattles and comb and diarrhoea. Laying birds will experience a sudden drop in egg production.

Milder forms of the disease will present less severe signs and lower mortality unless secondary infections become involved, in which case the underlying cause may be difficult to establish and mortality may be high.

Post-mortem findings

Lesions are non-specific and very variable, depending upon the severity of the disease and the involvement of other organisms. In some cases there may be swellings of the head and neck. Such swellings are never found in ND. There are no clearly defined changes which can be considered diagnostic.

Differential Diagnosis

AI can only be differentiated from other acute poultry respiratory diseases such as ND by serological tests (Agar gel immuno-diffusion test) and virus isolation. Samples for virus isolation should be taken from the trachea, lungs, airsacs, cloacal swabs and faeces.

Control

The maintenance of strict quarantine controls to prevent the introduction of the virus is essential. The diagnosis of AI will usually cause other countries to apply restrictions on the import of poultry products until the disease has been shown to be contained.

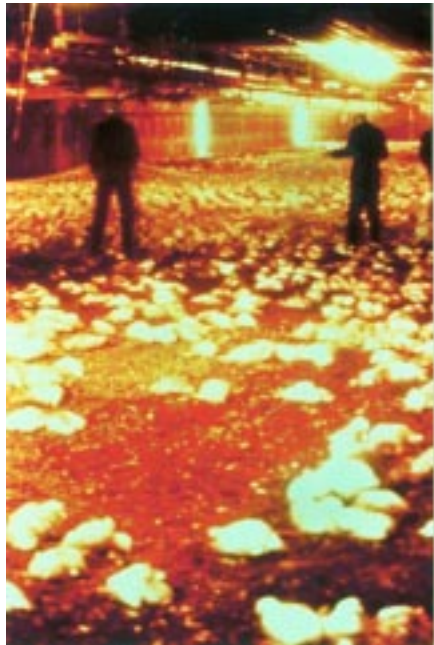
Slaughter or “stamping-out” policies are usually applied to prevent the spread of virus if the outbreak is confined. This has been applied effectively in recent outbreaks in Australia.

Treatment

There is no treatment for avian influenza.



Haemorrhages in the trachea may be present in both Newcastle disease and avian influenza.



High mortality rate associated with Newcastle disease or avian influenza

This leaflet was prepared by Peter Saville, Animal Health Adviser, South Pacific Commission, Suva, Fiji, from whom further information can be obtained. The photographs were provided by Solway Animal Health, Inc., 1201 Northland Drive, Mendota Heights, MN 55120-1149, USA.

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