Pigeon herpes virus

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Herpes virus infection of pigeons appears worldwide. According to new serological examinations, in certain areas (for example in Belgium) even 80% of the lofts may be infected. The virus was first isolated in 1945 when it was proven that a disease previously diagnosed as ornithosis responsible for the necrosis of intranuclear inclusions and internal organs is caused by a previously unknown virus which is immunologically different from ornithosis but often occurs together with it.

Etiology

The virus is enveloped, small and of cubic symmetry and it is a double-stranded DNA virus (Figure 1). On its surface, certain glycoproteins have immune suppressive effect. It is slightly resistant but is able to stay alive in phlegm for weeks.

Epidemiology

Pigeon herpes virus is strictly species-specific so its transmission and preservation depends exclusively on pigeons. Infection is spread by aerogen ways or by phlegm and contaminated objects (feeder, drinker, contaminated transport vehicle), many times during races. Both sporadic and acute epidemics may arise within the loft; the latter may even result in a 10% death rate.

In lofts naturally infected by the virus a part of the adult pigeons carry the infectious agent in a latent way and pass it down to their descendants. After the primary infection, the majority of nestlings later become asymptomatic carriers themselves. A disease is usually formed in animals younger than 6 months old who are the descendants of parents not carrying the virus or in pigeons that are carriers and have a decreased resistance due to other factors independent of herpes virus.
Symptoms

In most cases herpes virus does not cause visible clinical symptoms. It only weakens the pigeon’s immune system locally thus creating an opportunity for the colonisation of other pathogens, especially bacteria.

Marked symptoms mainly occur in pigeons younger than 6 months. At this age, the infection may cause death after 3-4 days of sickness. The two main, classic symptoms of the disease are serous-catarrhal conjunctivitis (mainly one-sided, constant lachrymation, ophthalmitis and a so-called pond formation on the feathers around the eye) and the formation of greyish white, necrotic nodules in the mouth, larynx and pharynx (Figure 2). Further characteristic symptoms: lack of appetite, greenish diarrhea, lethargy, interstitial pneumonia, cold and nasal catarrh. When setting up the diagnosis it should be taken into account that this whole scale of clinical diseases almost never appears at the same time.

Certain strains of herpes virus may cause neurological symptoms which highly resemble the symptoms caused by Paramyxovirus: torticollis, pathological head movements, tremors, uncertain walk, partial paralysation of wings, paralysation of the legs, inability to walk and fly, wobbling, deteriorating coordination skills. The latter is especially dangerous in case of homing pigeons as the animals can easily get lost during a race.

In practice we hardly ever meet herpes virus on its own. Furthermore, as we have mentioned before, herpes viral disease may remain latent for a long time or may cause symptoms that are hardly or not at all detectable. Therefore many times the symptoms mainly depend on the secondary pathogens that can be: Chlamydia (ornithosis), Escherichia coli, Mycoplasma, Salmonella, Pasteurella, Streptococcus, Trichomonas, etc. In such cases, pigeons relapsing into the same illness in a short time or getting infected by facultative pathogens found in its environment following the treatment of a secondary disease may raise suspicion of a herpes virus infection.

Pathology

During pathological and histopathological examinations, nodular necrotic pancreatitis, interstitial inflammation of the kidney and hepatomegalias can be detected, accompanied by nodular necrotic or haemorrhagic hepatitis.

In a few cases pathological epithelial changes can be observed in the animal’s crop; in rare cases the mucous membrane of the small intestine is burgundy red, with watery and bloody content and necrotic, fibrin-like accretions can be found in the trachea.

Laboratory diagnostic procedures

1. **Isolation on tissue culture:** This is one of the most reliable methods. Its disadvantage is that it is quite expensive and takes a long time.
2. **ELISA:** Although it would be pretty easy and cheap to diagnose infected animals with this method, unfortunately an ELISA test for pigeon herpes virus is currently not available in the ordinary course of trade.
3. **PCR:** It is a relatively new and quick method with high sensitivity and specificity but it is also quite expensive. Its great advantage is that it is also able to detect latent infection.
Defense, prevention

In case of lofts not yet infected by the virus the aim is to restrain the virus. Therefore, pigeons should be actively immunised. Currently only one kind of vaccine (Pharmavac columbi 2 inj a.u.v) is available which has a herpes virus component besides the paramyxovirus component. The vaccine provides protection against the virus for one year. As herpes virus infection in Hungary is quite frequent (it often spreads during transportation to races, exhibitions or among pigeons in crowded housing conditions), to ensure protection it is recommended to vaccinate the animals twice (particularly the lofts infected by circovirus), with a 3-4 week long break between the two vaccinations. This process is called boostering and it means that, compared to one-time vaccination, more antibodies are produced in pigeons which guarantees lasting protection. Naturally, by improving housing and transport conditions, double vaccination could be avoided but this is not likely to happen in Hungary in the next 5-10 years.

In the infected lofts the aim is to decrease virus incidents and to prevent the infection of nestlings. There are two possible cases: the virus might be in the stage of viraemia or in the latent stage.

In the stage of viraemia, vaccinating both infected and seemingly healthy pigeons is prohibited and the animals should only be treated for secondary diseases. For treating eye symptoms, Tubocin eye drop or Oculoguttae Tubocini FoNo is perfect. It should be used for a minimum of one week, 5 times a day.

In case of lofts in the latent stage or not yet infected by herpes virus, nestlings should be vaccinated first at 4-6 weeks old then – due to the above mentioned reasons – it is advised to repeat the process after 3-4 weeks.kell adni, majd - a fent említett okokból kifolyólag - 3-4 hét múlva érdemes megismételni.

The timing of vaccinations

It is worth including defence against herpes virus in the immunisation schedule. The advised time for the first vaccination is December. In lofts where double immunisation is needed, the second vaccine should be given 3 weeks after the first one. In case of seriously endangered lofts the second immunisation should be timed for the end of January because this way the level of antibodies will be the highest during the period of egg production both in pigeons and in eggs, so the hatchlings and few days old nestlings will also have an effective defence.