

VIRAL INFECTIONS

Enzootic bronchopneumonia, Bovine respiratory Disease (BRD)

3 - 12 months of age, autumn-winter seasons are frequent.

Factor is multifactorial

Predisposing factors are generated by viral agents (PI-3, adeno-, re-viruses; respiratory syncytial virus, IBR, MD et al.).

Interstitial pneumonia, as a result of secondary infection (Corynebacterium pyogenes, Pasteurella spp. Chlamydia sp., Hemophilis sp, Streptococcus sp., Staphylococcus spp., Pseudomonas aeruginosa et al.) Results in the return to purulent, abscess, fibrinous pneumonia.

In the case described as lung bowel syndrome, diarrhea d is increased as a result of changes in the small bowel.

MYXOVIRUS INFECTIONS

They usually cause catarrhal infection of the upper respiratory tract

Pneumonia is secondary

PIG INFLUENZA

Influenza virus is generated by type 3

It can start spontaneously and influence the entire flock.

Verminous pneumonia

it is seasonal

Secondary infection is seen (hemophilus, pasteurella ..)

With the spread of the fire in the upper respiratory tract, interstitial pneumonia (anterior parts) may be secondary pneumonia with secondary infection.

EQUINE INFLUENZA

Ortomyxovirus, influenza A (equi virus type I)

Inhalation

Virus replication in ciliated epithelium

Lysis of ciliated epithelium

**Necrotizing bronchitis / bronchiolitis /
bronchointerstitial pneumonia**

BOVINE PARAINFLUENZA - 3 INFECTIONS

It causes inflammation of the upper respiratory tract characterized by mucous membrane discharge.

LUNG

forms the interstitial pneumonia in the form of pure (primary) infection. It participates in Shipping fever and enzootic pneumonia in the form of secondary or mixed infections. In this case, the lesions are usually localized in the cranioventral regions; The composition consists of broncho-interstitial pneumonia and atelectatic sites.

Microscopic examination of the pneumonia in the table next to the table; especially the infection 2-4. In the days of bronchial epithelium hyperplasia is encountered. Intracytoplasmic inclusion bodies are characteristic findings .

Bovine respiratory Syncytial Virus Infection

The causative agent is the pneumovirus genus from the paramyxoviridae family.

In most herds, the antibody against the virus is detected.

Together with other viruses, it makes bovine flu

In the form of pure infection, interstitial pneumonia is characterized by syncytial virus infection.

Pathological Findings

Macroscopical Findings

Lesions are not severe.

Degenerative rhinitis

Catarrhal bronchitis, bronchiolitis

Lymph nodes are swollen

When the lung lesions develop, it is usually localized in the cranioventral regions and atelectasia is observed besides the pneumonia.

In caudal regions, it is emphysema. Especially in the form of interstitial and bullous emphysema.

Microscopical Findings

Acute bronchitis and bronchiolitis are important findings. The mucosa epithelial cells of the bronchi and bronchiols proliferate and return to the multinucleated syncytial cells.

In addition, intracytoplasmic inclusion bodies are also observed in these cells.

These two findings are pathognomonic and are sufficient for histomorphological diagnosis.

Intracytoplasmic inclusion bodies and multinucleated syncytial cells are found in alveoli.

In addition, there are **interstitial pneumonia, atelectasis and emphysema.**

There are similar situations. Peribronchial lymph follicles are hyperplastic.

CANINE DISTEMPER DISEASE

Paramyxoviridae is from the Morbilli virus genus -
Medipest group.

(Me = measles, Di 0 distemper, Pest0 plague, rinderpest)

Virus pantropic (shows affinity to various organ and cells).

It enters the regional lymphoid tissue (regional lymph nodes, tonsils etc.) according to the mode of transmission.

If neutralized antibodies develop within 8-9 days, the virus cannot spread

Age is an important factor in the development of the disease. It develops in dogs under 1 year old (except for old dog encephalitis!)

The effect on lymphoid tissues (mild disorders in lymphocytes) facilitates the development of secondary infection.

For this reason, especially the respiratory form is almost always complicated by secondary infection!

Forms of the effect of various changes in the system as a result of changes occur.

This forms :

1. Respiration (interstitial pneumonia, catarrhal and other pneumonias as a result of secondary infection) It is especially complicated with *Bordetella bronchiseptica*!

2. Digestive (catarrhal gastroenteritis or enteritis; sometimes hemorrhagic)

3. Nerve (nonpurulent encephalitis, or more precisely, nonpurulent encephalomyelitis) Only in older dogs (6,7,10 years old) only encephalitis form develops!

4. Eye

5. Skin (eczema-like change in skin, hyperkeratosis, end of hyperkeratosis in the soles of the form of ide hard pat z).

The first three forms are preliminary. A number of forms can be seen together.

In the diagnosis, the morphological changes in the lungs and other organs as well as the presence of intracytoplasmic and intranuclear inclusion bodies are considered to be pathognomonic.

Demonstration of demyelination in the related inflammation table in the form of non-suppurative encephalitis is characteristic. In addition, intracytoplasmic and nuclear inclusion in neuron and glia cells confirmed the diagnosis. They are particularly intranuclear in astroglia cells.

Non-Respiratory Lesions

The virus induces widespread tissue damage. Gross lesions are commonly found in the gastrointestinal tract (gastroenteritis), lymphoid tissue (atrophy of thymus and lymph nodes), dermatitis and conjunctivitis, cystitis and urethritis, retinitis, ameloblast necrosis and hypoplasia of enamel, and encephalomyelitis. See other sections of the course notes (e.g. - neuropathology).

PESTE DES PETITS RUMINANTS VIRUS INFECTION

Distemper is from the Morbilli virus genus of the Paramyxoviridae family such as rinderpest, measles, and marine mammals. It carries the characteristics of the genus.

Occurs in sheep and goats. When the virus is given to cattle, the antibody does not form.

The disease occurs in goats, especially in Central African countries, in India. It has been observed in Middle Eastern countries like Israel and has been identified as serological in most of them.

The symptoms of the digestive system (clinical, necropsy and histopathological) are like rinder pest.

The cattle are separated from the rinder pest when there is no disease in the cattle and there is a lesion in the respiratory tract.

Respiratory system lesions are similar to distemper and partially to measles.

Like Distemper, the interstitial begins as pneumonia. With secondary infection, catarrhal, abscess, and even fibrin with pneumonia rotates.

In addition to this, the presence of **intracytoplasmic and intranuclear inclusion bodies** such as distemper, in bronch, bronchiol and alveolar epithelial cells is pathognomonic. Another pathognomonic finding is the presence of **intraalveolar multinuclear giant cells** in the lung, which are different from distemper. This is similar to the latest finding in terms of measles disease.

ADENOVIRUS INFECTION

DOG

Type I Canine hepatitis

Type II forms the disease of the respiratory system.

Necrotic bronchitis, intranuclear inclusion body (Cowdry A)

Interalveolar interstitial pneumonia occurs.

There is also serofibrinous exudate in the alveoli.

HORSE

Congenital immune deficiency is common in horses (arabian colts).

Mucopurulent exudate in the respiratory tract,

Atelectasis in the cranioventral regions of the lung

Microscopic examination

Necrotic proliferative (hyperplastic) bronchitis

Interalveolar interstitial pneumonia

Alveolar lumens include macrophage, and partly neutrophil leukocytes

Intranuclear inclusion bodies in bronch and alveolar epithelial cells are the main findings.

Inclusion bodies:

Upper respiratory tract, renal pelvis and ureter epithelium, conjunctiva, pancreas are also observed in salivary glands.

HERPES VIRUS INFECTIONS

Herpes viruses are located in other systems and cause diseases in the respiratory system.

Inclusion body rhinitis of pigs

IBR in cattle, CGB

Feline viral rhinotracheitis in cats

Rhinopneumonitis equi in horses
more common herpes virus infections

Equine Rhinopneumonitis

Inflammation of the respiratory tract

Pregnancy (7-10 months) is characteristic with abortus

The main findings are the discarded fetus

Nervous system lesions (especially in foals)

Pathogenesis

Aerogen enters the body from the upper respiratory tract that is taken by infection

Pregnant animals pass from the placenta to the offspring

Adults

It does not cause serious illness.

Occurs with minor upper respiratory tract infection

Mild fever, catarrhal rhinitis, conjunctivitis, sometimes edema of the extremities are formed.

Pregnant mares have obesity without symptoms.

Secondary infection

Mucopurulent rhinitis,
pharyngitis, laryngitis,
The bronchopneumonia occur.

Fetus

The main findings are in the fetus. In this way, you can reach the diagnosis!

**The mummification,
Icterus**

Petechial hemorrhages in mucous membranes

Subcutaneous edema

Focal necrosis of organs, especially liver and spleen

Pneumonia

Liver and spleen. intranuclear inclusion bodies in the lung cells

It is rare to see these bodies outside the fetus!

Foal

Especially at this age, ataxia is seen in the clinic due to neural changes.

The cause of neural findings

Malignant hypoxia and ischemia associated with necrotic vasculitis in the brain; disseminated meningoencephalitis; changes in the spinal cord!

also

Necrotic bronchitis,

Bronchopneumonia also frequently formed

Intranuclear inclusion bodies are observed in the epithelium of this region.

REOVIRUS INFECTION

Horse, cattle, dog, cat etc. In animals, it causes mostly symptomless upper respiratory tract infection.

It creates pneumonia with the help of predisposing factors. In such cases, atypical is involved in enzootic pneumonia.

PARVOVIRUS INFECTIONS

Congestion and edema in the lungs in dogs and cats develop due to myocarditis (myocarditis).

The main findings are in other systems, mild interalveolar interstitial pneumonia may also be shaped

Parvoviruses of other species are not important for the respiratory system.

RETROVIRUS INFECTIONS

More chronic interstitial pneumonia;

Arthritis,

Mastitis

Other findings such as encephalitis are also formed.

Some are characterized by inflammatory neoplastic changes.

Ovine progressive pneumonia (Maedi-Visna);

Caprine arthritis encephalitis infections

Inflammatoric neoplastic changes

Pulmonary adenomatosis of sheep

OVINE PROGRESSIVE PNEUMONIA MAEDI - VISNA

Agent : Lentivirus; Type C fragmented retrovirus.

Long-term development of such viruses

The -lenti- "is known as slow virus infection (due to the prolonged incubation).

BEFORE :

Maedi (1923 USA) progressive interstitial pneumonia

Visna (1957, Iceland) is defined as two separate diseases characterized by necrotic - nonpurulent encephalitis.

Also during this disease as in goat's caprine arthritis encephalitis infection:

Chronic proliferative arthritis

Lymphoid cell clusters are characterized by chronic mastitis, suggesting lymph nodes in the interstitial regions of the breast.

Clinical findings

The disease is endemic (seen in certain regions), but progresses slowly.

It does not occur in under 2 years of age because it is long in incubation.

Dry cough, difficulty breathing, weakness are the main symptoms.

Pathological Findings

Macroscopical Findings :

The lung is pale, light pink.

Good collapse.

Elasticity (rubber) consistency.

It is heavy

Lesions are especially localized in dorsal parts

In the upper and sectional faces of these sections, the circumscribed areas with pin-head size, small-granular landscape with gray-white or gray-red color, are limited.

Bronchi are filled with mucus.

Regional lymph nodes were enlarged.

Histopathological Findings

Peribronchial, perivascular

Connective tissue proliferation in interstitial regions

Lymphocytes and other mononuclear cells

In particular, lymphoid cell foci resembling lymph follicles are noteworthy.

Peribronchial lymphoid tissue hyperplasia; smooth muscles in the bronchus wall are hypertrophy

Fibrosis is seen in the interlobular regions.

Alveolar type II cells and bronch, bronchiol epithelial cells show hyperplasia. This finding is especially evident in alveolar ducts!

Lymph nodes

Chronic lymphadenitis is encountered. Lymph follicles undergo hyperplasia.

Equine viral arteritis

Inhalation of Equine Arteritis Virus

Monocytic cell infection

Regional lymphoid trafficking

Viremia

Infection of endothelium

Fibrinoid vasculitis

Gross lesions are hemorrhage and edema in many sites, including lungs, intestine, scrotum, and periorbital tissues and voluminous hydrothorax and hydroperitoneum.

Interstitial pneumonia with hyperplasia of type II pneumonocytes

Aujeszky's Disease (Pseudorabies)

Suid alphaherpesvirus 1

Neuronal infection

Interstitial pneumonia (Interalveolar)

Necrosis

Gross lesions in pigs occur in several nonneural tissues, including organs of the respiratory system, lymphoid system, digestive tract, and reproductive tract