

PASTEURIZATION

P. multocida and **P. haemolytica** are very important agent for serious disease on domestic animals.

Some types are **nasopharyngeal** and **oral mucosa** of normale human and animals (**P.pneumotropica**, **P urea**)

Pasteurella multocida (P.septica)

It is important in cattle, sheep, buffalo, deer, pigs, rabbits and chickens.

According to the immunological character of Robert I, II, III, IV, V and VI; According to its serological characteristics, it is divided into types such as B A C D by Carter.

Some refer to the E serotype.

In this typing, P and O antigens in Pasteurella species; and capsule antigens are generally used..

Pasteurella haemolytica

It is hemolytic. There are serotypes up to 1-15.

Septicemia in sheep; secondary pneumonia in sheep, goats and cattle.

According to biotype A and T biotypes are divided into two types.

BOVINE PASTEURELLOSIS

It causes primary or secondary pneumonie and other system diseases.

The primary pasteurellose in cattle causes classical pasteurellosis.

Secondary pasteurellose also includes findings from other diseases.

In general, the primary pasteurellose cattle are known as haemorrhagic septicemia, and the secondary pasteurellose is known shipping fever.

A. Primary Pasteurellose

P. multocida is formed by type B (I) and partly by type D (IV).

1) **Peracute form** is characterized by hemorrhagic septicemia.

2) **Acute form** occurs with two sub-forms.

a) **Pectoral with fibrinous pneumonia;**

b) **The intestinal is formed by the end of the allergic infection and haemorrhagic gastroenteritis.**

Bovine Haemorrhagic Septicaemia

It occurs in cattle, buffalo and wild ruminants. It is common in Asia and Africa.

Agent :

***P. multocida* type B (I) is formed by type D (IV). Also mentioned in type E, E (6).]**

Transmission

Saliva, gaita, urine, excreted from the body with milk.

Alimenter is transmitted.

Pathogenesis

After receipt, lymphatic tissue in the pharyngeal region passes to the organism, bacteremia occurs.

Releasing toxin (Endotoxin)!!!!!!!

On the one hand causes the payment of inflammation, disrupting the permeability of the vein; on the other hand, thrombosis is performed by intravasal coagulation.

As a result, edema in the body; bleeding, other acute disease symptoms and fibrinous pneumonia develop.

Clinical Findings

Mortality may increase to 100%, even if 10% is subclinical.

The **peracute form** is accompanied by hemorrhagic septicemia and death occurs in a short time (several hours and one day).

In the **delayed (acute) form**, submucosal, subcutaneous, bleeding and edema are encountered. Especially under the chin, under the neck, under the chest, eyelid edema.

Fever, respiratory distress, haemorrhagic gastro enteritis in intestinal form and fibrinose pneumonia in pectoral form are observed.

Pathological Findings

There is no significant finding in the form of peracute septicemia.

In acute events:

- Petechial hemorrhages in serous membranes, lungs, muscles and other organs.**
- Edema: Pharynx, larynx, eyelid, leg, neck, edema on the lower chest.**
- Especially under the skin yellowish-colored coagulated.**

- Bloody fluid in the serous cavities.
- Lymph tubers, bloating, bleeding.
- Acute catarrhal, sometimes haemorrhagic gastroenteritis (intestinal form)
- Death often happens from asphyxia.

Fibrinous pneumonie: Changes (macroscopic, microscopic) are observed.

* Perivascular, peribronchial organization and sequesterization is less. DIFFERENCE from mycoplasmosis!

Differential Diagnosis

Haemorrhagic septicemia,

 Anthrax

 Pneumonia

 Should be done with Mycoplasma

Shipping Fever

B. Secondary Pasteurellose

Young animals are more frequent.

In particular, *P.multocida* type A (II) and *P.haemolytica* (type A1) are responsible for this figure.

Parainfluenza-3, IBR; Syncytial virus infection or *Chlamydia* sp., *Mycoplasma* sp. It is added later to the pneumonia formed by the primary factors.

Therefore, pneumonia with pure fibrin does not occur.

Katarrhal, partially fibrin, abscess et al. pneumonia types are formed.

In addition, pneumonia findings due to primary infection such as interstitial pneumonia are also included in this table.

Shipping fever emerges with such findings.

Shipping fever

(shipping = ship by ship; fever = fever, fever)

Transport, transport, animal market fever

Railway Fever

Calf Pasteurellosis

Often (late calf, calves) occur!

Agent

Pasteurella haemolytica (tipA I) (less)

Pasteurella multocida (tipA II) (more) is responsible.

Usually participates in interstitial pneumonias composed of primary factors such as Parainfluenza-3

Fibrinous pneumonia and other types of pneumonia are shaped by the subsequent mixing of this local Pasteurellosis.

Pasteurellosis-related findings are more localized in cranioventral regions.

Pathological Findings

Macroscopical Findings

Lesions are mostly located in a region; It is localized in the **cranioventral of lobes.**

Fibrinous pneumonia and pleuritis !!!!!!!

Other pneumonia sites and coagulation necrosis are encountered!!!!!!!!!!!!

But the formation of sequester is small.

On the otherhand the findings related to the primary disease were formed.

Microscopical Findings

Vascular thrombosis and necrosis due to endotoxin effect.

Another histological feature:

The effect of bacterial toxin is that the leucocytes in the alveolar cavities take a long form. Such cells that resemble millet/maize grains are defined as «oat cell».

It is a finding that helps diagnosis. The origin of monocytes (or neutrophil leukocytes) has not been clarified.-

**Pasteurella haemolytica is more fibrinous pneumonia;
pasteurella multocida fibrino-purulent pneumoni**

Also:

Special findings such as inclusion body, syncytial giant cells are also added to this table.

DIFFERENTIAL DIAGNOSIS: Can be confused with Coli septicemia especially in calves.

Other findings

Meningitis: Two to four month old calves have fibrinopurulent meningitis with *P.multocida*.

Polyarthrititis: Some types of calves

Abortus: *P.haemolitica* causes abortion without evidence.

Mastitis: *P.haemolitica* sporadic peracute, lethal mastitis. Haemorrhagic in the parenchyma; fibrinous, necrotic exudate.

P.multocida leads to progressive mastitis in the herd. It is characterized by fibrosis, atrophie.

Infection of milk-sucking calves may be by this route.

SHEEP AND GOAT PASTEURELLOSIS

P.haemolytica is responsible for the primary pasterurellose.

Goat kitten and especially the lambs:

Hemorrhagic septicemia (type I),

Fibrinous pleurapneumonia,

Enzootic pneumonia in lambs (type A) coexist.

P.multocida makes secondary pasteurellosis. It is involved in interstitial (viral) and verminous pneumonia.

This type of fibrinous pneumonia is also called the pleuritis “schafrotz af (sheep's gland malleus).

Pathogenesis

The infection is aerobic. However, it can normally be found in the nose, pharynx, tonsil and even lung.

Poor hygiene, maintenance and malnutrition (lack of vitamin A in goats), transplantation, shear, climate (cold, humid air) and other stress factors in the shelter play a role in the development of primary and especially secondary pasteurellosis.

Again, viral interstitial pneumonia, Chlamidia sp. lung parasites (verminous pneumonia) also have the same effect.

Endotoxin is responsible for the development of primary pasteurellosis with hemorrhagic septicemia.

Clinical Findings

a) Hemorrhagic septicemia form

Its findings remind the enterotoxemie.

High fever, oral breathing, foam in the mouth, severe hyperemia in the mucous membranes. Death takes place shortly.

b) Pneumonia form

Acute fibrin pneumonia in the shape of the clinic less common.

Sero-mucous nose discharge

It is characterized by generalized condition disturbances such as respiratory distress, cough, fever tachycardia.

Pathological Findings

a) Hemorrhagic septicemia form

Lymph nodules (especially mesenteric) are swollen, bleeding and edema.

In serous membranes such as pleura, pericardium, peritoneal mesenterium; intermuscular areas; Petechial, ecchymotic hemorrhages are also observed in the subcutaneous tissue, usually in the chest and neck.

Spleen kidneys are hyperemic and mildly swollen. The macroscopic appearance of the spleen resembles anthrax, but the spleen is not too bulging.

The lung is usually hyperemic and cyanotic. It is decorated with edematous and ecchymotic hemorrhages up to 1 cm in diameter.

The lumen of the Trachea may have a mildly bloody or bloodless fluid (edema).

Pharynx is shaped by necrotic pharyngitis. Necrosis is plaque around the tonsils.

Oesophagus, abomasum, colonies of the mucosa of the colon can be found.

The liver is hyperemic and necrosis is encountered.

Necrosis is mostly focal; miller

Microscopic examination of the necrosis of the V porta arms of microbial embolism and thrombosis is evident in the resulting ischaemia.

It is noteworthy that leukocytes are present in or around the necrotic areas. It is aggressive, that is, agranulositer inflammation. This situation shows that the effect of leukocytes from the toxin of the agent is not given the necessary response.

In the joints, pericadium, meninx and plexus choroideus, in some cases inflammatory reaction is encountered.

Lung :

Fibrinous, fibrinonecrosis pneumonia, serofibrinous pleuritis develops.

Subacute events are associated with adhesive pleuritis and abscesses in the lung.

Microscopic examination revealed microbial emboli and oat cells.

**Secondary Pasteurellosis
It's like cattle.**

Goat

Septicemic shape usually peracute

The shape of the pneumonia is mostly characterized by serofibrinous pleuropneumonia.

***P. multocida* is more common.**

In development, predisposing stress factors (especially vitamin A deficiency) are more important

BOVINE MYCOPLASMOSIS

Pleura pneumonia contagiosa
Contagious bovine pleura
pneumonia
(Sığır akciğer ağrısı)

The disease is
common in the
world.

Especially in Asia,
Africa and some
parts of Eastern
Europe.

Apart from the cattle, zebu, bison, yak and camel are also sensitive.

Sheep and goats can be transmitted to the experimental; in these species may cause septicemia and local lesions.

Transmission

Aerogen.

It is especially transmitted by the secrets of animals in the cowhouse.

The recovery animals have active role on transmission.

Pathogenesis

The causative aerogen comes to the lung by infection.

In the lung, before endobronchial; then it spreads to the peribronchial and passes from the parenchyma to the pleura.

Acute vasculitis in the arteries is caused by thrombosis and consequently necrosis

Vasculitis is the result of hypersensitivity, which is caused by the association of the antibody with mycoplasma surface antigens.

(Arthus type or mixed hypersensitivity?).

It spreads from where it resides by breaking the body resistance or by re-infection.
Acute relapses may occur or become chronic.

Clinical Findings

The period of incubation is long (up to 1 month).

Mortality ranges from 10% to 70%.

In addition to general condition deterioration and fever is initially dry, then painful cough is detected.

With the onset of hepatitis, respiratory and pulse increases. Percussion is painful.

Immunity continues for 2 years or more after the disease has been overcome.

Macroscopical Findings

Pneumonia begins first in focal multiple foci in lung lobes or lobes

Then cover the entire lobe or lobes.

It is complicated by fibrinous pleuritis !!!!!!!!!!!

Pleura is covered with a defective yellow colored fibrin mass of different thickness. Over time, the adhesion between the leaves of the pleura is shaped.

Although lesions are similar to other fibrinous pneumonia vascular thrombosis due to yellowish-colored large necrosis areas develop.

These regions result in carnification during recovery period and mainly extensive sequester formation.

Microscopical Findings

Typical fibrinous (croupous) pneumonia findings are encountered.

Thrombosis is severe in veins and necrosis due to it is wide.

When it is organized during recovery period; especially in the peribronchial perivascular regions is the criterion of morphological diagnosis.

Small areas of necrosis are filled with granulation tissue

Differential diagnosis

It is more like pasteurellosis. Initially severe thrombosis and large necrosis; In the period of recovery peribronchial perivascular regions are distinguished from pasteurellosis by formation of secretion with distinct organization.

Extrapulmonary Findings

Polyarthrititis in young animals,
Abortion may occur in pregnant.

Liver

Mononuclear cell infiltration in portal regions, small necrosis around the anode and vena centralis.

Spleen

Germinal centers expand; immature lymphocytes are seen in the middle zone. The plasma cells condensates in the regions.

Enzootic

Pneumonie

Enzootic Pneumonie

Bronchitis, bronchiolitis, broncho-interstitial pneumonia events are caused by the synergistic effects of the enzootic pneumonia events in beef; .

Some are subclinical and subclinical bronchiolitis and pneumonia

M.dispar, M.bovis, M.ureaplasma types are held responsible.

Also M. bovis genitalium is sometimes isolated from such events.

Pathological Findings

There are no known fibrinous pneumonia findings! Qatarral, purulent, and partly intersititiel pneumonia are documented. Sometimes it is defined as atypical interstitiel pneumonia

These findings:

- 1 - Cranioventral areas are localized in large areas. These areas are red colored and atelectatic.
- 2 - Catarrhal bronchitis and bronchiolitis are found in the changes in the document of the intersititiel pneumonia.

a - With regard to catarrhal bronchitis and bronchiolitis and pneumonia: the exudate of neutrophil leukocytes in the lumen of the bronch alveolar.

b - Interstitial pneumonia: thickening of the alveolar walls, pneumocyt type II hyperplasia, peribronchial lymphocyte cell (cuffing) are found.

c- Atelektasie shaped by clogging of the bronchi.

d- In addition, bronchus with submucosal glands, lamina epithelialis goblet cells in the secretion increase, in the chronic case mucosa epithelium hyperplasia occurs.

e - These findings allow the separation of true fibrinous pneumonia from mycoplasmas

Other Infections with *Mycoplasma* spp. on cattle

Mastitis

The agent is *M.agalactia*. Bovis is. (or *M.bovis*)

The inflammation is localized around the ducts with intersititial, interlobular regions of the breast.

Neutrophil leukocyte foci in these regions; In the ductus and glands, the neutrophil leukocytes are rich in exudate.

Hyperplasie in ductus epithelium in advanced cases. Edema, lympho-plasmocyter infiltration, fibrosis and eosinophilic leukocytes are seen in the intersititium.

Genital Infection

In the cows :

It causes endometritis, salpingitis and localized peritonitis.

There is infiltration of endometrial edema and lymphoplasmacyter cells.

In the bulls:

Epididymitis, seminal vesiculitis is also responsible.

M.agalactia var.bovis was obtained from amniotic fluid from necrosis and purulent placentitis.

Contagious Caprine Pleura-pneumonia

The agent *M. mycoides capri*, subsp (var.) *Mycoides* (PPLO)

Cattle were not susceptible to the disease.

It is characterized by findings of fibrinous pneumonia.

Necrosis and sequestrum are seen in advanced conditions.

Fibrinous pleuritis, end with adhesive pleuritis.

Also:

In goat kitten; fibrinose pericarditis, meningitis, interstitial pneumonia (as in cattle)

In Goats; arthritis, peritonitis, abortus, mastitis (as in cattle).

SHEEP

It comes from *M.ovipneumoniae*.

In sheep, together with *Pasteurella haemolitica*, enzootic pneumonia is held responsible !!!!!!!

Such lesions are characterized by chronic catarrhal bronchitis, moderately chronic alveolitis, and peribronchial lymphoplasmasite infiltrations.

Fibrinous pneumonia and pleuritis were: experimentally, *M.mycoides* of goat origin, and *M.dispar* of cattle origin.

The lesions of *M.agalactia* are as in goats and cattle.

HAEMOPHILUS

Haemophilus are Gram (-), pleomorphic (cocoid, filamentous) bacterial species.

**There are various types. for example
The 12 antigenic types of H. pleurapneumoniae
compared to the capsule antigen were recorded.**

**There was a difference in virulence, pathogenicity,
geographical distribution among the types.**

**On the other hand, due to the type, age, natural and
immune resistance or susceptibility of the host,
different reactions are shown.**

**Therefore, the placement, duration and outcome of
hemophilus infection in the body is manifested by
different disease tables.**

The Diseases of Hemophilus spp.

H. Pleurapneumoniae: Contagious pleuropneumoni, meningitis, arthritis

H. Parasuis: Domuzda polyserositis (pleuritis, peritonitis, perikarditis) arthritis, keratitis, Glasser hastalığı, domuz pneumonisi (PIG)

H. Somnus: Infectious thromboembolic meningoencephalitis , pneumoni ve arthritis (CATTLE, CALVES)

H. Agni: Meningitis, arthriktis ve pneumoni (SHEEP)

H. haemoglobinophilus , commersale agent of **genitale system at the dog**

H. paragallinarum **avian infectious corysa**

H. influenzae **upper respiratory diseases (*Human*)**

H. equigenitalis ***Contagious equine metritis***

Haemophilus Infections of Cattle

Agent : H.somnus

It often causes embolic meningoencephalitis.

Clinical Findings :

Fever

Ataxia

Opisthotonus

Paralyse

Blindness

It often causes embolic meningoencephalitis.

Many focal haemorrhagia in the brain, besides meningitis; infarcts with a diameter of 1-15 mm (necrosis areas) are noteworthy in the brain and medulla spinalis.

It also forms polyarthrititis with serofibrinous laryngitis, tracheitis, pleuritis, pericarditis, peritonitis. Lymph nodes are swollen.

At the Urogenitale System :

Necrotic metritis

Sporadic Abortion (7. months)

Histopathological Findings :

Thrombosis

Vasculitis (It is characterised with septic emboli)

Findings, microscopic reflection of macroscopic findings

Haemophilus Infections of Sheep

ESPECIALLY IMPORTANT IN LAMBS !

H. agni causes septicemia in the lambs.

Fever depression is observed in the clinic.

Necropsy:

Bleeding in skeletal muscles and other regions.

Focal necrosis in the liver

Splenomegaly

Fibrino-purulent arthritis

Meningitis (brain basal)

Choroiditis is encountered.

In the histopathological examination:

Vasculitis which is shaped as a result of general bacterial embolism is the main finding.

Other changes depend on it and are like cattle.

Haemophilus Infections of Equidae

Genital lesions are important in these animals, and Contagious Equine Metritis (CEM) leads.

The effect is H.equigenital.

It settles in the genital organ.

Mucous/purulent exudation

Proliferation of epithelial cells, vacuolization and the region is characterized by infiltration of mononuclear cells

TUBERCULOSIS

There are types of *M. tuberculosis*.

Human type affects humans, cattle; does not affect birds

M. tuberculosis bovis human bovine pig, sometimes affects the dog cat, horse sheep

M. tuberculosis avium sometimes affects cattle sheep at cattle.

M. Tuberculosis. Hominis sometimes affects monkeys, cattle dogs.

Mycolic acid provides acid resistance to the agent.

Lipid Increases the resistance of the agent. It increases the pathogenicity.

It keeps macrophages alive for 10 days. If the body is resistant or has already taken the causative agent, it is digested in macrophages.

If the body is resistant, they continue to reproduce and the disease is shaped.

Tuberculo protein causes hypersensitivity.

Pathogenesis

Where it first enters, neutrophil is covered by leucocytes.

However, the lipid substance cannot be eliminated by neutrophil leucocytes.

Therefore, the agent is taken by macrophages in the region. It maintains its viability for 10 days in macrophages.

In this period, the organism is sensitive and how to develop a reaction.

Therefore, the organism presents lesions in different forms and patterns.

If the organism is strong and the condition is weak (dose, pathogenicity is low), the productive type of inflammation develops.

If the resistance of the organism is weak, if it is strong, the exudative type of inflammation develops.

Exudative tuberculosis

Neutrophil begins with leukocyte and partly with fibrin exudation. With the Ziehl-Neelsen special staining method, small red rods are also found in these regions.

Subsequently, these areas undergo caseification necrosis. In the necrosis area, the basic structure of the tissue is selected in part. This is more evident in lung tissue rich in elastic yarns. The alveoli boundaries are further clarified by the application of the dyeing process, especially the dyeing of elastic yarns such as van Gieson.

This type of necrosis, in which the basic structure of the tissue can also be selected, is considered as the primary caseification necrosis .

Productive Tuberculose

Granulomatous inflammation from proliferative infections. Its appearance is typical and it is diagnosed by histological examination.

Caseification necrosis and post-calcification on the centrum; It is characterized by a capsule of connective tissue cells with histiocytes, epithelioid histiocytes and Langhans type giant cells in the outermost region (this is the last generation of granular tissue rich in capillary and connective tissue cells).

Produktif begins with macrophage (histiocyte) infiltration to the site of tuberculosis agent.

In these areas epithelioid histiocytes and Langhans type giant cells appear at the time. Among them, there are a large number of plasma cells and lymphocytes among them. These regions are surrounded by the aforementioned capsule. After a while, caseification necrosis is formed in the middle. In the area of necrosis, tissue structure is not chosen as before. This type of caseification necrosis in productive tuberculosis is a secondary caseification necrosis.

Milier tuberculosis

It is prominent in the early and late generalization of tuberculosis. It is more common in the areas where the lung is not well aired.

It has a productive structure.

Transparent begins in small lesions; then fuzzy yellowish-brown milier turns into tubercles.

The microscopic cyst is rich in epithelioid cells. In this respect, it is called “epithelioid cell tubercle .

After entering the organism, the tuberculosis agent draws different tables according to the resistance of the organism, the factor and the time elapsed and is named according to these.

Primary infect or Ghon focus

where tuberculosis bacilli first enters, it emerges with the findings previously described.

(Ghon = Anton GHON, pathologist, 1866-1936)

Primer complex (Ghon complex)

It is formed by spreading to the region lymph nodes with primary infect.

Incomplete primer complex

recovery of primary infect; only the area is characterized by the presence of a lesion in the lymph nodes.

The first period of infection

**Primer complex
and
Early generalization
Produktif tbc**

Exudate TBC

**Late generalization
Milier (productive)**

**Exudative, glopan tbc
lesions with
occur.**

Postprimer infection period

Tuberculosis occurs after the first infection is overcome.

Tuberculosis of chronic organ, open organ (lung) tuberculosis as well as private names.

**There are SPECIAL FINDINGS!
Develops in two ways**

Reinfection: Tuberculosis in the body of survivors of tuberculosis

Superinfection = Infected tuberculosis from outside with the TBc.

Transmission (Generalization)

Hematogen

This is the generalization of the body.

The result of intensive bacteraemia

larger and unified conglomerate tubercles are observed in the organs with the same age and size as the miliar tubercles or their combination.

Occasional recurrent bacteremia

Different age and size (nodular miliar) tubercles are encountered.

Lymphogenesis

Propagated by lymph vessels. In particular, there is a retrograde lymphogen expansion. Infection of macrophages is transported from the lymph nodes to other regions in the opposite direction

Contact spread

One focus is transported to the environment by macrophages. In this case, satellite lesions occur around the main lesion.

Canalicular spread

Chronic organ tuberculosis is characteristic. Moved through channels. For example, bronchus, bronchiol, trachea in the lung; Propagated by bile ducts in the liver.

BOVINE TUBERCULOSIS

Lesions are generally on the lung and in young animals.

1. FIRST INFECTION PERIOD

Primary focus

It is often located under the pleura in the diaphragmatic lobe.

From peas to fist size; caseification, later calcified and encapsulated in the form of tubercle.

It can also be found around miliary, resorptive tubercle.

Microscopical Findings

In the middle, the secondary caseification surrounding the necrosis was surrounded by lymphocytes. Histiocytes, epithelioid histiocytes, Langhans giant cells are few. Caseous necrosis is subsequently calcified.

All these regions are surrounded by capsules of connective tissue cells (fibrocytes, fibroblasts).

Regional Lymph Nodes

It has increased by volume (swollen); In the radiar style, it includes TB lesions.

Or it is of normal size and contains small caseous necrosis and calcification areas.

EARLY GENERALISATION

a. Hematogenous acute (rapid) miliary tuberculosis lesions

Lesions are productive.

It is more common in the lungs where there is little air flow.

A large number of miliary; previously, glass-like transparent, dull yellowish tubercles are seen later

Microscopic appearance of the epithelioid cells are intense tubercle.

Lymph necrosis is also associated with severe caseous necrosis or TB lesions with calcification.

b. Chronic (slow, delayed) generalisation

It is also encountered with productive lesions (tubercles).

However, bacteremia is occasionally; different types of organs, more precisely the size of the different, miliary and nodular tubercles develops

In the structure of such lesions, epithelioid histiocytes, caseous necrosis and calcification take the first place.

Lymph nodes are as before.

c. Acinous-lobular (primary) caseified pneumonia

It is seen frequently in young animal. The formation is due to resistivity (endurance) and to the result of a hyperactive (allergic to allergic) reaction.

Exudative changes are predominant in the acinus (in the alveoli where the basal bronchis are terminated) or in the progression of the primary colonization of the lobes by necrosis.

Epitheloid is common, it does not include cells such as histiocytes and giant cells.

Caseous necrosis is seen in lymph nodes.

POSTPRIMARY INFECTION ! CHRONIC ORGAN TUBERCULOSIS !

Reinfection develops as a result of hyperinfection, with the help of an allergic (hyperergic) reaction.

Tuberculosis of chronic organ is known as «open organ tuberculosis» in humans; It is the third period of tuberculosis in humans.

POSTPRIMARY INFECTION !

CHRONIC ORGAN TUBERCULOSIS !

1. Acinus (nodose tuberculosis lesions)

The lesion is located in the caudal upper part of the diaphragmatic region.

Firstly, acinus foci are formed.

Exudate accumulates in the alveoli where terminal bronchi terminate and these areas are prominent in the appearance of yellowish cloverleaf.

The nodose foci, on the other hand, are made up of large bulging nodules by spreading them. In addition, they are combined with lobar areas.

2. It spreads through canals.

The interior of the bronchi is full of bulky masses.

3. Caverns are formed.

There are two types of cavern formation.

a. Bronchiectatic cavern

Bronchiolar expanses due to the excavation of the bronchi, When the exudate is emptied, the cavern is formed. It is noted that they were surrounded by a bronch wall. Such caverns are typical of cattle in particular.

b. Melting caverns

It is typical in humans. It forms in the tissue with the melting of Acinus-nodose foci. Causes bleeding.

4. Bronchi, and trachea, pharynx, miler or fungous tubercles (nodes) in the mucosa of the larynx and ulcers are formed by opening them.

5. There are no changes in the lymph nodes in this type.

LATE GENERALIZATION

1. Glopan (rapidly progressing) acinus nodose caseified tuberculosis
2. Lobular caseified pneumonia
3. Miliary tuberculosis

1. Glopan (rapidly progressing) acinous nodular caseified tuberculosis

Lesions are distributed to all lobes.

Miliary is a large number of different sizes, ranging from submucous acinus to acinus-nodose; It is characterized by exudative tuberculosis lesions that are not surrounded by connective tissue.

Its microscopic appearance is exudative.

The lung is also emphysematous and increased in volume.

The regional lymph nodes are very bulging, yellowish and moist, and they are adorned with widespread excavation areas.

In addition to this, old tubercles, productive character with limited, gray-yellowish color and most of the limestones belonging to the first infection period are also noteworthy.

Other organs, especially in the renal cortex, are found to be acute and submissive tubercles.

2. Lobular caseified pneumonia

Lungs:

Lobular style; a wide variety of various sizes; lobular style with dry, dull yellow areas.

Radial finger-shaped areas are also found especially in the lungs containing air.

The sections are blurry yellowish and contain dot-like bleedings.

The region is similar to the lymph nodes.

There are also fresh miliary tubercles in the liver and kidneys.

It is the more common type of tuberculosis after birth or long-lasting transplantations. It is similar to this type of tuberculosis in humans.

The typical acute miliary is characterized by tuberculosis.

It spreads in the lungs in many, small, glassy landscapes; especially localized in areas with low air intake.

Microscopic structure is mostly epitheloid cell tubercle structure. Caseification necrosis is uncommon.

The lungs are generally pale pink-red; partially empirical and partly edematous.

Lymph nodes also have areas prone to caseification.

EQUIDAE

It is rare because it is resistant. When it is usually characterized by productive lesions.

Created by *M. bovis*. The agent often reaches the lung through the intestines.

Acute miliary tuberculosis

Lung is bulging and empirical.

Miliary nodes are spread over the lung and the number is higher.

Regional lymph nodes

Hard, white-white

Chronic generalized tuberculosis

Miliary is mostly nodular. Caseous necrosis and calcification are rare. The regional lymph nodes are similar to the previous ones.

GOAT AND SHEEP

Tuberculosis is usually **exudate in goats**.
It has a limited spreading caseous pneumonia type.
The generalization is usually with bronchi.

TB is **rarely seen in sheep**.

During the early generalization period, the lung is included by the capsule from the connective tissue; caseification and calcified nodules.

Regional lymph nodes also develop related changes.

CAT AND DOG

The agent *M. bovis*, *M. tuberculosis*

It's dangerous to infect humans.

Cat cattle are more gentle on the human type of dog.

Contamination

More digestion to cat;

the dog is by means of digestion and respiration.

OTHER TISSUE TUBERCULOSIS

PLEURITIS TUBERCULOSA

It is prone to spread to serous membranes (peritoneal pleuria) in cattle.

Hematogen and lymphogen come from the surrounding tissues in relation to early and late generalization.

It is secondary because it comes with metastasis.

It is seen in different ways.

1. Tuberculosis with pearl: Pleura is a characteristic form of peritoneal tuberculosis. Pedunculated(w/o); from lentils to the size of chickpeas, or in the form of calcified nodules. They are combined with each other to form a larger pleuritis tuberculosa nodosa or granulomatosa.

2. Pleuritis tuberculosis caseosa

**Mostly follows chronic pulmonary tuberculosis
Caseified areas are seen in this form.
Occasionally, fibrin is also present.**

3. Pleuritis serofibrinosa - purulenta tuberculosis

**It is the type of exudative TB which is seen in mainly
carnivores.**

4. Pleuritis tuberculosis infiltrativa

Non-Caseified is a plaque-like granulation tissue.

PERITONITIS TUBERCULOSA

Congenital (omphologen)

Liver TBC

Ulcerative bowel from Tbc barssi

Metritis tbc'sonu

From lung to hematogea to pleura

IT IS SIMILAR TO PLEURITIS TUBERCULOSA

HEPATITIS TUBERCULOSA

Omphologen

Intestine (V. Porta)

Hematogen transmission

Miliary nodular in the form of tbc

PNEUMOMYCOSIS

Granulomatous, inflammatory changes are formed by obligate, facultative fungi

In some cases, especially if the agent is spores or hyphae; according to the resistance of the organism, these lesions may be more exudative type.

The factors arrive to the lung hematogenously or aerogen way.

Macroscopic appearance is not specific

They are especially diagnosed by microscopic morphological lesions or cultural (mycological-microbiological) examination,

They're usually opportunists. In case of various factors (such as other infections, prolonged antibiotic treatment), they develop activity and cause illness.

Aspergillosis

A. flavus

A. niger

A. nidularis

and the most pathogen

A. fumigatus

It is common in poultry and mammals.

Metastatic hematogenous pathways to the lung from the aerogen or other organs. In mammals, it is also possible to infect the placenta.

Lesions spread to the whole lung starting from the bronchus and the alveoli where the agent first entered.

The lesion where it first enters is usually as a rosette shape.

In acute events, necrotic changes are predominant. Melted lentil size up to the size of the muddy - yellowish nodes (nodules) are shaped.

In the microscopic examination, the necrotic region of the necrosis of the conidispores, hyphae which is the reproductive form of the conidispores, and the necrotic area, the perifocal edema, leukocyte and hemorrhage in the surrounding alveoli is observed.

Thrombosis occurs in veins

The necrotic tissue spreads to the blood vessels.

In bronchi, inflammatory changes, bronchiectatic caverns are formed.

In chronic events granulomatous change is predominant.

Hazelnut, walnut size grows around the capsule nodules develop.

Microscopic examination of the nodules: the agent, macrophages, giant cells are seen. It is surrounded by fibrous tissue (connective tissue).

Aspergillus diagnosis's main finding is the presence of conidispores encountered in all events.

Conidispores are found mostly in areas where the air is dense, more precisely in areas close to the branches or in the bronches. In the regions where there is little airing, the hyphae that do not have special features are located.

HISTOPLASMOSIS

The causative agent is *Histoplasma capsulatum*.

It is not infectious, but non-bleeding (it does not pass through the bloodstream to the host)

It spreads to other organs besides the respiratory system. It causes hyperplasia, especially in reticuloendothelial cells.

The host spectrum is large.

In addition to human beings: dogs, cattle, horses, wild animals (eg foxes) and laboratory animals (rat, mouse, guinea pig) are encountered.

It is localized in the lung or causes extensive lesions.

Localized case :

The capsule is formed by later lining nodules. Histopathological examination of these nodules: yeast-like active epithelioid cells dried out; It is seen that there is focus around the encapsulated granulomatous inflammation. This is also a common form of localized histoplasmosis in humans.

Generalised case :

Interstitial tissue includes plasma cells, lymphocytes and epithelioid cells. The active epithelioid cell or other macrophages are round, rounded and encapsulated.

Pneumocystis carinii

- **Induces interstitial pneumonia; Not granulomatous pneumonia**
- (5-7 micrometer cysts) contain 1-4 micrometer trophozoites
- Detected in tissue sections with PAS and GMS stains
- Trophozoites attach to pulmonary type 1 alveolar epithelial cells to induce damage

ACTINOBACILLOSIS

Cause pyogranulomatous inflammation in the pig more than cattle.

Aerogen infection

Apical, intermediary lobes are encountered with soft areas containing small abscesses or abscess size.

Hematogenous infection

In all lobes, small (pig) or walnut-sized abscesses are formed.

Microscopic findings

granulomatous; pyogranulomatous type of inflammation

In the middle of the radier is the factor in the landscape;

There are epithelioid histiocytes, histiocytes, giant cells and lymphocytes and connective tissue.

BLASTOMYCOSIS

Common in dogs

It causes localized skin infection or generalized mycotic infection.

In humans, the skin and lungs are generalized

DOG

It settles in the lung. Tends to be generalized.

Granulomatous, pyogranulomatous property.

Macroscopical findings

In severe cases, white-nodules are seen in pleura in all lobes of the lungs. They combine with each other to form larger nodules.

Sometimes it is liquefaction and it opens to bronches and pleuria. However, it is not complicated by pleuritis.

Granuloma and abscess are encountered in regional lymph nodes.

Generalized form :

Similar lesions are seen in liver, kidney, spleen and other lymph nodes.

It is characterized by more exudative and more proliferative types than microscopic structures.

The exudative tendency: neutrophil leukocytes, granuloma of macrophages, pyogranuloma.

The proliferative tendency is in the composition of granuloma (granulomatous inflammation) consisting of epithelioid histiocytes and histiocytes.

They are seen in these regions.

Skin form: Papules are formed. In a short time, abscesses, new abscesses occur.

COCCIDIOIDOMYCOSE

The factor is *Coccidioides immitis* .

Human and animals (dogs, cattle, sheep) in the respiratory system

(in the nose and lung) constitutes the primary disease.

There are double walled and endospores.

This morphological feature is used in diagnosis. The greater the number of spores or endospores determines the type of inflammatory reaction.

CRYPTOCOCCOSIS

Its effect is *Cryptococcus neoformans*.

It is rounded ovoid in culture and tissue sections and has a mucinous thick capsule around the mucopolysaccharide structure. In tissue samples stained with hematoxylin eosin, this capsule is seen as a light colored ring because it does not get good dye. It gives the characteristic of morphology and provides its diagnosis.

Dogs, pigs, cattle, horses, monkeys and people are the main hosts.

It is saprophyte

Not transmitted directly from one host to another

It is taken from the environment by inhalation.

**PNEUMONIA
VERMINOSA**

Causative agent : Parasites

Some types;

- live in the parenchyma of lung**
- migrate to the lung during their life cycle**
- are seen on the lung accidentally.**

Ascaris suum

Parascaris equorum

Toxacara canis

**Echinococcus sp. Especially in
ruminant**

Protostrongylus

P. rufescens, P. brevispiculum ruminant

P. rufescens sheep, goat, camel

**Muellerius capillaris goat, old
sheep**

Cystocaulus ocreatus

Metastrongylus

PNEUMOCOCCONIOSIS

Anthracosis

Inhaled charcoal is formed by the accumulation of carbon-containing powders (pigments) in the lung.

In the cities where the air pollution is intense; industrial zones and animals around cattle mines (cats, dogs, horses, cattle, etc.) are encountered.

Macroscopical Findings:

It emerges as black spots, stains or streaks spread to lung lobes.

There are also changes in the region of lymph nodes. Particularly the cortical parts of lymph nodes are blackish.

Microscopical Findings :

Especially surround the bronchus and bronchiolus, alveolar walls, either free or phagocytized on macrophages, black pigment carbon is found.

Regional lymph nodes, especially in the cortical regions of macrophages are of varying density pigment.

In the case of carbon dust accumulation in animals, no reaction other than the indicated table is found.

However, focal fibrosis may develop if the exposure is prolonged.

This is due to the short life of the animals; It is less likely to encounter carbon dusts.

Silicosis

Silicosis Silicic acid is formed by the accumulation of quartz, silicandioxidic powders into the lung.

Silicatose is a powder inhalation disease caused by the accumulation of asbestos, talc, kaolin powder into the lung.

Although it is insignificant in animals, it occurs in humans, especially in occupational diseases.

Granulomatous change in lung, fibrosis, forms chronic emphysema.

ZEOLITE

(ERIONITE)

- *It is the most potent carcinogenic mineral in the world.**
- Prof Dr İzzettin Barış has been proven, this mineral for the first time in Turkey in the world**
- * Common in Cappadocia (Karain and Tuzköy)**
- * Causes lung fibrosis and mesothelioma.**
- * For this reason, the decision of displacement of Tuzköy was taken for the first time in our country (2001).**

Kaolin

In porcelain construction, long-term effect of kaolin is seen as occupational disease.

Lung grayish color.

Nodules or Widespread progressive fibrosis is shaped.

Microscopic examination

Kaolin particles, fibrosis are encountered.