RABBIT PASTEURELLOSIS

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Pasteurellosis

• Pasteurellosis is a common disease in domestic rabbits (30%–90% of apparently healthy rabbits may be asymptomatic carriers).

• It is highly contagious and transmitted primarily by direct contact.

• When nasal cultures are collected, not every positive result indicates a pathologic condition.
The etiologic agent **Pasteurella multocida**

- Gram-negative, non-motile coco-bacillus or short rods, non spore forming, have bipolarity when stained with blood stains.

- Grow on blood agar giving dew drop like colonies, non-haemolytic and 3 recognized types (smooth mucoid and rough). It is thought that the mucoid type is the most pathogenic one.
The etiologic agent

**Pasteurella multocida**

- Virulence of the microorganism vary from mild to highly pathogenic (The organism is endotoxin producer and serologically has at least five serotypes).

- Pasteurella multocida had 5 antigenic groups A-E types; A and D are most commonly isolated from rabbits.

- Pasteurella multocida as well as bordetella bronchiseptica is a normal inhabitant of the upper respiratory tract of some rabbits and when animal exposed to stress factors, the organism flares and cause the disease.
Stress factors

Environmental factors
- Bad (poor) ventilation.
- Extreme temperatures.
- High ammonia percent.
- Overcrowding.
- Improper care of nest-box babies.

Nutritional factors
- Sudden change of diet.
- Poor quality diet.
- Irregular feeding.

Physiological factors
- Pregnancy, parturition, heavy lactation, old ages, reproduction.
- Early weaning.
- Concurrent infection (as enteritis in 4-12 week old rabbits).
- Transportation.
Susceptibility

(a)
• All ages of rabbits are susceptible.
• Young rabbits usually developed an acute form with high mortality.
• Semi-mature and adult acquire sub-acute and chronic form with low mortality.

(b) There is variation in breed susceptibility due to genetic factors.

(c) Disease more prevalent in spring and fall.
## Mode of infection and transmission

Infection occurs through the respiratory route (inhalation) with wet or dried discharge from diseased rabbits.

### Natural transmission

- Direct contact between chronically (carriers) infected does and their litter in the first few weeks after kindling or between breeding pairs during mating.

- Infection transmitted from one farm to another through air or mechanically by attendants, rats, flies.

### N.B

- Transmission by air borne mean occur over short (distance A group of non-infected rabbits housed in cages adjacent to a group of Pasteurella shedders, these animals require weeks to months to demonstrate nasal discharge.
Rabbit pasteurellosis produces high mortality through septicemia, while other rabbits develop other forms as snuffles, pneumonia, otitis media, genital infection such as orchitis and epididymitis in males and metritis or pyometra in females, conjunctivitis, multiple abscesses formation in internal organs and arthritis.
The term snuffles refers to rhinitis and para-nasal sinusitis characterized by mucous or mucopurelent nasal discharge which the animal wipes away with its forelegs. The fur on the inside of the legs becomes matted as a consequence.

Respiratory signs (sneezing and snuffling sounds). The condition should not be confused with a cold (where the discharge is usually thin and clear).
Hemorrhagic septicemia

In peracute cases no signs are present and the animal may die within a few hours without much sign of the trouble.

In acute cases fever is present with rise in temperature, rapid respiration and breathing.

Hemorrhages in lungs and lymph nodes and congested blood vessels.

Chest cavity contains a clear yellowish fluid.
Acute fibrinopurelent pneumonia and pleuritis with septicemia. Symptoms are anorexia, depression, death. The lesions are acute inflammatory reaction or hemorrhage in lung and fibrin covers pleural surface. Cavitation of abscess of entire lobes in chronic cases may occur.
Otitis media

Occurs when the microorganisms ascend Eustachian tube to the middle ear. No signs firstly then torticollis when extends to inner ear or brain in severe cases roll over, unable to eat or drink, death. Suppurative exudate in tympanic cavities Extends to brain (meningoencephalitis) or rupture and discharge from external ear.
Genital tract infection

Vaginal discharge (mucus or mucopurelent) fail to conceive. Bucks low conception rate. Thick creamy exudate in doe uterus and abscess in testes.
Multiple abscesses

In many sites
(subcutaneous tissue, lungs, brain, heart, or muscles).
Conjunctivitis

Subacute or chronic conjunctivitis. Swollen eyes glued shut from exudate, congestion of conjunctiva with serous-purulent exudate and epiphora.
Clinical signs and course

A) Peracute form:

Usually are not observed due to rapid death of rabbits.

This death in septicaemic form due to endotoxin shock accompanied by disseminated intravascular coagulation (DIC) of small B.Vs. especially that of organs.
b) Acute form:

**Nasal discharge**: usually bilateral and in rare cases unilateral in the form of catarrhal nasal discharge, may tinged with blood in some cases, due to accumulation of these exudates in nostrils, the *rabbit shake its head* and *rub the external flares with the medial aspect of the forelimb* at frequent intervals to get rid of these discharge and there for it may be difficult to detect the discharge on the nose but can he detected by wetness of the fur around the nose and of the forelimbs.

**Abnormal respiratory sounds**: cough, constant (recurrent) sneezing, snuffling sound during respiration due to partial obstruction of the respiratory passage from which the disease take its name.
b) Acute form:

Presence of catarrhal exudates may be tinged with blood in nasal cavity, paranasal sinuses, trachea, bronchi with Redding and edema of their m.m. (rhinitis, tracheitis, bronchitis) Lung congested.

Inflammation of the skin around the nose.

Swelling of the lymph nodes.

Reddening conjunctiva and swelling of eyelids.

Metritis: one or both slightly enlarged and contain serious exudates.
c) Sub-acute

Presence of muco-purulent exudates in the nose, trachea, bronchi, with pneumonia in lungs.

d) Chronic form

Abscesses in back and belly, and may found in any organs or tissue in the body.

In genital infection

Female: one or both uterus generally enlarged and has purulent exudates.

Male: one or both testicles enlarged, firm and has abscess formation.
Diagnosis

Case history of rapidly spreading disease may result in high mortality. Clinical signs and P.M. examination.

Isolation and identification of causative agent: living from nasal discharge and dead from heart blood, liver, spleen, bones and respiratory tract.

Serology: AGAT, ELISA.

PCR
**Differential diagnosis**

1. **Rhinitis: may be differentiated from**
   - Cold: Nasal discharge is thin and clear.
   - Temporary irritation: As dust, dry feed lead to temporary sneezing.
   - Viral haemorrhagic disease (epistaxis).

2. **Nervous signs**
   - Bacterial infection: Listeria, Proteus, chlamydia
   - Mycotic infection: Aspergillosis.
   - Parasitic: Ear mange, coenurosis, cerebrospinal nematodosis.
   - Nutritional: Vit A, magnesium deficiency.
3. Vaginal discharge

Salmonellosis: mucopurulent vaginal discharge.
Listeriosis: blood tinged vaginal discharge.
Staph: purulent discharge.
Corynebacterium: purulent discharge.

4. S/C abscesses

Viral tumors
Bacterial cause: Staph. pseudomonas, proteus.
Parasitic: coenurus serialis cyst.

5. Septicemia

From septicemic diseases.

6. Conjunctivitis
Prevention and control

(A) Prevention of the disease:

1- Sanitation and sound management to prevent introduction of the infection.
   - Avoid stress factors especially bad ventilation.
   - Daily cleaning of rabbit hutch and equipments to avoid ammonia. Isolation and.
   - Quarantine measures for newly introduced rabbits for at least 3 weeks.
   - For prevention of genital affection:
     - Regular examination of external genitalia of breeding stock. Regular examination of breeding records and get rid of any female fail to conceive or male of low conception rate.
     - Vaginal or preputial wash for bacteriological examination for suspected cases.

2- Using of drugs in prophylactic dose.

3- Systemic vaccination of all rabbits 2 months age and over with local prepared formalinized bacterin, then poostered after 15 days and revaccination every 6 months.
Prevention and control

(B) Control of the disease:

- Sanitation and sound management to prevent spread of the disease.
- Isolation of the diseased rabbits from apparently healthy rabbits.
- Hygienic disposal of dead rabbits.
- Thorough cleaning and disinfection of rabbit hutch and equipment.
Prevention and control

**Therapy:**

The use of drugs in prophylactic dose to apparently healthy rabbits and in therapeutic dose for diseased rabbits.

Combination of penicillin and streptomycin or broad spectrum antibiotics such as, tetracycline, erythromycin, ampicillin. Enrofloxacin chloramphenicol or S. quinoxaline.

**Local treatment for:**

Conjunctivitis Local application of antibiotic eye ointment.

S/c abscesses should be treated surgically.

Castration and ovariohysterectomy coupled with antibiotic therapy in genital tract infection.