

# Abortion in cattle (Brucellosis)

The background of the slide features a collection of stylized, semi-transparent silhouettes of various farm animals. These include several cows in different colors (brown, grey, black), two pigs (one pink, one reddish), and several dogs of various breeds and colors (black, tan, brown). The animals are scattered across the slide, creating a farm-themed backdrop.

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**WELCOME**

# Abortion

- Expulsion of **living fetus** before reaching to full term or **dead fetus** at any stage.
- It is most common in **cows** than mare then small ruminants, swine, dogs & cats.
- It is common during **mid of pregnancy** till **full** term of pregnancy.
- If occur **before 5** month, it followed by **retention of the placenta** but after that may or may not.

# Classification of abortion

## Specific infectious Abortion



- 1) Bacterial
  1. Brucellosis
  2. Vibriosis
  3. Leptospirosis

*NS: staph., strept., E. coli & salmonella*
- 2) Viral

*NS: FMD, RVF*

  - 1) Bovine viral diarrhea (BVD)
  - 2) Infectious bovine rhinotrachitis (IBR)
- 3) Protozoal
  - Trichomoniasis
  - Toxoplasmosis
- 4) Fungal
  - Aspergillosis

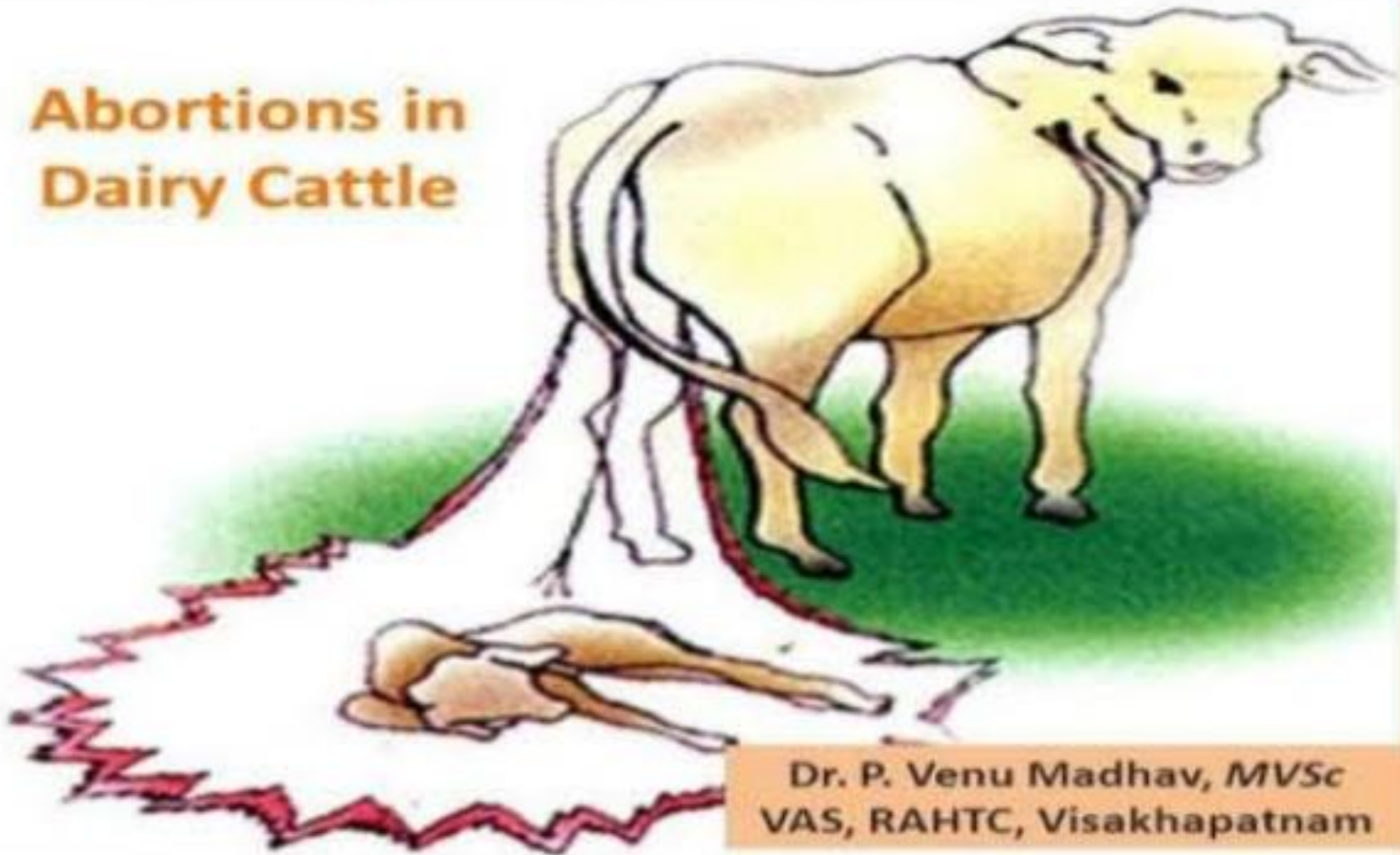
## Non specific/infectious Abortion



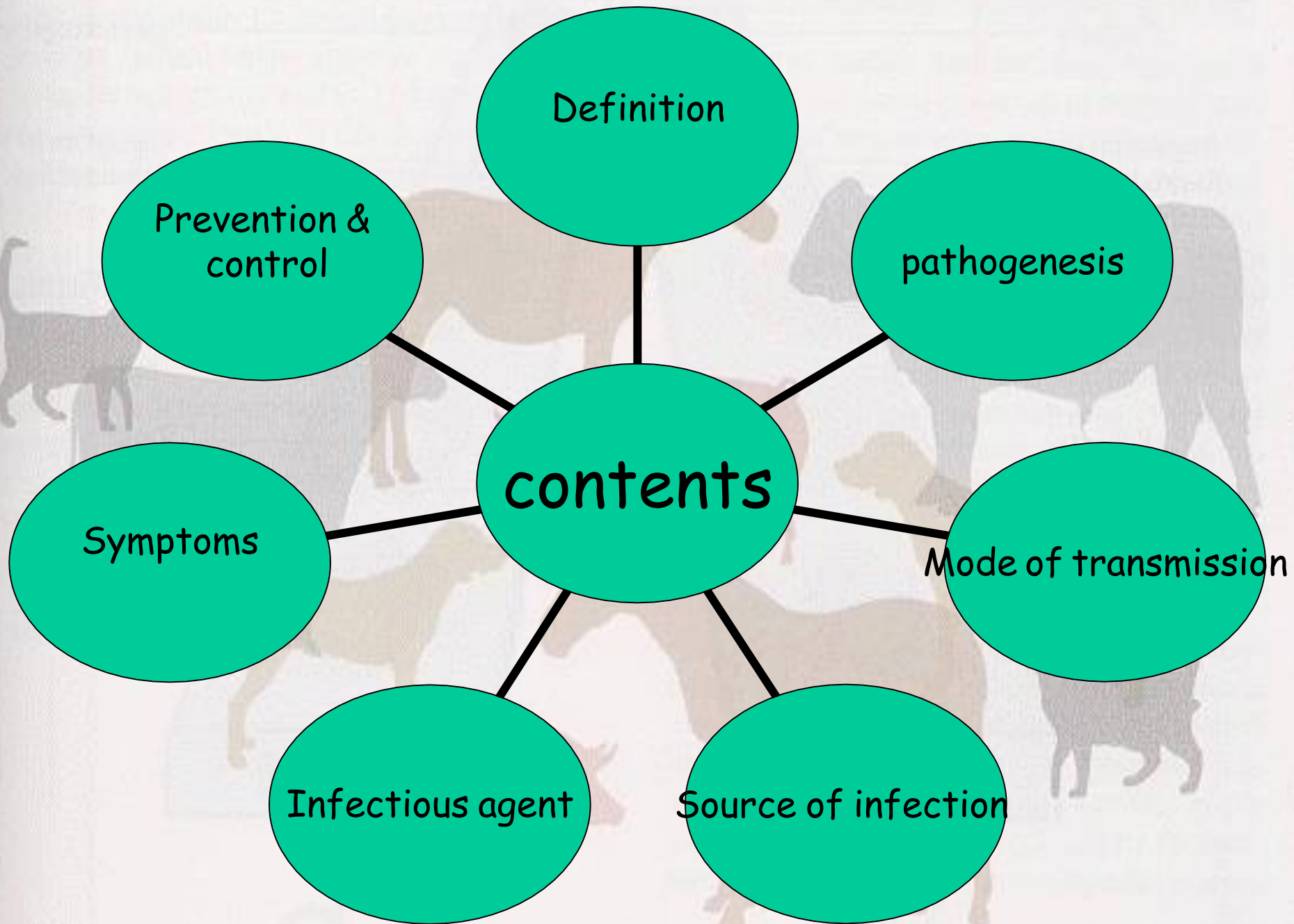
1. Physical as trauma, kicking
2. Chemical as drugs or toxic plants
3. Hormonal as glucocorticoids & E<sub>2</sub>
4. Nutritional deficiency as vit A & iodine
5. Psychological as nervous action in mare
6. Genetics as disease in embryo
7. Allergic reactions
8. Twins

# Brucellosis

**Abortions in  
Dairy Cattle**



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# Definition

- Brucellosis is one of the most serious of the current public health problem.
- It is a disease affect healthy mother.
- Gram negative non motile coccobacillus.
- Environmental persistence:
  - Withstands drying.
  - Temperature, pH, humidity.
  - Freezing and aborted materials, dust, soil.
- It **killed** by heat at 60°C / 10-30 min.
- Its **incubation period** from 3 wk to one year or more.

- **Animal Disease names:** Bang's Disease, Enzootic Abortion, Epizootic Abortion, Ram Epididymitis & Contagious Abortion.
- **Human Disease names:** Malta Fever, Undulant Fever & Mediterranean Fever.

- **It is characterized clinically by:**

1. High incidence of abortion with retained placenta.
2. Inflammation in genital system, fetal membrane & fetus
3. Infertility.



# Risk of Populations

1. Cattle /dairy farmers
2. Veterinarians
3. Abattoir workers
4. Meat inspectors
5. Lab workers
6. Hunters (handle infected animals)
7. Consumers (Unpasteurized dairy products as milk or unpasteurized foreign cheeses).

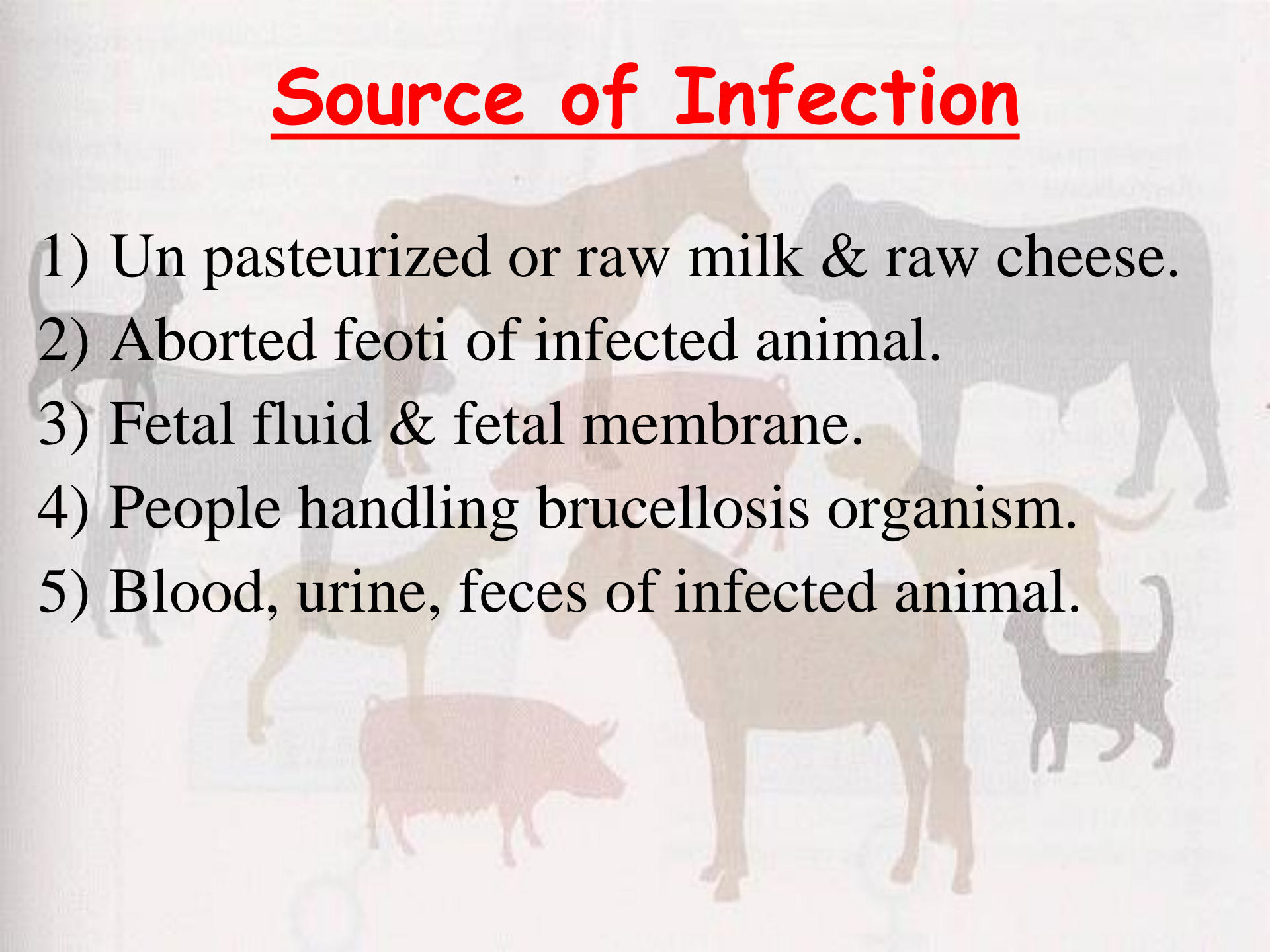


# Infectious Agents

- *Brucella abortus* → affect cattle, buffalo, camel & bison.
- *Brucella melitensis* → affect goats
- *Brucella suis* → affects pigs
- *Brucella ovis* → affects sheep
- *Brucella canis*  
→ affects dogs



# Source of Infection

- 1) Un pasteurized or raw milk & raw cheese.
  - 2) Aborted feoti of infected animal.
  - 3) Fetal fluid & fetal membrane.
  - 4) People handling brucellosis organism.
  - 5) Blood, urine, feces of infected animal.
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# Mode of transmission in animals

- 1) **Ingestion** of infected tissues or body fluids
- 2) **Contact** with infected placenta, fetus, fetal fluids and vaginal discharges
  - Mucous membranes, injections
- 3) **Venereal (present in semen)**
  - Swine, sheep, goats, dogs
- 4) **Fomites** of infected animals (feed & water).
- 5) **Conjunctiva** of the eye.
- 6) **Inhalation** of infected bedding.

# Mode of transmission in Human

- **Ingestion:**
  1. Drinking of raw milk
  2. Consumption of improper cooked meat & raw cheese.
- **Through skin & mucous membrane**
  1. Handling of infectious materials as aborted feoti, placenta, urine & blood.
  2. Direct or in direct contact with infected goat & cattle.
- **Man to man transmission is rare**
- **Aerosol inhalation** in Laboratory, abattoirs, Pens, stables during cleaning.
- **Inoculation with vaccines** as in *B. abortus* strain 19 or *B. melitensis* Rev-1.

# pathogenesis

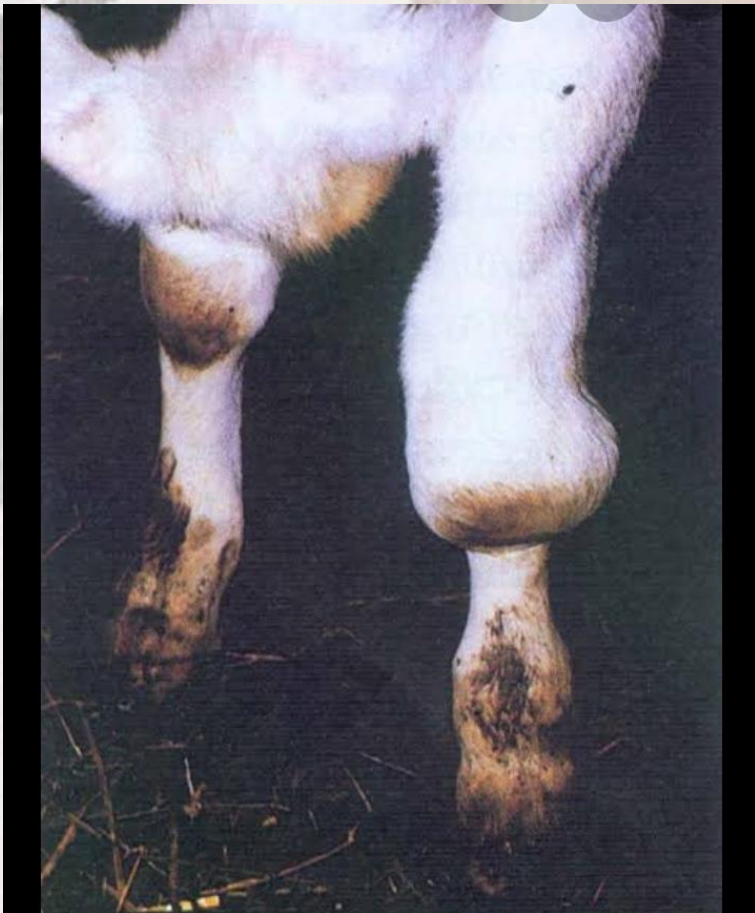
- The Infection begin by **ingestion or inhalation** then localized in lymph node then to blood.
- If animal **non pregnant** → microorganism localized in supramamary lymph node, joint (hygroma & lameness), testis or epididymis (orchitis or epididymitis).
- If animal **pregnant** → mos in gravid uterus & production of **erythritol** result in rapid multiplication of brucella → cause necrosis of trophoblast & ulceration & placentitis (loss its function) & abortion.
- After abortion, mos localized in lymph node, liver, spleen, joint & supramamary lymph node.

# Symptoms in female animal (Cattle)

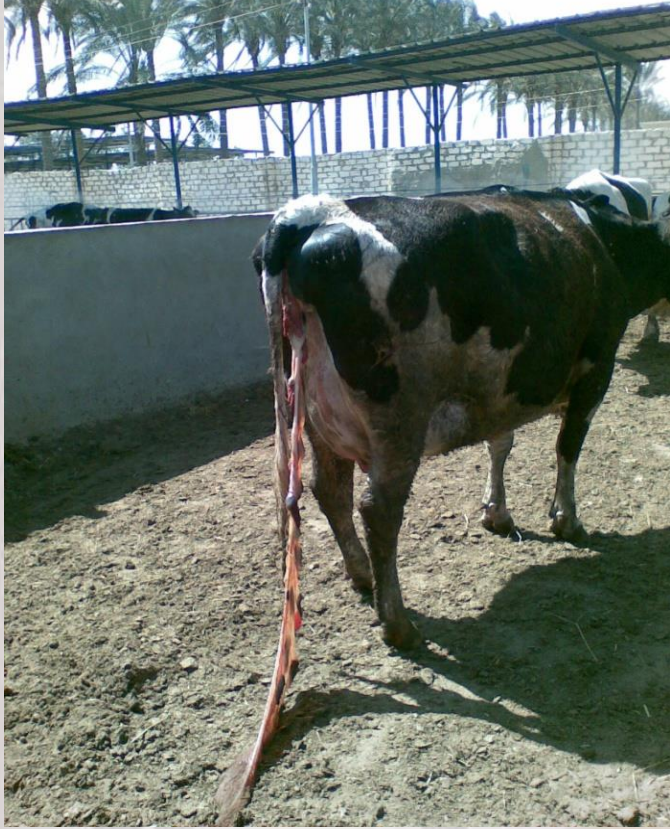
- **Storm** of abortion at 7-8 months (Third trimester) & it vary according to size of herd & its resistance 25% & the next season 50% .
- **Retained placenta** (Once expelled have a leathery necrotic appearance).
- **Endometritis** result in sterility due to damage of uterine gland.
- Birth of **dead or weak calves** (hairless or fully developed) with respiratory distress and lung infections with reddish serous fluid in tissues.
- **Low** milk yield with mastitis.
- **Vaginitis** with brown mucopurulent vaginal, cervicitis & metritis.

- **Symptoms in male animals:**

1. Orchitis, epididymitis and seminovesiculitis.
2. Hygroma of knee joint and lameness.







**Edematous placenta**



# Symptoms in sheep & goat

- *B. melitensis*

- Late term abortions

- Retained placenta

- Birth of dead or weak lambs/kids

- Articular hygroma

- *B. ovis*

- Abortions,

- fertility problems in sheep

(Orchitis, epididymitis & arthritis).



# Symptoms in swine

- *B. suis*:
  - **Abortion**, early or late gestation
  - **Fertility problems**; orchitis
  - **Lameness**, posterior paralysis, metritis & abscesses in all body.



# Symptoms in horses

- Horses is suceptable to *B. abortus* most common or *B. Suis*.
- **Fistulous Withers** or Poll Evil (inflammation of the supraspinous bursa) that lead to clear viscous straw like exudate from ruptured fistula.
- Abortion is rare in horse.



# Symptoms in human

- **Acute case:** flu-like symptoms including fever, malaise, anorexia and back pain.
- **Drenching sweats** can occur particularly at night.
- Cough (pneumonia) & headache, weight loss & joint fatigue.
- **Intermittent fever** at regular intervals persists from 10-14 days (undulant fever).
- **Gastrointestinal signs** including anorexia, nausea, vomiting, diarrhea and constipation occur frequently.
- **Abortion** in woman & **orchitis** in man.
- Endocarditis, hepatomegaly, splenomegaly, arthritis.
- Encephalitis & meningitis.

# Diagnosis in Animals

- **Clinical diagnosis:**

- History, symptoms & postpartum lesions.

- **Laboratory isolation of organism:**

Blood, semen, vaginal discharge, fetal membrane, testicular abscess in male.

1. Direct film stained by zehil neilsen stain.
2. Culture on albumin agar or blood agar.
3. Animal inoculation: male genia pig inoculated s/c after 30 days, orchitis occurs.



- **Serology:**

- **Serum agglutination test:** after one month of abortion.

- Normal (1:10), infected (1:40), suspicious (1:100) & infected (1:200).

- **Milk ring test:** brucella antigen with milk sample.

- Positive (pink ring above milk), negative (uniform pink color in milk).

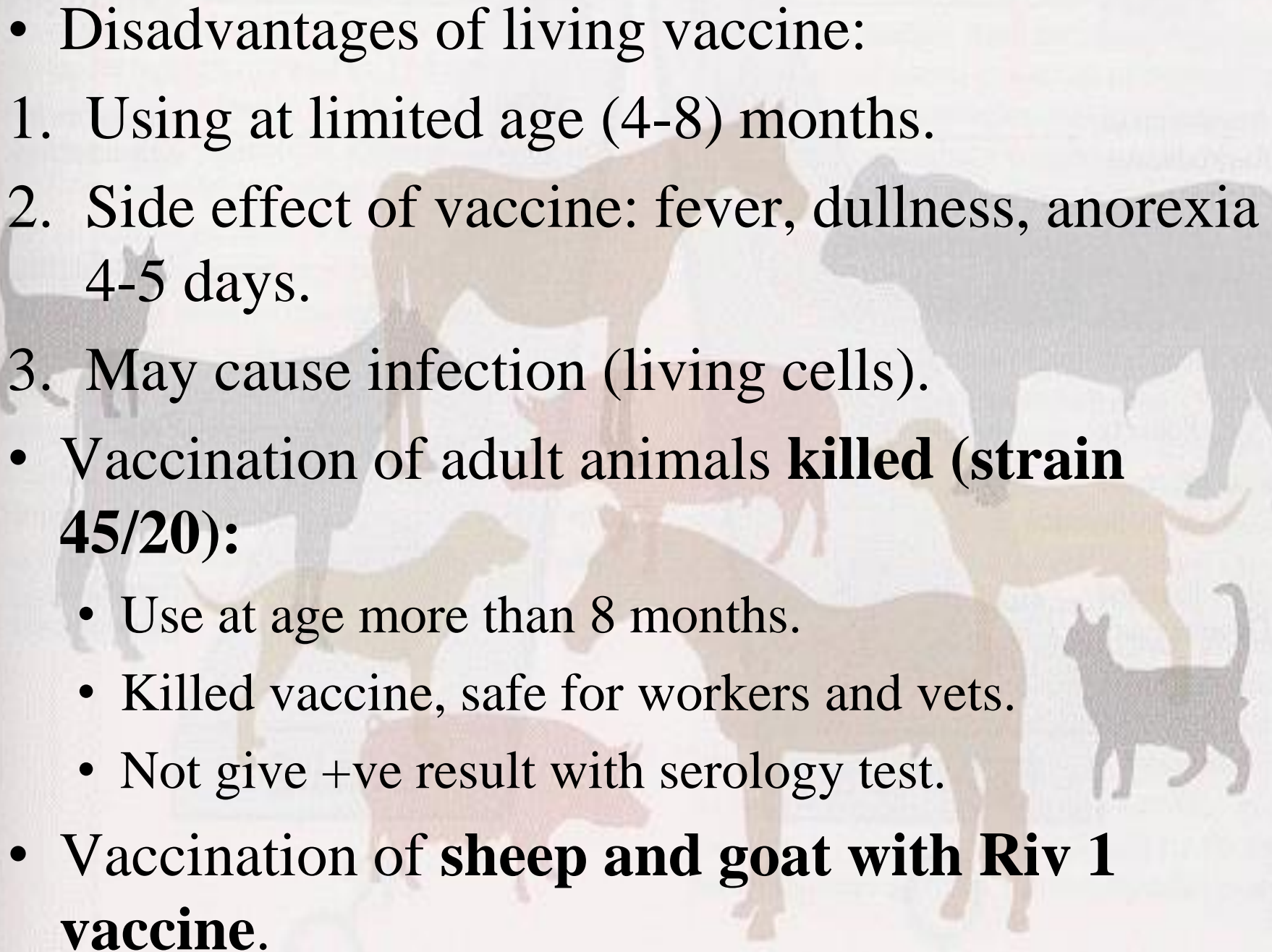
- Brucellosis card test.



# Prevention & control

- Isolation or slaughter of infected animal
- Strict attention given to veterinarian in handling living vaccine.
- Protective clothing for workers .
- Wounds & abrasions should be treated.
- Avoid consumption of raw dairy products.
- Vaccination by **live vaccine strain 19 (young animal)**:
  - From living cells (dose 5ml s/c)
  - **From 4-8 months animals:** not less than 4 month (immaturity of immune system & interfere with maternal immunity).
  - **Not more than 8 months:** (+ve result with all test (false diagnosis), vaccine secreted in semen as pathogenic mos).



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- Disadvantages of living vaccine:
    1. Using at limited age (4-8) months.
    2. Side effect of vaccine: fever, dullness, anorexia 4-5 days.
    3. May cause infection (living cells).
  - Vaccination of adult animals **killed (strain 45/20)**:
    - Use at age more than 8 months.
    - Killed vaccine, safe for workers and vets.
    - Not give +ve result with serology test.
  - Vaccination of **sheep and goat with Riv 1 vaccine.**

# Treatment & prognosis

- Treatment of infected **persons** with intensive course of antibiotics as **doxycycline** for 6wks with **streptomycin** for 2-3wks & recovery is common.
- Treatment of infected **animals** with combination of antibiotic therapy & surgical drainage of placenta with antibiotics.
- Disease may last days, months or years so eradication or slaughtering is best choice.

