Brucellosis

Synonyms (المرادفات): undulant fever, Malta fever, Mediterranean fever Melitococcosis, (in man); contagious abortion, infectious abortion, epizootic abortion (in animals); Bang's disease (in cattle).

Brucellosis: is an important zoonotic bacterial disease caused by ***Brucella spp***. It affects human and different kinds of animals (sheep, goats, cattle, camels, pigs, horses, dogs, rats and wild animals including deer, bison, elk, water buffalo, and marine mammals). It is primarily a reproductive disease in animals (manifested with reproductive failure, such as **abortion** or **birth of unthrifty newborns** and **placentitis** in the female, and **orchitis and epididymitis** with frequent **sterility** in the male).

Etiology:

Brucella spp. are facultative intracellular gram-negative cocco-bacilli, **Nine Brucella** species are currently recognized, seven of them that affect overland animals (الارضيه) are: **1-*B. abortus,* 2-*B. melitensis,* 3- *B. suis, 4-B. ovis,5- B. canis,6-B. neotomae, and 7-B. microti*** and two that affect marine mammals (البحرية) are: ***8- B. ceti and 9- B. pinnipedialis***. The first three species are **called classical Brucella** and within these species, seven biovars are recognized for *B. abortus*, three for *B. melitensis* and five for *B. suis*. The strains of brucellae were named based on the host animal preferentially infected.

Epidemiology

Brucellosis is found worldwide, but it is well controlled in most developed countries. The clinical disease is still common in the Middle East, Asia, Africa, South and Central America, the Mediterranean Basin and the Caribbean. Natural transmission occurs by **ingestion of organisms**, which are present in large numbers in aborted fetuses, fetal membranes, and uterine discharges. Brucellae have been recovered from fetuses and from manure that has remained in a cool environment for >2 months. Exposure to direct sunlight kills the organisms within a few hours. ***B. abortus, B. melitensis, B. suis and B. canis*** are usually transmitted between animals by contact with the placenta, fetus, fetal fluids and vaginal discharges from an infected animal. Animals are infectious after either an abortion or full term parturition. Although ruminants are usually asymptomatic after their first abortion, they can become chronic carriers, and continue to shed Brucella in milk and uterine discharges during subsequent pregnancies.

Transmission in Animals:

Animals can become infected with brucellosis in a number of ways, including:

1- by consuming feed or water that has been contaminated by infected tissues or fluids.

2- through direct contact with infected tissues or fluids from an infected animal (placenta, fetus, fetal fluids and vaginal discharges …).

3- by consuming colostrum or milk from an infected animal

4-Venereal Swine, sheep, goats, dogs

5- Brucella may enter the body through mucous membranes, conjunctivae, wounds, or intact skin in both people and animals.

6- Fomites

Clinical Findings

The main symptoms are **abortion, retained placenta, orchitis, epididymitis and, rarely, arthritis**. The disease is usually asymptomatic in non-pregnant females. Following infection with *B. abortus* or *B. melitensis*, pregnant adult females develop a placentitis usually resulting in abortion between the fifth and the month of pregnancy. The mammary gland and associated lymph nodes may also be infected, and organisms may be excreted in the milk. **In horses**, it causes a condition called **fistulous withers** or **poll evil,** a swelling of the neck or back. However, pregnant mares may either abort or give birth to weak and vulnerable foals.

Diagnosis

1- **Case history and clinical signs** (introduce new animals to the herd, abortion, abortion, retained placenta, orchitis, epididymitis ……..).

2- **Serological agglutination tests**. The detection of specific antibody in serum or milk remains the most practical means of diagnosis of brucellosis. **Rose Bengal Plate Test (RBT), Serum agglutination test (SAT) , Enzyme Linked Immnuno-Sorbent assay (ELISA). Complement fixation test (CFT), Milk Ring Test (MRT), milk ELISA.**

3- Brucellin skin test

4- **Bacteriological methods**. The isolation of Brucella offers a definitive diagnosis of brucellosis. Brucella is excreted in large numbers at parturition and can be cultured from a range of material including vaginal mucus, placenta, fetal stomach contents and milk using suitable selective culture media. Samples collected from aborted fetus are ideal for bacteriological examination (**stomach contents, meconium, lung, spleen, liver, and placental cotyledons** should be collected aseptically into sterile containers). When neither fetus nor cotyledons are available, vaginal mucus swabs should be collected from several animals in the affected herd. Also milk samples, joint fluid should be collected. At autopsy samples of lymph nodes, bone marrow, uterus, testes, and hygromas fluid should be collected.

5- Polymerase chain Reaction (PCR).

Differential diagnosis:

The following diseases must be considered in the differential diagnosis;

1- Chlamydial abortion
2- Vibriosis
3- Toxoplasmosis
4- Listeriosis
5- Rift valley fever

Prevention and Control:

- Education about risk of transmission

Farmers, veterinarians, abattoir workers, butchers, consumers, hunters

- Wear proper clothes if dealing with infected animals/tissues

– Gloves, masks, goggles

- Avoid consumption of raw dairy products

- Vaccination, in areas of high prevalence, young goats and sheep with **Rev-1,** Calves with **RB51** or ***Brucella abortus* strain 19 (S19)** vaccine.

References

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2- Radostits, O. M. Gay, C.C. Hinchcliff, K. W. Constable, P. D. and et al,2007. Veterinary medicine A textbook of the diseases of cattle,horses, sheep, pigs and goats, 10 edition.

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