

# Brucella melitensis : A forgotten disease?

## Introduction

*B. melitensis* (biovar 1, 2 or 3) is the main causative agent of brucellosis in sheep and goats, but it also occasionally occurs in some cattle herds.

Two outbreaks of *B. melitensis* were diagnosed during the past few years in South Africa: The 2015 outbreak was diagnosed in a goat and sheep herd in the Beaufort West Local Municipality in the Western Cape province, while the 2010 outbreak was reported in a goat herd in Gauteng in the Kungwini Local Municipality. Human cases were also diagnosed in response to these outbreaks.

South Africa has never declared itself to be free of *B. melitensis* to the OIE (World Organisation for Animal Health). It is therefore essential to consider *B. melitensis* in cases of abortions in livestock.

## Epidemiology

There seems to be no difference in pathogenicity among the three biovars of *B. melitensis*.

All goat breeds are believed to be equally susceptible, while in sheep the resistance seems to vary with Maltese sheep and local Nguni sheep breeds showing some resistance.

Routes of infection include:

- Contaminated environment and equipment used for milking or artificial insemination
- Permanent lambing/kidding camps and lush pastures, particularly if wet and muddy
- Orally via the sucking or licking of aborted material or vaginal discharges (genital discharges seem to be a major source of infection, especially in nanny goats where shedding may persist for up to three months following abortion/kidding)
- The ingestion of infected milk, colostrum (organism may persist for years in the udder with constant intermittent shedding in milk) or feedstuffs
- Inhalation of dust
- A small percentage of lambs becoming infected *in utero*. *B. melitensis* infection in lambs may persist until adulthood without inducing a detectable serological response
- Semen may pose a risk of transmission, but it is generally accepted that billy goats and rams do not play an important role in the epidemiology of the disease
- Farm dogs kept with infected herds may become infected with *B. melitensis* and infected bitches may serve as a reservoir of infection.

Spill-over infections from domestic ruminants to wildlife have been documented. *B. melitensis* was diagnosed in sable in South Africa in 2007 and again in 2015. It is therefore essential to also keep *B. melitensis* on the differential diagnostic list for wildlife.

## Clinical signs

### Cattle

Pregnant cows may abort and shed *B. melitensis* in their milk.

### Sheep and goats

- Usually the first sign is an abortion storm. During subsequent breeding seasons, the number of abortions may decrease progressively and may eventually cease to occur, but such flocks, however, remain infected for years
- Kids or lambs from infected females may be born weak or asymptomatic but may become persistent carriers
- Retention of placenta and foetal membranes (especially in nanny goats)
- Decreased milk yield and quality
- In males, orchitis or epididymitis may occur and this may in turn result in decreased fertility
- Arthritis (hygromas).

## Humans

*B. melitensis* is considered the most virulent brucellosis species for humans and it has been rated by the World Health Organisation as one of the most important zoonoses. It causes the disease known as Malta fever (also known as Mediterranean- or Undulant fever) in humans and the clinical disease caused by *B. melitensis* is more severe compared to those caused by *B. abortus* and *B. suis* in humans.

### Transmission

Humans may become infected through:

- The ingestion of raw milk and other unpasteurised dairy products (e.g. soft cheeses)

- Contact with infected carcasses
- Handling of wool from infected animals
- Handling of infected aborted material
- During the milking process by milkers being infected through the skin and by milk that sprays into their eyes
- Accidental injection with live vaccines containing *B. melitensis*.

### Symptoms of disease

*B. melitensis* infection in humans resembles that of influenza or malaria. The disease may persist as chronic brucellosis. Occasionally complications may occur which may result in death.

### Protective measures

Wear full protective clothing (overall or coat; rubber or plastic apron; masks; rubber gloves; boots; eye protection) when handling risk material, such as ewes or nanny goats that are in the process of giving birth, aborted fetuses, infective genital secretions and carcasses. If animals are known to be infected with *Brucella* spp. they should be slaughtered at abattoirs designated for this purpose, as the staff would have been specifically trained and equipped to deal with the risk. Tissues that are likely to be heavily infected will be removed, condemned and destroyed.

## Diagnosis in animals

One of the OIE recommended serological tests that is available is the Complement Fixation Test (CFT). A positive CFT result cannot distinguish between infection with *B. melitensis* and *B. abortus* or between positive results due to infection or vaccination.

A definitive species diagnosis will depend on culture, isolation and identification of the agent on samples of:

- Aborted fetuses (especially the stomach contents, spleen and lung) and foetal membranes
- From carcasses: genital and oropharyngeal lymph nodes, spleen, mammary glands and associated lymph nodes, late pregnant or early post-partum uterus.

## Compliance with the Animal Diseases Act, 1984 (Act No. 35 of 1984)

Brucellosis in any animal species is a controlled animal disease in terms of the Animal Diseases Act, 1984 (Act No. 35 of 1984) and any suspected or confirmed outbreak must be immediately reported to the responsible State Veterinarian. The department will cover the diagnostic costs for *B. melitensis* diagnosis if samples are submitted by the relevant provincial State Veterinarian.

Control by test and slaughter or slaughter out of an entire herd is practised.

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