

## SECTION II-2 SIGNS OF MASTITIS

### 2. SIGNS OF MASTITIS

Mastitis as a disease can be categorized into three types depending on the severity of the disease and the signs that it causes.

#### 2.1 CLINICAL MASTITIS

Clinical mastitis presents itself with visible signs of infection with abnormal milk, and may or may not be associated with systemic signs, depending on the severity of the infection.

##### 2.1.1 SEVERE CLINICAL MASTITIS

This term means that the ewe has signs of illness, i.e. that the disease has affected it systemically. The incidence of severe clinical mastitis (number of cases/year) is generally ~ 5%, but the case fatality rate (proportion of ewes that die if they have the disease) is often 10 to 50%, making this not only economically important but also a welfare concern. Of those that survive, a very high percentage (as high as 70%) are culled either because the udder is irreversibly damaged or because of low milk production after recovery.

##### ACUTE SEVERE CLINICAL MASTITIS

Acute means sudden onset (as opposed to chronic where the disease has been present for weeks or months). Signs include: a high fever, usually 40.5 °C (105 °F) or higher (normal ~ 39.5 °C or 103 °F); depression; partial or complete lack of appetite; **dehydration** which is usually noted as sunken, dull eyes; and grinding teeth from pain. The udder or individual gland is swollen, hot, and painful to touch and usually has an inflamed or red appearance. The ewe may appear lame because of a reluctance to have the leg touch the udder. The milk may be watery in appearance or red-tinged from blood or appear like reddish serum - with or without clots of milk present.

##### GANGRENOUS MASTITIS

Gangrenous mastitis is often called “blue bag”. Signs in the ewe may be similar to acute severe clinical mastitis with the exception that the gland and / or teats are cool or cold to the touch. About 8 to 10% of all cases of clinical mastitis are gangrenous. The onset of the disease is very acute, e.g. within a few hours. The skin is often bluish or purple in colour indicating that the blood supply to the skin and udder is damaged – usually from toxins released by the bacteria in the udder (Fig. 2). The secretion from the udder is

Fig. 1. Severe mastitis



Fig. 2. Gangrenous mastitis



usually scant, blood-tinged serum. Gas may also be “milked-out” and may sometimes be felt in the udder. The changes to the skin may advance beyond the udder and can affect the abdomen and inside of the thighs. When this is the case, the likelihood for survival of the ewe is poor.

Gangrenous mastitis is most often seen within 1 to 4 weeks after lambing, and some cases occur after weaning – but it can occur at any time of lactation. The bacteria usually responsible for this type of mastitis are either *Staphylococcus aureus* (most commonly) or *Mannheimia haemolytica*, but other organisms are less commonly responsible, such as *Escherichia coli* (*E. coli*) or *Pseudomonas* bacteria (See Section II.3.2.1 for more details). Bacterial spores from clostridial organisms which prefer tissue with low levels of oxygen, may invade into damaged tissue causing “gangrene”. Usually by the time the gland becomes cold to the touch, it is too late to save it – but perhaps not too late to save the ewe. However, ewes with gangrenous mastitis are usually very ill and in need of emergency treatment if they are to be saved.

Ewes that recover from gangrenous mastitis will lose the diseased gland (Fig. 4). The tissue dies and becomes purulent and the discharges from the decaying gland are full of bacteria. These wounds can easily become fly struck and filled with maggots. If not treated, the decaying material will be a source of infection to other ewes.

### 2.1.2 MODERATE CLINICAL MASTITIS

There are clinical changes to the udder and milk, but the ewe appears healthy and shows no illness.

#### ACUTE

The onset is sudden, usually noticed from one milking to the next. The ewe is not ill but the udder is abnormal, e.g. the udder is uneven because one of the glands is swollen, the skin of the gland may appear pink or red and warm to the touch, the gland is often firm on palpation, or it may be lumpy or fibrotic (Fig. 5). With moderate clinical mastitis, the ewe will usually have a normal appetite, although milk production is reduced. The milk is likely abnormal in appearance, e.g. discoloured, clots or strings – sometimes purulent.

#### CHRONIC

Again the ewe is not ill but changes are noted in the udder. It may be that the initial infection was missed, or the ewe failed to recover completely from an acute case of mastitis. It is not uncommon for chronic mastitis to be noted when weaning the lambs, at dry-off, at shearing when the ewe is tipped up, or at lambing. The udder, one or both glands, is usually not of normal size – it may be larger because of the presence of scar tissue or abscesses, or shrunken because of the loss of functional tissue producing milk. It may be hard or lumpy. If abscesses are present, there may be pus draining from a hole in the gland (Fig. 3). The udder may still be warm to the touch and painful but these changes are

Fig. 5. Ruptured abscess



Fig. 3. Sloughing gland



Fig. 4. Firm gland



mild compared to more severe mastitis. Usually the milk is abnormal and decreased in amount. It may even be absent or replaced with a purulent (i.e. pus-like) secretion.

### 2.1.3 MILD CLINICAL MASTITIS

The ewe is not ill, the udder appears normal but the milk appears abnormal. It may have clots, be purulent and / or have an abnormal colour or sometimes odour or taste. These changes may be acute or chronic but it may be more difficult to tell how long the changes have been present based on the appearance of the milk.

Fig. 6. Normal appearing udder



### 2.2 SUBCLINICAL MASTITIS

This is by far the most common presentation of mastitis. There are no clinical changes to the ewe or the udder and the milk has a normal appearance (Fig. 6). However, mastitis may be present and be causing an increase in somatic cells and a decrease in milk production. Subclinical mastitis must be detected using tests that detect either the somatic cells or by culturing the milk. Because most mastitis in ewes is subclinical it is economically critical to detect and control.

### 2.3 AGALACTIA

Agalactia means that one or both glands have no milk whatsoever. There are many causes of agalactia:

- The milk-producing tissue of the glands may be destroyed by an infection;
- The teats may have a blockage – either congenital (the teat wasn't formed correctly) or acquired from trauma (e.g. lamb bites), or secondary to severe mastitis;
- The ewe may not be producing milk either because she is ill, nutritionally starved, or she is at the end of her lactation.
- Apparent agalactia may occur if the milk let-down mechanism isn't working (e.g. stress or improper udder preparation), or the lambs have nursed out all of her milk.