KOONAC Goat Farm

# Gangrenous Mastitis



## 1. Introduction

Gangrenous mastitis, also called "Black Mastitis", is a bacterial infection of the mammary gland, in most cases caused by the bacterium *Staphylococcus aureus*. Affected goats are in pain and have high fever for a short period, but soon become hypothermic. The udder is hard, swollen, and painful. Initially it is hot, but then it becomes cold. The secretion of the mammary gland becomes a watery, blood containing serous fluid. The infection can rapidly progress to blood poisoning (toxaemia), and death may occur within 24 hours.

Survival chance is guarded. In a report from Cyprus on 720 goats with gangrenous mastitis, 60% survived. If a goat survives the acute phase, a clear line of demarcation forms on the udder. The affected part of the udder becomes clammy, is turning dark purple and later almost black, and is occasionally sloughed.

This text is a documentation of a case of gangrenous mastitis that occurred on our farm, where the goat survived. It has been written with the intention to illustrate the process that has to be expected when the decision is made to (try to) save the goat.

## 2. "Help", the affected goat

Our affected goat was a Saanen x Anglo-Nubian cross. Her name was "Help". She had her first kid, a big buckling, at the age of 1.9 years, and was 263 days into her first lactation period when the infection of her mammary gland happened (3. April 2015). Her body weight was 66-67 kg. She was a pleasant and easy-going milker. Her average daily milk production (with one milking per day) was around 2.2 kg. She always had excellent milk. Her average concentration of butter

fat and protein were 3.98% and 3.00%, respectively, and her somatic cell counts were always low (below 150'000).

# 3. Treatment and course of disease (Day 0 -17)

The following text is an extract from our original health records (see Chapter 5 for explanation about the drugs that were used).

## Day 0

- Morning: Lethargic, does not follow herd from the night paddock to the yard for milking. When she was pushed to the yard, she laid down several times, moaning.
- Flat, fast breathing. Faeces normal (no scour).
- Found that she had peracute (gangrenous) mastitis on the right side. Reason unknown, SSC were low two weeks ago, no signs of illness the evening before!
- Udder hard, cold
- Body temperature normal.
- Clotted milk with bloody serous fluid stripped from udder.
- Injected 6.6g Mastalone Blue ($^2/_3$ of one syringe) directly into the teat (intramammary injection; see Chapter 6 for explanation)
- Injected 5ml Alamycin 10 intra-muscular (IM).

## Day 1

- Inactive, not eating;
- Body temperature normal, probably slightly hypothermic;
- Stripped serous fluid from udder morning, noon and evening;
- Morning: Injected 6.6g Mastalone Blue (intramammary);
- Injected 6ml Alamycin 10 subcutaneous (SC).

## Day 2

- Right teat is cold and medium hard, slowly gets darker;
- Morning: Injected 6.6g Mastalone Blue (intramammary);
- Injected 6ml Alamycin LA 300 (SC);
- Injected 1.5ml Flunixin (IM); shortly after this injection “Help” improves, starts to eat a bit, and relaxes;
- Supra-mammary lymph nodes (in front of the udder along the underside of belly) are massively enlarged and swollen;
- Stripped fluid from teat 3x daily.

## Day 3

- No change;
- Injected 2ml Flunixin (IM);
- Stripped fluid from teat 3x daily.

## Day 4

- No change;
- Injected 1.5ml Flunixin (IM);
- Stripped fluid from teat 3x daily.

## Day 5

- Condition stable, goat not active, but eats a little and digests normally;
- Injected 6ml Alamycin LA 300 (SC);
- Injected 1.5ml Flunixin (IM; hopefully for the last time);
- Continued stripping fluid from udder 3x daily, then 2x daily.

## Day 9

- “Help” is in fairly good mood, no more Flunixin required;
- Teat has become hard like a block of clay, no more fluid in teat;
- Injected 6ml Alamycin LA 300 (SC); hopefully no further antibiotic treatment required.

## Day 17

- Dead part of teat is hard and dry, starts to separate, sprayed demarcation line with Cetrigen to prevent infection and to deter flies (fortunately there are not many flies around because of the cold weather);
- In general, the goat seems well and not really affected by her udder problem.

No further medical treatment after day 17 (20. May 2015)

# 4. Photo documentation (Day 11 – 80)

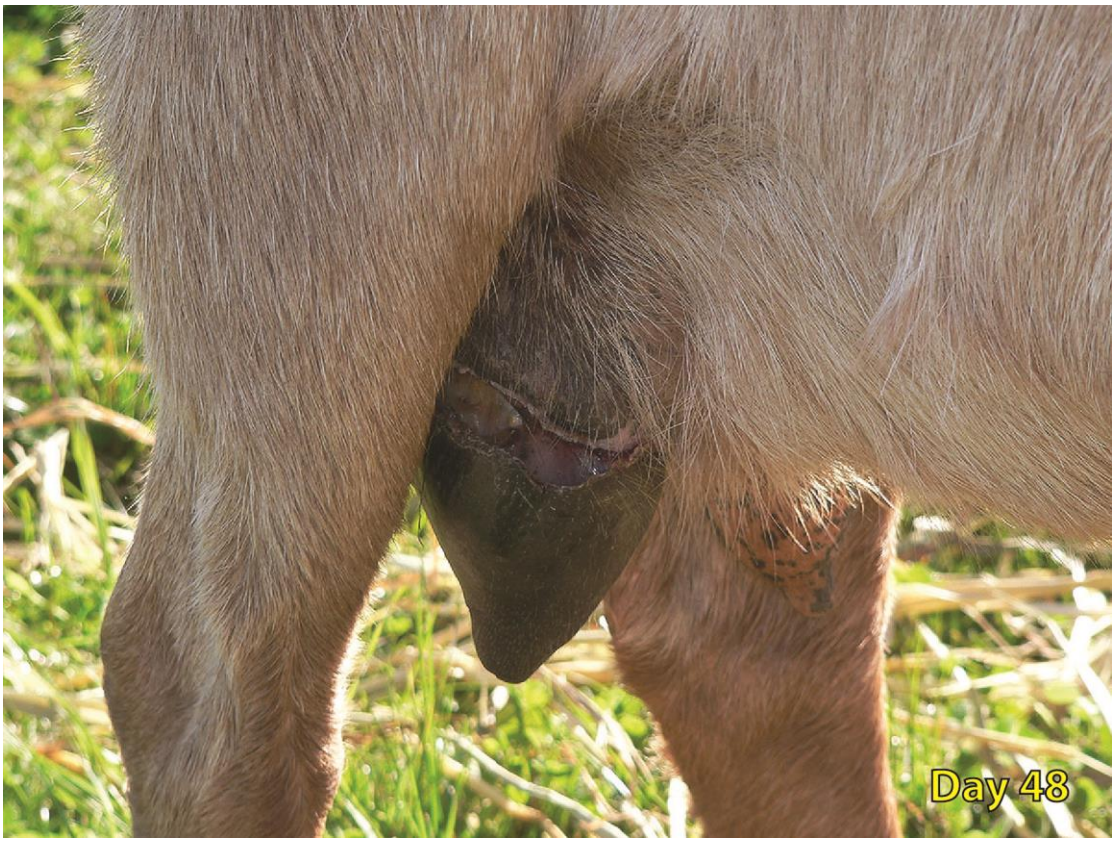
This section contains a sequence of pictures that were taken between day 11 and day 80. The pictures show how the affected side of the udder became dark and hard and finally sloughed from the rest of the udder.

## Day 11

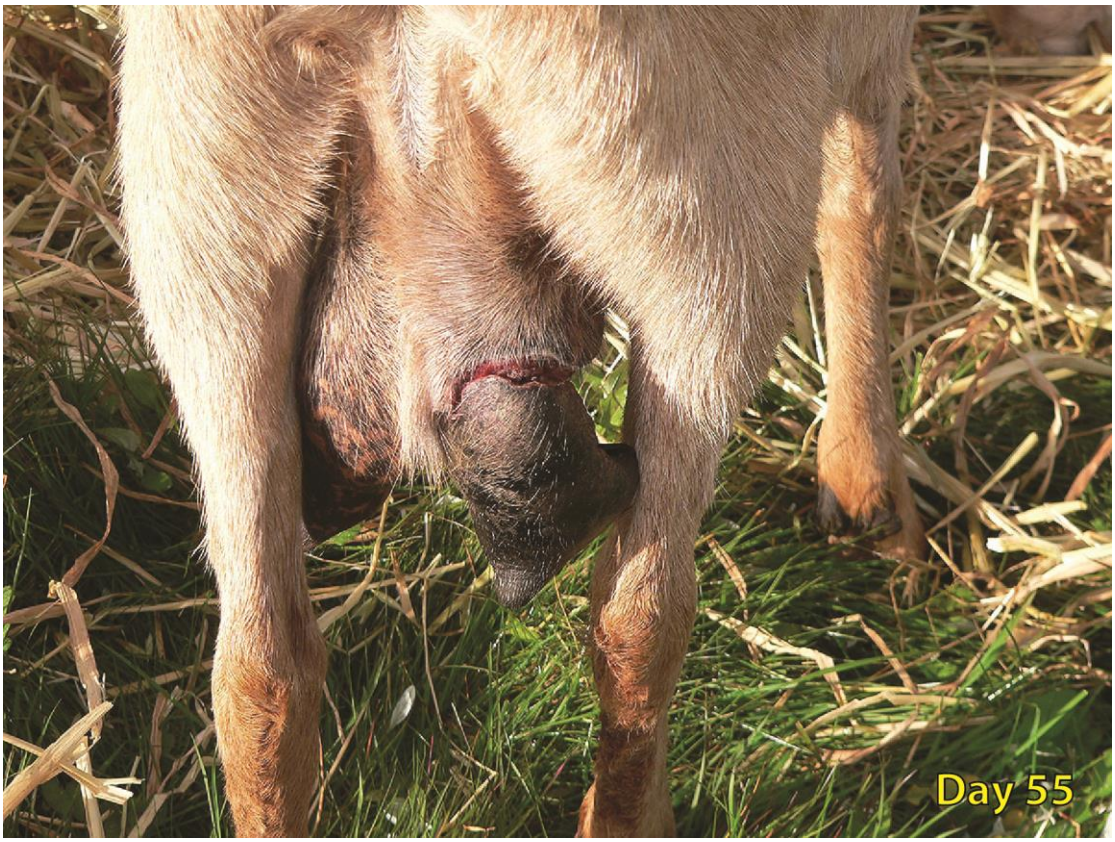

## Day 20


## Day 40


## Day 48

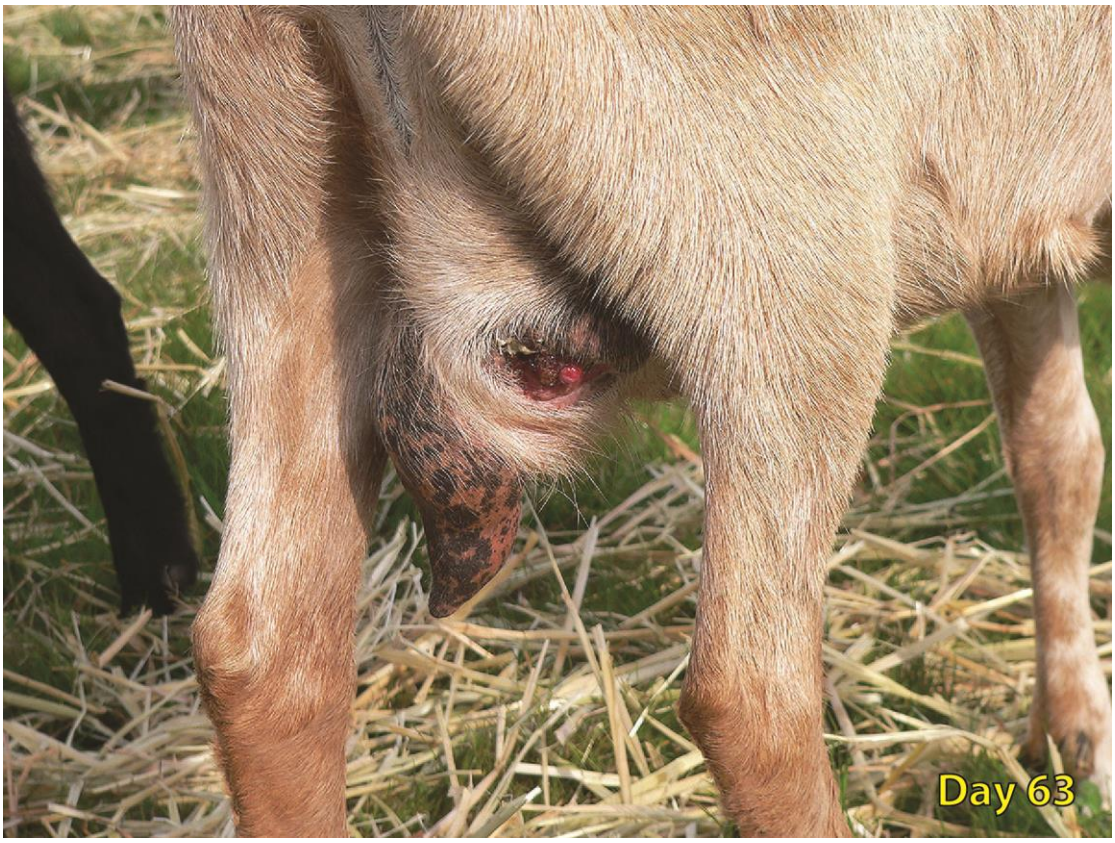



## Day 55

## Day 62


## Day 63




## Day 80


# 5. Used drugs

## Alamycin 10

- Manufactured by Norbrook;
- Fast acting broad spectrum antibiotic injection for use in cattle, sheep and pigs;
- Active Constituent: 100mg/mL Oxytetracycline (as hydrochloride);
- Recommended dosage (for sheep and pigs): 2-4.5mL/50kg bodyweight daily for 3-5 days;
- Recommended injection intramuscular (IM) or slow intravenous (IV)[1].

## Alamycin LA 300

- Manufactured by Norbrook;
- Long acting broad spectrum antibiotic injection for use in cattle, sheep and pigs;
- Active Constituent: 300mg/mL Oxytetracycline (as dihydrate);
- Recommended dosage (for sheep and pigs): 1mL/15kg BW (Standard dose, activity for 3 to 4 days) or 1mL/10kg BW (High dose, activity for 5 to 6 days).

[1] We found that goats often get a strong and painful allergic reaction to IM injection of Oxytetracycline. For this reason we only inject Oxytetracycline IM in emergency situation, where a quick effect of the antibiotic is required. In all other situations, for example for repetition injections, we inject under the skin (subcutaneously, SC).

## Cetrigen

- Manufactured by Virbac;
- An antibacterial and insect repelling topical spray for use on open wounds in cattle, sheep, pigs, horses, poultry and other animals;
- Active Constituents: Cetrimed (an antiseptic compound), DEET and Di-N-propyl isocinchomeronate (insect repellents).

## Flunixin Injection

- Manufacturer: Norbrook;
- Flunixin is a potent, non-narcotic, non-steroidal, analgesic drug with anti-inflammatory and anti-pyretic activity;
- Active Constituent: 0.5% flunixin meglumine;
- Recommended dosage: 1ml/45kg bodyweight, daily for up to 5 days;
- Recommended injection intramuscular (IM) or slow intraveneous (IV).

## Mastalone Blue

- Manufactured by Zoetis (former Pfizer);
- Broad spectrum antibiotic and anti-inflammatory intramammary suspension for the treatment of mastitis in lactating cows;
- Active Constituents: 18.5% Oxytetracycline (as Oxytetracycline Hydrochloride), 10% Olendomycin (as Phosphate), 10% Neomycin (as Sulphate);
- Recommended dosage for cows: 1 syringe (10g) daily for three days.

# 6. Technique of Intramammary Infusion

The applicator tip of the original Mastalone Blue tube, like the one of other commercial bovine intramammary infusion tubes (syringes), is too large to be inserted into an average goat teat. The following text is a description of the technique we use to infuse the antibiotic ointment into the affected goat teat.

Materials required:

- Tubes with antibiotic ointment for intramammary injection (e.g. Mastalone Blue);
- one 10 mL disposable syringe;
- one gauge 16 needle;
- one gauge 18 needle, tip blunted, for example with fine wet sand-paper.

Before we inject the ointment into the teat, we transferred it from the original Mastalone tube into a disposable 10 mL syringe. This can be done with a gauge 16 needle on the 10 mL syringe, which fits tightly into the opening of the applicator tip of the original Mastalone tube. The gauge 16 needle is inserted into the opening of the applicator tip, and then the ointment is injected

from the original tube into the 10 ml syringe by pressing down the piston of the Mastalone tube, and at the same time pulling up the piston of the 10 mL syringe.

Once the ointment has been transferred into the 10 mL syringe, the coarse gauge 16 needle is replace with the blunted gauge 18 needle. This needle is then carefully inserted into the streak canal of the goat teat and the ointment is injected into the teat.

It is important that the needle is only inserted a few millimetres, only just deep enough to prevent leakage of the ointment during infusion. Deeper insertion will damage the lining of the streak canal and will force bacteria that colonise the keratin lining upward into the teat cistern, thereby predisposing to new infections.