Milk Fever

The average milk yield for the UK national herd has increased by 30% over the last 25 years, and so the demands of lactation now make it extremely difficult for the dairy cow to maintain blood calcium concentrations around calving. Consequently, milk fever has become an important production disease, with an average annual incidence of 4-9% in the UK, and incidences of 60-70% not unknown.

Incidences of milk fever tend to vary with age and breed. Jersey cows, for example, are more susceptible to milk fever. The reasons for the perceived increased risk Jerseys have to milk fever are unknown, but could be related to the fact that they usually become older than other breeds (Houe 2001). When other factors are controlled the difference between breeds is likely to be small (kusumanti et al.1993).

The management and nutrition of the cow during the dry period can have a strong influence on the susceptibility of individual animals to the condition.

The word 'fever' is a misnomer, as body temperature during the disease is usually below normal.

CLINICAL SIGNS OF MILK FEVER

The clinical signs of milk fever include:

- Cows that are dull and lethargic
- Ears are cold to the touch
- Stiffness in the legs

In severe cases:

- The cow becomes recumbent
- Has a kink in her neck
- The rumen becomes static
- Faeces tend to bulge in the rectum

These well-recognised signs are due to the rapid decrease in calcium concentrations in the blood which occurs close to parturition.

The basic reason for this hypocalcaemia is the inability of some cows to match their rapidly increasing requirements for calcium for milk secretion by absorbing sufficient calcium from their gut, or by mobilising calcium from their own skeleton.

Milk fever depresses rumen contractility, and other disorders such as retained placenta, metritis, dystocia, displaced abomasums and ketosis are associated with it.

Due to these periparturient disorders and the effect on the rumen, feed intake can drop and worsen the energy status of the already affected cow. This negative energy balance in the postpartum cow will have a strong influence on subsequent fertility.

PREVENTION OF MILK FEVER

Conventional methods for the prevention of milk fever include:

Method 1:

Restriction of calcium in the prepartum period.

This activates the calcium homeostatic mechanisms. This method is effective only if sufficiently low dietary calcium levels are fed (20g/day). However due to the fixed calcium concentrations of forages fed in the prepartum diet, manipulation of the diet to low enough calcium levels is not possible.

Both zeolite and vegetable oils have been shown to reduce the absorption of Ca sufficiently (Wilson, 2003). However they may not be suitable for other reasons (amount required, effects on rumen microbes (Goff 2008)).

Method 2:

Magnesium supplementation at 15 to 20g/day.

This needs to be given with a source of easily digestible carbohydrates to encourage uptake.

Method 3:

Peripartum supplementation of susceptible animals with injectable or oral calcium.

This is labour-intensive, time consuming and may even have negative effects as a large depot of calcium can switch off homeostatic pathways. This should not be used as a first line prevention.

THE DIETARY CATION-ANION BALANCE

It has been shown that prepartum dietary cation-anion balance (DCAB) is strongly correlated to the clinical incidence of milk fever.

Reducing DCAB rather than the calcium content of the prepartum ration is now considered the method of choice for preventing milk fever.

What is DCAB?

DCAB is defined as:
DCAB (mEq/Kg DM) = (sodium + potassium) + (chlorine + sulphur).

The DCAB ration can be easily calculated if the percentage concentrations (in Dry Matter terms) of sodium, potassium, chlorine and sulphur ions are known.

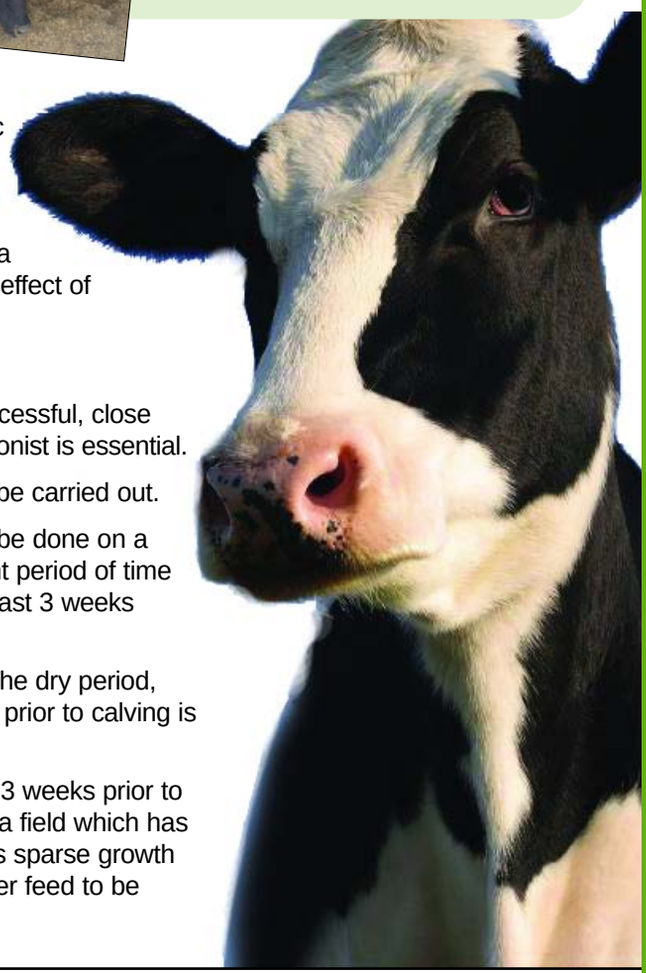
A negative DCAB ration causes mild metabolic acidosis, which increases the production of Vitamin D3. This has an effect through a series of hormones and pathways to cause an increased mobilisation of calcium from the bone and uptake from the intestines.

Due to the induced metabolic acidosis, and a conservation of bicarbonate ions, the urine becomes more acidic, making urine pH monitoring a useful tool for assessing the effect of reducing DCAB.

DCAB Rationing

For a DCAB ration to be successful, close work with your vet and nutritionist is essential.

- Grass silage analysis must be carried out.
- Urine pH monitoring has to be done on a regular basis and a sufficient period of time on the diet must occur, at least 3 weeks before calving.
- If cows are at grass during the dry period, then housing them 3 weeks prior to calving is preferable.
- If it is not possible to house 3 weeks prior to calving, then move them to a field which has not received potash and has sparse growth so as to encourage the buffer feed to be eaten.



For further information contact your local XLVets practice:

xLvets Excellence in Practice

FarmSkills GROWING FARM BUSINESS SUCCESS