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MILK FEVER
(HYPOCALCAEMIA)
of COWS

The condition known as milk fever is almost essentially a disease of highly productive adult milking cows at the time of calving. It is characterised by a low blood calcium level causing a sudden general depression of consciousness of the cow and muscular paralysis. Without treatment most cases result in the death of the cow.

OCCURRENCE
Milk fever mainly occurs in mature cows between five and ten years of age; that is during the period of highest milk production. The disease is not often seen in beef cows and is very rare in heifers. Of breeds; the higher butter fat producing cows are more susceptible so that the disease is more commonly seen in the Channel Island breeds than in Holsteins. The season of the year also affects the occurrence with more cases in the winter and spring months.

The great majority of the cases of milk fever occur within the first three days after calving and the animal may become affected at any time during this period. Exceptionally, the attack occurs immediately before calving, or even while calving is actually in progress. This disease is not, however, wholly confined to the parturient period. Occasionally it affects animals which have been milking for a period of weeks or months. These cases of so-called “Delayed Milk Fever,” mainly occur when cows are running on succulent pastures, and are often associated with the period when the animal is in season.

CAUSE
The actual cause, a fall in blood calcium, is known but the reason for this fall in blood calcium is not known.

Milk and more especially colostrum is very rich in calcium. Now, analyses have shown that ½ a gallon of colostrum contains as much calcium as is present in the cows blood stream at any one time. Therefore, the cow following calving has to be continuously replenishing its blood calcium from large amounts of calcium stored in the bony structures of the body. In some high producing cows, for a reason unknown this replenishment of blood calcium is not rapid enough and blood calcium levels fall with the resulting symptoms of milk fever.

The term milk fever is rather a misnomer as there is no fever, in fact the body temperature is usually lower than normal.

The term hypocalcaemia, that is low blood calcium, is much more applicable.

SYMPTOMS
The chain of symptoms shown as a result of the low blood calcium can be divided for convenience into 3 stages.

First stage.—The cow still standing becomes depressed and ceases to eat or chew its cud. If forced to walk it appears stiff in the hindquarters and definitely unsteady on its feet. Rarely, there is an initial period of excitement with twitching all over.

Second stage.—The cow is seen recumbent in a characteristic pose lying awkwardly on her brisket with her head bent around towards the flank and resting on her shoulder.

Third stage.—The cow lying flat on its side, perfectly relaxed and in a coma. There is no response to stimuli such as prodding.

Symptoms common to stage 2 and 3 are that the eyes and muzzle are dry and the cow is usually constipated. The breathing is changed and can either be deep and laboured or shallow and frequent. There
is commonly moaning with breathing as if the cow is in pain.

If allowed to progress without treatment bloating occurs which restricts breathing so that from a distance the cow appears dead. At this stage fluid contents of the stomach often run out the nose and mouth. Without treatment the cow will die once she reaches this stage.

Two methods of treatment are available:

1. The subcutaneous injection of calcium borogluconate solution.
2. Inflation of the udder with air.

The calcium injection is preferable to udder inflation on account of the fact that it obviates the risk of mastitis and is not accompanied by a decrease in milk yield. Udder inflation should only be used in emergency when calcium injections are not available.

1. — The Injection of Calcium Borogluconate Solution.

This is the obvious method to quickly restore the blood calcium level back to normal.

The solution for injection can be prepared by stirring a mixture of three ounces of calcium gluconate and three drachms of boric acid (8 drachms = 1 ounce) into 1 pint of boiling water until it is completely dissolved. The solution should be allowed to cool to blood heat before injection, and the whole of it administered at one treatment. Making for greater convenience, calcium borogluconate may be purchased in carton form. Each carton contains the requisite dose of the drug which when dissolved in a given amount of water produces a solution which is immediately ready for use. An even more convenient form is the calcium borogluconate solution already for injection. This solution does not deteriorate and can be kept indefinitely.

As it is necessary to administer a relatively large quantity of calcium borogluconate solution it is advisable to employ an outfit which will enable the injection to be made quickly and efficiently. An injector which will be found suitable for this purpose, and which may be made up at a comparatively small cost, is reproduced in the diagram. A rubber enema syringe will serve quite well as an air pump. When air is forced into the bottle by pressure on the rubber bulb the solution is forced out and flows freely through the needle.

Another apparatus that is very useful is the flutter valve which can be used as shown in the accompanying photograph. It is essential for this apparatus that you
have a large needle. A 12 or 13 gauge is best.

The injections should be given at two points along the neck or behind the shoulder, approximately six ounces of the solution being injected beneath the skin at each of the sites selected. The needle and tubing should be sterilised by boiling before use. The hair over the site of the injection should be clipped and the skin cleansed by swabbing with methylated spirits. In making the injection a fold of skin should be taken up between the fingers and penetrated by a thrust with the needle which can afterwards be felt lying immediately beneath the skin. After injecting the fluid gently massage the area of injection. This will help to avoid abscess formation, and give faster absorption of the calcium.

In cases in which the cow shows some excitement 2/3 of an ounce of magnesium sulphate should be added to the calcium solution. When the injections have been completed the cow should be propped in the natural recumbent position and supported by bags of earth or sand placed alongside the shoulder.

The response being usually fairly rapid the cow should start to sweat at the nose and tremble. She often passes dung, and soon after this commonly rises. The breathing becomes steadier and the cow may belch up gas. The cow should be normal in six hours if not she should be given another injection.

The recovered cow should be encouraged to eat and drink. If the cow fails to return to normal eating habits she should be drenched with molasses (1 or 2 lb.) or glycerine 2 pints a day for three days.

Cows which become bright again but cannot or will not rise are a problem, as there is usually some complicating injury to the limbs which has occurred when the muscles were relaxed during the hypocalcaemia or a secondary infection has occurred. They should not be given further calcium injections as too much calcium can cause death. Some sulky cows will not attempt to rise following apparently successful treatment. There are all types of methods suggested for stirring these animals to their feet, such as a barking dog or rubbing the tail between your boot and a piece of hard material. The most enterprising method suggested would appear to be a cat dragged by the tail backwards along the cow's back, the cat's sharp claws causing the cow to rise. This is not however, a Departmental recommendation.

One important after treatment point is do not milk the cow out following recovery. Ease only at the first milking and gradually increase the amount of milk taken at the next couple of milkings.

Use of a flutter valve apparatus

2.—The Inflation of the Udder with Air.

This method consists of inflating each of the four quarters with air, until they are firmly distended. A milk fever outfit is used for this purpose. This consists of a pump similar in type to a bicycle pump to which is connected in series an air filter, and a teat syphon (tube).

Immediately before use, the air filter and teat syphon are sterilised by immersion for ten minutes in boiling water, and the air filter, which consists of a hollow metal cylinder, is packed with dry cotton wool. Meanwhile, the udder is prepared by thorough washing with an antiseptic solution such as lysol or dettol in the strength of two ounces to five pints of water, and a cloth which has been steeped in this solution and then wrung out is placed beneath it.

The sterilised teat syphon is now introduced into the teat canal and air is pumped in until the quarter is firmly distended. Each quarter in turn is dealt with in this manner and when the inflation is completed the teats should be grasped firmly and the udder massaged. It is a
common practice to ligature the teats with tapes for a period of two or three hours to prevent an escape of air.

This procedure, however, is unnecessary, and it may lead to the development of a troublesome stricture, if the tapes are allowed to remain in position too long.

In carrying out this treatment great care should be exercised in the sterilisation of equipment and the cleansing of the udder and teats, otherwise infection will be introduced into the udder, which may result in an attack of mastitis.

Recovery should occur within a few hours. If the cow does not improve then inject calcium solution as described.

**PREVENTION**

Many methods have been tried to prevent milk fever in susceptible cows such as feeding high calcium diets, large doses of vitamin D in the feed, some animal protein added or diets high in phosphorous and low in calcium for a month before milking. All however, are of doubtful value and not generally recommended.

Two methods of prevention which appear to have some merit are delayed milking or removing only a part of the milk from the udder for the first few days and/or a calcium injection immediately after calving in those cows very susceptible to milk fever.

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