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HYPOCALCAEMIA (Milk Fever, Grass Tetany)
IN BREEDING EWES

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In early seasons, when green feed is abundant about the time of lambing, widespread outbreaks of hypocalcaemia are likely to occur in breeding ewes and unless preventive measures are adopted serious losses may be sustained.

Hypocalcaemia results from a lowering of the calcium content of the blood and in this respect the disease in sheep resembles the condition of milk fever which affects dairy cows about the time of calving. Pregnant and lactating ewes are most commonly affected, especially when grazing on lush pastures or on young cereal crops. Under such conditions droving even for a short distance or a brief period of starvation resulting from yarding may precipitate an attack.

Hypocalcaemia is not, however, confined to lambing ewes but may also affect dry ewes as well as rams, wethers and young sheep. The outbreaks which occur amongst dry sheep are usually associated with a sudden check to feeding such as may result from shearing, crutching or dipping, or transport by road or rail. The grazing by hungry sheep of plants rich in oxalates such as sorrel or soursobs may also produce the disease.

The onset of the disease is sudden and the symptoms consist of dullness, unsteadiness of gait, muscular tremors and coma, followed by death within a few hours or the animals may survive for two or three days.

For the treatment of the disease the injection of a solution of calcium borogluconate for the purpose of restoring the blood calcium to its normal level is recommended and this in the majority of cases is followed by a rapid and often quite spectacular recovery.

The prevention of the disease is largely a matter of management and in seasons which favour its occurrence care should be exercised with the handling of in-lamb and milking ewes so as to avoid unnecessary driving or yarding for unduly long periods.

CAUSE

As the name hypocalcaemia denotes, the disease is associated with a reduction of the calcium content of the blood, which in severe cases may fall to considerably less than half the normal level. It may occur under a wide range of conditions but in breeding ewes it is most likely to make its appearance in seasons where there is an early and luxuriant growth of green feed. In pregnant and lactating ewes, grazing on lush pastures or on young wheat or oat crops favours the development of the disease and the risk is increased by droving or yarding. Even driving for a short distance such as from the paddocks to the yards may precipitate an attack. So also may a brief period of starvation resulting...
from yarding overnight or even for a few hours, particularly if the ewes are driven when released from the yards.

Amongst other factors which may predispose to the disease may be mentioned:—(a) The turning of hungry sheep on to green feed after train journeys. (b) The grazing of hungry sheep on pastures in which plants rich in oxalates such as sorrel, soursobs, or roly poly are abundant. Oxalates reduce the calcium content of the blood. (c) A sudden check to feeding such as may result from shearing, crutching or trucking particularly if this is followed by droving. (d) Heavy feeding on cereal grains or cereal chaff which are low in calcium. Sheep fed on these products do not develop hypocalcaemia unless deprived of roughage in the form of dry grazing, clover burr or scrub which contain adequate amounts of calcium and do not develop symptoms unless driven.

In Western Australia, hypocalcaemia in dry sheep appears to be of infrequent occurrence, but outbreaks have been met with in weaners released on to green feed after long rail journeys, as well as in wethers after prolonged yarding.

SYMPTOMS

The disease occurs principally amongst in-lamb and milking ewes which may become affected from six weeks prior to lambing up to about 10 weeks afterwards. Its onset is sudden and a considerable number of animals may show symptoms at the same time. The early symptoms consist of staggering or unsteadiness of gait with a stiff or stilted action usually affecting the hind legs but sometimes all four legs. Affected sheep are dull and listless and disinclined to move. When driven they show symptoms of trembling and shivering while in motion. There is usually a watery discharge from the nostrils and some cases may show evidence of scouring. Soon the animal goes down and is unable to rise and sinks into a condition of coma. A characteristic posture has been described in which the animal lies on the brisket with the hind legs straddled out behind and with the neck extended and the lower jaw resting on the ground, but this has not been observed in the cases coming under our notice. Without appropriate treatment death may occur within a few hours but some cases may linger for two to three days.

POST MORTEM APPEARANCES

At post mortem nothing of diagnostic significance will be observed. The third stomach or “bible” is usually hard and contracted and the caecum or blind gut may be distended with gas and thereby considerably enlarged. The liver and kidneys are congested and there may be large haemorrhages on the external surface of the heart.

DIAGNOSIS

From a consideration of the history of the outbreak, the class of animal affected and the symptoms exhibited the diagnosis of hypocalcaemia should in most cases present no serious difficulty. In the case of ewes advanced in pregnancy it might possibly be confused with pregnancy toxaemia. The symptoms of stupor and partial or complete blindness which occur in pregnancy toxaemia are, however, distinctive and the animal lingers from several days to a week before death occurs. In addition, the liver in pregnancy toxaemia is infiltrated with fat being characteristically pale yellow in colour and very soft, whereas in hypocalcaemia it shows little abnormality. Finally, pregnancy toxaemia is most likely to occur during adverse seasons when the ewes are losing condition, whereas in hypocalcaemia the reverse usually obtains.

Should any doubt exist in the matter a sample of blood comprising about four ounces should be obtained from an affected animal and forwarded to the Animal Health and Nutrition Laboratory for calcium determination.

As a practical means of diagnosis an affected sheep may be injected with the prescribed dose of calcium borogluconate and should prompt recovery occur this will leave no doubt regarding the condition with which the animal is affected.

TREATMENT

For the treatment of affected animals the injection of a solution of calcium borogluconate is recommended. When administered in the prescribed dosage this will increase the calcium content of the
blood to the normal level, resulting in rapid recovery. Calcium borogluconate is available in packets containing 2½ ounces which is sufficient for the treatment of five sheep. The contents of the packet are dissolved in 10 ounces of boiling water and the solution is allowed to cool before use. The dosage for the sheep is 60 c.c.s. (two ounces) and this should be injected either into the jugular vein or beneath the skin using a large hypodermic syringe.

Alternatively a solution of calcium borogluconate may be prepared in accordance with the following formula:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium gluconate</td>
<td>8 ounces</td>
</tr>
<tr>
<td>Boric acid</td>
<td>2</td>
</tr>
<tr>
<td>Water</td>
<td>2 pints</td>
</tr>
</tbody>
</table>

Upon boiling these ingredients together a clear solution will be produced. This should be allowed to cool and injected in a dosage of 60 c.c. If it is desired to store the solution a few drops of Thymol should be added to prevent the growth of moulds.

Following the administration of calcium borogluconate in the dosage prescribed above, complete recovery will usually occur within a few minutes to half an hour or a little longer. Should no response have occurred after an hour the injection should be repeated.

In the case of wet ewes a satisfactory response may be obtained by the inflation of the udder with air in the manner employed for the treatment of dairy cows suffering from milk fever. In an emergency a bicycle pump may be used inserting the valve from which the rubber has been removed into the teat duct and inflating each of the quarters firmly but not over-tightly with the air. The valve should be sterilised by boiling before use and after inflation the end of the teat should be pinched to prevent the escape of air. When a milk fever outfit of the type supplied for the treatment of cattle is employed, the large teat tube or siphon which might damage the teat duct of the ewe should be substituted by a hypodermic needle with the point removed and rounded off by filing.

When supplies of calcium borogluconate are unavailable drenching with molasses in a dosage of half a pint mixed with an equal volume of water may be practised. Molasses contains readily available calcium salts and may be effective in the treatment of early cases. It should not, however, be regarded as a substitute for calcium borogluconate.

**PREVENTION**

Since the disease is likely to make its appearance amongst breeding ewes in early seasons when green feed is plentiful on all parts of a property during or just prior to lambing the adoption of preventive measures will in many instances prove difficult. Under these conditions, roughage in the form of hay should be distributed to the ewes in the paddocks or where a haystack is available in the paddock the flock should be allowed free access to it. Since driving or deprivation of food for even a short period may predispose to the disease in lambing ewes the flock should as far as possible be left undisturbed.

Where yarding cannot be avoided, the flock should be driven slowly and quietly and retained in the yards for as short a period as possible. Yarding overnight should at all costs be avoided. Droving after yarding should whenever possible also be avoided.

The grazing of young wheat or oat crops should at first be restricted to a short period daily and the ewes should be fed roughage before being turned on to the paddock. Later as the crop is eaten back and the animals become accustomed to the change of diet the period of grazing may be lengthened.

When an outbreak has actually occurred a change to poorer pasture in another paddock will usually prevent further losses.

In the case of ewes fed heavily on cereal grains in the absence of suitable roughage a lick composed of two parts of ground limestone and one part of salt should be provided.

Hungry sheep should not be allowed access to plants with a high oxalate content.
... harmless to all types of fruit and foliage. Particularly valuable for use on crops susceptible to damage by copper and sulphur sprays. Leaves no visible residue.

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