NSW GOVERNMENT Department of Primary Industries

primefact

# Pregnancy Toxaemia in beef cattle

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Graham Bailey, Senior Veterinary Officer, Orange

## Introduction

Pregnancy toxaemia (also known as fatty liver syndrome) occurs when the breakdown products of fat, called ketones, build up in the brain and become toxic. It is commonest in fat pregnant cows – especially those bearing twins – in times of falling feed quality or limited feed quantity. Many graziers find it hard to believe that fat cows can die from insufficient feed.

The disease can be readily prevented by management practices.

## Cause of the disease

Pregnant cows require a great deal of ready energy in the form of glucose to maintain their developing calves. This comes from two sources. First, glucose is produced in the liver from the feed absorbed via the rumen. Secondly, fat deposits are mobilised and carried to the liver in the blood, for the liver to convert to glucose. This is a normal process to make up the shortfall that invariably occurs during pregnancy, when energy demands are high.

The problem occurs because a certain amount of glucose is needed by the liver to enable it to utilise the incoming fat. If the fat is coming in faster than the liver can make glucose, such as when the animal has very little quality feed, the fat starts to build up in the liver. The liver becomes enlarged, pale and fatty, and ketones build up to excessive levels in the blood, and start to affect the brain. Brain function is affected and the animal stops eating. This process is not easy to reverse.

## Occurrence

Pregnancy toxaemia is commonest in fat beef cows (condition score 4 and above) in the last 2 months of pregnancy, although recently calved cows are also occasionally affected. Pregnant cows of all ages are affected, with those bearing twins particularly susceptible. This is because cows pregnant with twins have greater energy requirements, and at the same time have internal space limitations, thus restricting their feed intake.

Cows with excessive parasitic burdens, poor teeth or lameness are also more susceptible. Stress such as sudden cold, wet weather, yarding and/or travelling may also induce the disease.

The feed conditions under which pregnancy toxaemia develops vary according to locality, but affected cows are generally those grazing dry grasses or stubble with no supplementary feed being provided. Large numbers of animals can be lost during drought, if supplementary feeding is inadequate.

## Clinical findings

The early clinical signs of pregnancy toxaemia are depression and lethargy. When yarded, affected cows may not respond normally to driving, and may appear stubborn or confused. Cows tend to isolate themselves from the herd and do not forage. Their appetite is reduced or absent. Sometimes they can be caught in the paddock.

Occasionally, affected cows close to calving show signs of restlessness and some excitability, a high stepping gait, staring eyes and a tendency to charge moving objects. As the condition progresses, cows become increasingly depressed and are reluctant to move when disturbed. Cows become recumbent between 2 days and 2 weeks before they die.

Affected cows usually have a rapid respiratory rate, with a characteristic sweet acetone-like odour detectable on their breath. When the condition occurs close to calving, abortion or premature calving may occur in recumbent cows.

The afterbirth (calving membranes) is usually retained. In many cows the stress of calving hastens death.

## Post mortem findings

Characteristic findings are an enlarged, soft, pale yellow liver, which is fatty in consistency and a uterus showing advanced pregnancy, often with twins.

## Diagnosis

The disease is diagnosed from the nutritional history, clinical signs, blood and/or urine test for ketones, and post mortem findings. In individual cows, pre-calving milk fever (hypocalcaemia) and grass tetany (hypomagnesaemia), may occur concurrently. Other diseases such as ephemeral fever (three-day sickness) must also be considered as possibilities.

## Treatment

Seek immediate veterinary advice about the possibility of intravenous fluid therapy, caesarean section or induction of calving.

Without intensive nursing, animals with pregnancy toxaemia are unlikely to recover. In a drought situation where many animals are being hand fed, most producers will not have the time to put into a single downer cow, and it may be preferable to euthanase it.

However, if early cases are recognised and treated urgently, before they stop eating and become recumbent, there may be some chance of success. Producers may recognise subsequent cases early, after having lost the first.

Sometimes injections of glucose, calcium borogluconate and magnesium salts under the skin are used, but these are far more likely to be effective if given intravenously by a veterinarian. Oral treatments of propylene glycol and electrolytes are also useful to treat mild cases.

**Oral treatments available for use on beef cattle**

| Product Name | Active Ingredient |
|---|---|
| Ketol® | Propylene glycol, choline chloride, cobalt(II) sulphate |
| Ceton® | Propylene glycol, choline chloride, cobalt chloride |
| Rudduck's Acetol® | Propylene glycol, choline chloride, cobalt chloride |

It may be worthwhile to make the effort to find some green feed, (for example fresh lucerne or hand-picked lush grass) to encourage these animals to start eating properly again.

The development of pregnancy toxaemia in one cow may indicate that other cows are at risk. Provision of an energy supplement such as grain is an essential part of treatment on a herd basis. This is all that is required to prevent further cases in herds where the disease has occurred in late-pregnant cows.

## Prevention

Prevention is a matter of nutritional management. Cows should be in good condition (condition score 3 or better) at calving, and feed available post-calving must be of sufficient quality and quantity that cows do not lose much condition while lactating.

This disease appears in patterns in some areas, and prevention depends on forward planning. For example, autumn calving in southern NSW before the winter rain will mean cows are heavily in calf when feed quality is poor. The first break in the weather will further reduce dry grass quality, as well as stress pregnant cows. In these situations, supplementary feeding with high-energy feeds (e.g. grain) will prevent pregnancy toxaemia.

Protein meal supplements alone will not provide sufficient energy to prevent the disease. They are not fed in sufficient quantity to supply enough energy.

Plan to have good quality feed for late-pregnant cows. Alternatively, single out late-pregnant cows for early supplementary feeding. These cows are the first to suffer in dry spells, especially if running in a mixed mob.

## Supplementary feeding practices

The amount of supplementary feeding will depend on the quality (as well as quantity) of the feed available.

Even on good feed, breeding cows go through a period when intake cannot meet requirements. Cows can normally cope with this by using fat reserves, but as the quality of the feed decreases, the possibility of pregnancy toxaemia occurring increases.

Supplementary feeding is therefore more important as pasture quality, as well as quantity, declines. Poor quality pastures have lower digestibility and nutrient value, and their intake is reduced.

The following supplements for dry-paddock (more than 1500 kg DM/ha) feeding of late-pregnant and/or lactating cows each provides equivalent energy:

- silage: 10 to 11 kg fresh per head per day
- good hay: 3.5 to 4.5 kg per head per day
- grain: 3.0 kg per head per day
- cottonseed meal: 2.5 kg per head per day
- grain and white cottonseed: 1.25 kg of each per head per day.

About 1% calcium should be fed with grain and cottonseed supplements.

As a guide to reserves of feed required, about 18 tonnes of grain or 33 tonnes of hay is required for 100 late pregnant cows for 2 months' supplementary feeding.

Should you suspect pregnancy toxaemia, seek veterinary attention to confirm the disease and obtain advice on treatment and control. Note that pregnancy toxaemia is common as a secondary complication in late-pregnant cows suffering other diseases, and an accurate diagnosis is essential.

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Edited by Leonie Martin
Farm Chemical Officer, Biosecurity NSW
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