Fatty Liver Syndrome

What is Fatty Liver?

Fatty liver syndrome is the accumulation of fat within the cow's liver. The dairy cow does not normally store fat in the liver, so fatty liver does not occur when a cow increases its body condition and puts fat on its back. Fatty liver occurs as a result of the cow breaking down too much fat for the liver to process properly, the broken down fat products are then converted back to fat in the liver to prevent them becoming toxic. Thus the liver becomes fat when the cow is losing condition, the more loss in condition the more fat in the liver.

Fatty liver syndrome (> 20% fat) reduces liver function, depresses appetite and milk yield, increases the risk of diseases such as RFM, metritis and mastitis, reduces fertility, and when severe (when it is usually called fat cow syndrome) can lead to death. Once it is deposited in the liver, the concentration of fat in the liver does not fall until the cow gets into positive energy balance, which can be over ten weeks after calving, particularly if the fatty liver is severe. Fat cows (>BCS 3.5) are much more prone to fatty liver.

Causes of Fatty Liver

Fatty liver, ketosis and displaced abomasum are closely interconnected. Cows which have one of these conditions are much more likely to get another.

The most important cause of fatty liver is negative energy balance.

Clinical Signs

- High incidence of diseases such as milk fever, ketosis, mastitis after calving
- Reduced fertility
- Rapid weight loss after calving particularly in cows that were fat at calving
- Reduced milk yield (often on a herd basis).
Diagnosis

- Clinical signs
- Blood samples: increased NEFA (free fatty acids), increased ketones (such as beta-hydroxy butyrate), increased liver enzymes
  Liver biopsy: this is the best diagnostic test.

Treatment

- Use the same treatment as for ketosis: Glucose, propylene glycol, corticosteroids.
- However treatment is often ineffective.
- Prevention is far more important.

Prevention and control

Fatty liver occurs because of too much fat breakdown after calving. This occurs primarily in cows that are too fat at calving. Therefore ensuring that cows calve at a body condition score between 2.5 to 3.0 will significantly reduce the risk of fatty liver. Cows should be dried off at a body condition score of 2.5 to 3.0 and maintain their body condition during the dry period. Any alteration of body condition score is best done during mid to late lactation.

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