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Protocol for Treating Feline Diabetes

Introduction

Diabetes has long been a very frustrating condition to treat in cats but newer forms of insulin combined with better knowledge of nutrition has enabled many cats to be managed extremely well and more often than not, in uncomplicated diabetes, they can actually be cured.

Uncomplicated diabetes

This is where no other underlying factor is found that is causing the diabetes. There are several potential underlying causes for diabetes, one of the most common being pancreatitis. This will often be tested at the time of diagnosis. Other causes of diabetes are quite rare although it is well recognised that diabetes is more common in overweight cats.

The Role of Diet

It is now well established that a major factor in the development of diabetes in cats is the feeding of carbohydrates. Cats are designed as hunters and their diet consists more of protein and fats than carbohydrates. Dry food is inherently higher in carbohydrates, often containing lots of cereals. Therefore it will always be recommended for a diabetic cat to be fed wet food alone. As mentioned overweight cats are more prone to diabetes but there is some question as to whether obesity actually causes diabetes in a lot of cats. Rather they may be being fed a lot of carbohydrates and are coincidentally fat as well as having diabetes.

Some wet diets are better than others and we would always aim to feed a diet with a carbohydrate content of < 10%

The calculation of the percentage dry matter of carbohydrates can be a little complicated as the amount of moisture in the food needs to be accounted for and also the amount of carbohydrate in a diet is not quoted on the label and needs to be calculated:

Example of Carbohydrates in Canned Whiskas in Jelly

% Dry matter of food (DM) = 100-Moisture% (stated on the can)
e.g.83% moisture = 17% of the can is actually food and not just water

Amount of carbohydrate in the same can = 17% - (total % percentage of other ingredients)
e.g.17% – (protein 8.5% + fat 5% + Inorganic Matter 2.5% + Crude Fibres 0.3%)
= 17-16.3
= 0.7% carbohydrate

However this is 0.7% of the whole can so again the moisture needs to be taken out to calculate the percentage of carbohydrate in the dry matter of the diet. This is calculated as:

Total percentage of carbohydrate in the can divided by total dry matter and multiplied by 100

= 0.7/17 x 100 = ***4.1%***

This is well below 10% and therefore canned whiskas in jelly is a good diet to choose for a diabetic cat. Other diets that we have checked are as follows**. Please bear in mind that sometimes the pouch formulation of what is seemingly the same food often has quite markedly different levels of carbohydrates so don't assume they are the same.**

Whiskas cans in Jelly

Co-op loved by us Chicken in Jelly (pouches)
Co-op loved by us Chicken in gravy (pouches)

Tesco Chef special braised meat select (pouches)
Tesco Cuts in jelly with chicken (pouches)
Tesco Cuts in jelly chicken and ham (pouches)

Purina gourmet perle pouches

Sheba – chicken (pouches)

Morrisons Fine Cuts (pouches)
Felix chicken in jelly (pouches)

Many other foods will be also low enough in carbohydrates so if you want a particular diet checked and the maths is pickling your brains then please do not hesitate to contact us.

Cats can either graze feed or they can be fed twice daily at the time of injections.

Insulin Treatment

All cats with diabetes will be recommended to start on insulin. In order to attempt to cure diabetes it is really important to keep the blood glucose at a relatively normal level. This is due to a concept known as **glucose toxicity.** When the blood glucose goes up slightly this has a negative effect on the pancreas and the production of insulin becomes insufficient to control the blood glucose. Thus we have a vicious circle. However, the converse is true and if we can artificially reduce the blood glucose with injected insulin we can potentially allow the pancreas to recover and, combined, with a low carbohydrate diet, there is a reasonable chance that the pancreas will return to a good enough function such that insulin injections are not necessary. This process can take anything from a few weeks to several months or, unfortunately, the reversal may never happen at all. This would mean that lifelong insulin injections are needed.

Injections are given with a very fine insulin needle and most animals barely notice them being given. The technique is very straightforward and not something to be afraid of.

Home Blood Testing and 'Tight Control'

In order to try and regulate the blood glucose tightly at a fairly low level it is essential for home blood testing to be carried out. The most accurate home testing kit is the alphatrak 2 and this is specifically designed for use in pets. Human monitors can be used but they can be inaccurate in cats by up to 30%. It is surprisingly easy to take a blood glucose sample from the ear vein of a cat and a procedure that is easily learnt. Bear in mind that taking a blood glucose level in the cat's own home is far less stressful than being in the surgery and, as stress has an effect on blood glucose, it is also more accurate.

Protocol for Starting Insulin therapy

We will usually recommend using a long acting insulin called insulin glargine and this will start at 0.5iu/kg twice daily. In the first week of treatment the insulin should not be increased even if there appears to be little initial response to the insulin. The bare minimum requirement for testing the blood glucose should be twice daily just before the injection time and feeding. The insulin dosage is then calculated per injection as following.

If the blood glucose level is > 10 mmol/l then the dosage should stay the same

If the blood glucose level is 5 < 10 mmol/l then the insulin dosage should be reduced by 0.5 iu

If the blood glucose level is < 5 then reduce the dose by 1 iu unless the current dose is already only 1iu, in which case drop by just 0.5iu to 0.5iu.

Hopefully the insulin requirements will gradually reduce over a period of weeks. However if, after 1 week on the recommended dose, there is little improvement, we will need to reappraise the situation and possibly think about increasing the dose.

What to do after a week if the insulin needs to be increased

As a general rule only one increase in dosage of 0.5iu is recommended per week. There will be cases where the insulin given is insufficient and to try and obtain 'tight control' one needs to increase the dosage of insulin.

The following guidelines will apply

If the blood glucose is > 15mmol/l then increase the dosage by 0.5 iu

If the blood glucose is 10-15 then keep the same dose

If the blood glucose is < 10 decrease by 0.5iu

How to wean off insulin if the diabetes resolves

The lowest practical dose of insulin that can be given without dilution is 0.5iu. Therefore the next step is to withhold insulin if the blood glucose levels are within normal limits. At this stage we will probably suggest being slightly more aggressive with the 'tight control' of the blood glucose and would recommend changing the cut-off point for 'normal' blood glucose down from < 10 to < 8.5. This is closer to the high end of normal blood glucose level for a cat.

Thus, once the daily dosage of insulin is 0.5iu twice daily this protocol should be followed.

If the blood glucose is > 8.5 mmol/l continue with the same dose but contact the surgery if this remains the same for 1 week

If the blood glucose is < 8.5 then give no insulin. Ideally the blood glucose should be tested again after 6 hours but if this is not possible then as soon as possible after 6 hours. If the blood glucose is raised above 8.5 then another 0.5iu should be given. If the blood glucose remains below 8.5 then ideally continue to blood test every 6 hrs to catch any elevation in levels as soon as possible. **It is appreciated that this is not always practical but this is a 'gold standard' guideline.** Hopefully the situation of checking bloods so frequently should be brief if the diabetes is resolving. As such the frequency of testing can be reduced. This is something that the veterinary surgeon will guide you through if and when this stage is reached.

What if one is never able to discontinue the insulin?

Unfortunately some cases will not resolve despite one's best efforts and some cats will require life long insulin. Once a regular, steady dose is established there is little need to do intense home blood testing. It is useful to periodically check that the blood glucose is not excessively high or low but shouldn't need to be done regularly.

Summary

In the past diabetes in cats has been very challenging to treat and has often required long term treatment with insulin. It is now clear that many cases can be cured with appropriate diet and insulin treatment. Whilst it is potentially quite hard work in the first instance involving a considerable commitment, the rewards can be great if the end result is a cat which needs no medication or monitoring.