Practical management of feline diabetes – current best practice

Diabetes mellitus is a common endocrine disorder of cats, comparable to human type-2 diabetes. Management of affected cats can be challenging but also rewarding, not least because early appropriate treatment can result in reversal of the diabetic state (diabetic remission). The International Society of Feline Medicine recently published Consensus Guidelines on the practical management of this condition and this article discusses the guidelines and presents important, applicable information. Areas covered include dietary management, the appropriate use of insulin and how to monitor and adjust the insulin dosage when managing feline diabetics. This article also provides a practical guide on teaching owners to measure blood glucose at home, an invaluable technique for stabilising and monitoring diabetic cats.

Key words: feline diabetes mellitus, consensus guidelines, home blood glucose testing, Somogyi, blood glucose curve

Introduction

Diabetes mellitus is a common disease in cats, dogs and humans. In dogs, most affected animals have a disease similar to human type-1 diabetes, caused by reduced insulin production from pancreatic β-cells. By contrast in cats, the majority of cases appear to result from a combination of both reduced insulin production and reduced insulin responsiveness (insulin resistance), more akin to the situation in human type-2 and type-3 diabetes. This is of more than just academic interest because it has significant bearing on the aims of treatment and the approach to treatment of the diabetic cat when compared to the diabetic dog. In particular the difference in pathophysiology means that for a proportion of cats, diabetes may be a temporary condition which can be largely reversed by appropriate early treatment, leading to a state of “diabetic remission”. This can be a very positive outcome for affected cats and their owners, and can be a valuable motivating force in encouraging owners to adopt effective early treatment. However it can also lead to complications in the management of diabetes mellitus because a cat’s insulin requirement can reduce over time, and if diabetic remission is not recognised, over-dose of insulin can result.

The International Society of Feline Medicine has recently published a set of Consensus Guidelines on the Practical Management of Diabetes Mellitus in Cats (Sparks et al. 2015). The Guidelines have been developed by an independent panel of clinicians and academics with the aim of producing practical advice for dealing with the diabetic cat, based on currently available best evidence. This article highlights the key points from these Guidelines, which are available free to access and download at www.jfim.sagepub.com/content/17/3/235.full.pdf+html

Aims of treatment

While we now recognise that diabetic remission is a potential outcome for many diabetic cats, the primary aims of treatment remain more straightforward:

• To limit or eliminate the cat’s clinical signs
• To use a treatment regime that is affordable and fits into the owner’s daily routines
• To avoid insulin-induced hypoglycaemia and to prevent other life-threatening complications e.g. diabetic ketoacidosis

In many cases it is possible to achieve and maintain very good glycaemic control and it appears that diabetic remission is more likely in cats with better glycaemic control. However on occasion it can be difficult to fully control hyperglycaemia without risking periods of hypoglycaemia.
Home monitoring of blood glucose levels can be invaluable for stabilising and monitoring diabetic cats. It allows owners to identify cats at risk of hypoglycaemia and may improve the level of glycaemic control that can be achieved.

A drop of blood is obtained from the marginal ear vein (see Figure A) or from the metacarpal or metatarsal pads. A hand-held glucometer is used to obtain the blood glucose reading (see Figure B). Most cats tolerate the procedure very well and with adequate teaching and support the majority of owners are able to perform home monitoring of blood glucose. The concept should therefore be introduced early in the management of diabetes, with assistance provided to owners by means of demonstrations of the technique at visits to the practice, use of printed and web-based support materials and telephone support from vets and veterinary nurses. A useful owner instruction video is available via:

- International Cat Care - http://www.icatcare.org:8080/advice/video
- Oxford Cat Clinic - http://www.oxfordcatclinic.co.uk/CatsFAQs1539.html

**Equipment:**

- Simple to use monitor that accepts strips filled by capillary action, and that is unaffected by the angle at which it is held. The only feline-validated glucometer currently available is the AlphaTRAK 2 meter (Abbott, see Figure B) and this should ideally be used, despite the increased initial outlay cost to the owner. Glucose meters designed for human blood tend to under-estimate the blood glucose level in cat’s blood, although this is rarely of clinical significance.

- Cotton wool ball
- 23 gauge hypodermic needle
- Good lighting – to view the marginal ear vein
- Vaseline – to prevent blood drop dissipating
- Treats – for use during the training period

**Method:**

- Successful monitoring requires an owner who is prepared to spend some time with the cat accustoming it to the technique
- Choose a site where the cat will rest comfortably. Familiarise the cat to being stroked and given treats at this site at regular times. Familiarise the cat with handling of the ears
- Set up the glucometer and insert a test strip
- Visualise the peripheral ear vein, which runs parallel to and approximately 1-2 mm inside the edge of the pinna. The vein can be clearly seen in most short-haired cats, especially when highlighted by a bright light (see Figure A). In long-haired cats and dark coated short-haired cats it may help to shave the ear when owners first start to do home monitoring
- Place the cotton wool on the inside of the pinna and prick the outer surface of the ear over the peripheral vein (see Figure C), allow a small drop of blood to form (Figure D). A small amount of Vaseline can be placed at the site before pricking to prevent the bleb of blood from dissipating. If a drop of blood doesn’t form straight away, gently massage the ear each side of the prick-site to encourage bleeding

- Introduce the tip of the glucometer strip to the blood (See Figure E)
- Move the cotton wool over the ear-prick and apply gentle pressure until the bleeding stops

Serial samples can be collected from different sites, working around the ear margin and from one ear to the other.