

TREATMENT OF FELINE DIABETES MELLITUS

Ariadna Val Prieto

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UAB
Universitat Autònoma
de Barcelona



FELINE DIABETES MELLITUS

- Common endocrinopathy in cats that appears to be increasing in prevalence.
- The treatment of this disease is a challenge for both veterinary staff and owners since constant and individualized monitoring of the animal is required.
- Characterized by chronic hyperglycemia that occurs as a result of a deficit in insulin production, an incorrect action of insulin, or both.
- The most common form of diabetes in cats is type II diabetes.
- The main clinical signs observed are polyuria, polydipsia and polyphagia as well as lethargy and weight loss.
- Less frequently, signs compatible with neuropathy can be observed. Some cats may also present systemic signs of diabetic ketoacidosis, such as anorexia, vomiting, dehydration and depression.

OBJECTIVES

- To conduct a literature review on current methods for the diagnosis, treatment and control of diabetes mellitus in cats to improve management strategies and thus achieve a better quality of life for the animal and the guardian.
- To review available clinical studies with particular attention to new drugs such as sodium-glucose cotransporter type 2 (SGLT2) inhibitors, evaluating their efficacy and safety.

DIAGNOSIS

- Complete physical and laboratory examination.
- Hyperglycemia, glycosuria and stress leukogram.
- Increase in cholesterol, liver enzymes and to a lesser extent triglycerides.
- Hyperglycemia, azotemia and metabolic acidosis in diabetic ketoacidosis.
- Clinical signs appear when blood glucose concentrations exceed 250-290 mg/dL.
- Fructosamine is indicative of blood glucose levels from the previous week and may not be affected by stress-induced hyperglycemia.

ORAL HYPOGLYCEMICS

Therapeutic class	Mode of action	Indications	Adverse effects
Sulfonylureas	Stimulate insulin secretion	Only used if owners do not want to inject insulin	<ul style="list-style-type: none"> • Cholestasis • Hypoglycemia • Vomiting • Progression of pancreatic amyloidosis
Incretins	Stimulate insulin secretion and β -cell formation, delay gastric emptying and suppress glucagon	Can be used with other hypoglycemic agents and with insulin	Transient gastrointestinal side effects
α -glucosidase inhibitors	Block enzymes in the intestinal mucosa	Used in conjunction with insulin therapy Useful as first-line treatment in patients with more marked postprandial hyperglycemia	<ul style="list-style-type: none"> • Gastrointestinal adverse effects • Hepatic adverse effects
Biguanides	Reduce gluconeogenesis and glycogenolysis and promote glycogen synthesis	Can be used with other hypoglycemic agents and with insulin	<ul style="list-style-type: none"> • Gastrointestinal adverse effects • Avoid use with kidney disease
Thiazolidinediones	Inhibit hepatic glucose production and increase insulin sensitivity	Can be used with other hypoglycemic agents and with insulin	<ul style="list-style-type: none"> • Weight gain • Increased risk of heart failure and bone fractures
Transition metals	Participate in glucose metabolism	Adjunct role in combination therapy	<ul style="list-style-type: none"> • Anorexia and vomiting • Excessive accumulations in the liver and kidneys
SGLT2 inhibitors	Reduce the reabsorption of glucose in the kidneys, increasing its elimination through urine	Some residual β -cell function is required since they do not replace the insulin needed to prevent ketosis	<ul style="list-style-type: none"> • Vomiting, diarrhea, anorexia, lethargy and dehydration • Diabetic ketoacidosis • Urinary tract infections

INSULIN THERAPY

- Initiate treatment with insulin preparations with the longest duration of action such as glargine, detemir and PZI.
- Dose reassessment should take place 7 to 14 days later.
- Dosing pens are more accurate than syringes for low doses of insulin.

Type of insulin	Concentration	Duration of action	Initial dose
Regular	100 U/ml	5-8 h	0.05-0.1 U/kg/h
Lente	40 U/ml	8-14 h	0.25-0.5 U/kg
PZI	40 U/ml	12-24 h	0.2-0.4 U/kg
Glargine	100 and 300 U/ml	12-24 h	0.25-0.5 U/kg
Detemir	100 U/ml	12-24 h	0.25-0.5 U/kg

Novel insulins; AKS-267



- ↑ protein (40 % metabolizable energy)
- ↑ physical activity
- Gradual weight loss (0.5-1 % weekly)
- Weight control 1-2 times a month

CONCLUSIONS

- The main treatment strategies include pharmacological therapy with insulin and hypoglycemic agents, along with dietary adjustments and management of underlying diseases.
- The management is complex and does not depend solely on treatment; therefore, early diagnosis and proper control are necessary to improve the prognosis and be able to achieve a state of remission.

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