

Differential Diagnosis in Small Animal Medicine

By

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MA VetMB CertSAM CertVC MRCVS



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*To Naomi and Abigail, for their patience and support,
and Mac, for a lifetime of companionship.*

Introduction

This book was written to fill what I felt was a gap in the market. While working up difficult medical cases, I have often wanted a single ready reference to help me formulate a differential list from the clinical information I have available. Unfortunately, I found myself frequently having to consult multiple textbooks to bring all the information I needed together. I decided therefore to write a book that would serve as a ready reference for differential diagnoses of the majority of presentations that are encountered in practice, including both common and uncommon conditions. This text should be of use to veterinary students, general practitioners, university interns, residents and anyone who, like me, cannot fully carry these lists around in their heads. I hope other clinicians find it as useful as I do.

The differential diagnosis list is one of the most important aspects of the problem-oriented approach to clinical diagnosis. For those who are not familiar with the problem-oriented approach, a brief outline follows.

As the name implies, problem-oriented medical management (POMM), concentrates on the individual problems of a patient. A differential diagnosis list should be made for each and every problem that is found in a patient, whether in the history, the physical examination, imaging or clinicopathological tests. Although superficially this may not sound very 'holistic', in fact, if all the patient's problems are considered individually, the whole patient will have been evaluated, without falling into the trap of presuming that all of the findings are caused by a single condition.

The problem-oriented approach starts with a detailed history, and it is important to discover what the owners perceive to be the main problems – after all, they usually know their animal better than the clinician does. However, there may be relevant historical signs that the owners had not considered significant, so failing to systematically ask all the questions which could be of importance in a case can lead to overlooking important information. Using a checklist or form, such as the one in Appendix A can be useful as an aide-memoire.

In every case, a detailed physical examination should be carried out, including body systems that are not apparently of immediate concern. Again, a checklist or form, such as the one in Appendix B, can help ensure a systematic approach.

Once the history has been taken and the physical examination has been completed, the clinician should list every problem that has been discovered. Problems may include such findings as exercise intolerance, pruritus, pyrexia or a heart murmur. A differential diagnosis list should then be created for every problem. The list should be appropriate to that animal. There is no point listing feline leukaemia virus as a likely diagnosis in a dog!

An attempt should also be made to categorise the conditions in order of likelihood, or at least into common and uncommon. Although the more common conditions have been indicated in this book with an asterisk (*), there are few objective data regarding the true incidence of conditions, and the estimate of incidence is largely subjective and influenced by the author's geographical location and caseload. Familiarity with how

common conditions are and their local incidence will help prioritise differential lists. The clinician can then select diagnostic tests in a rough order of probability, although rarer but life-threatening conditions, such as hypoadrenocorticism, should also be ruled out early in the course of investigations. Some authorities rightly point out that emphasis should be placed on historical and physical signs, and that 'over-investigating' can be expensive and potentially detrimental to the patient (Chesney, 2003).

It is this author's opinion, however, that it is possible to place too much importance on probabilities and how commonly a condition occurs. The newly-qualified veterinary surgeon will often look for the rare but exciting and memorable condition they learned about at college, while the experienced practitioner will often remind them that 'common things are common', and suggest they restrict their investigations only to commonly-encountered conditions. The ideal approach is probably somewhere in between.

Although it is self-evidently true that common things are common, it is also true that uncommon things are encountered relatively often. To take a hypothetical example: if a common problem is caused by common conditions A and B with a frequency of 80%, and by rare conditions C to Z the rest of the time, with conditions C to Z occurring with equal frequency, then each individual condition C to Z will be responsible for the problem approximately 0.9% of the time, making each individual condition quite uncommon. However, 1 in 5 presentations of this problem will be caused by an uncommon condition, and so uncommon conditions will be diagnosed commonly, provided they are looked for. The problem-oriented approach ensures that these uncommon conditions are not overlooked.

Some authorities prefer to categorise the initial approach to a case differently, and describe the subjective and objective assessment of a patient as part of the SOAP approach (Subjective, Objective, Assessment, Plan). The principle is the same however, in that a detailed history or physical examination is the basis of the initial differential list.

Once the differential diagnosis list has been formulated, the clinician is in a position to select appropriate tests to aid in making a definitive diagnosis. Prioritising the selection of diagnostic tests helps avoid placing undue financial strain on the client and inappropriate or unnecessary testing on the patient. Tests may be prioritised on such factors as: the number of conditions which will be ruled in and out; the sensitivity and specificity of the tests; the risk/benefit to the patient ratio; the financial cost/benefit to the client ratio; the incidence or prevalence of the condition being tested for; the importance of the condition being tested for (e.g. hypoadrenocorticism is uncommon, but the consequences of failing to diagnose it may be serious).

After the results of initial testing have been obtained the clinician may be in a position to make a definitive diagnosis. Often, however, it is necessary to refine the differential list and select further appropriate testing. The differential list may be reformulated as often as is necessary until a single diagnosis for that problem is made. Often, a single diagnosis will tie in all the problems satisfactorily. However, in many cases, particularly in geriatric patients, concurrent disorders will require multiple diagnoses.

For problem cases in which a clear diagnosis is not made, or the patient fails to respond to treatment as expected, returning to the beginning with the history and physical examination, with the condition often having progressed, can be helpful. However, very few tests are 100% sensitive and specific, and many 'definitive' diagnoses in fact leave room for some doubt. The clinician should never be afraid to revise the initial diagnosis if further evidence comes to light. Those who are concerned that failing to make the correct diagnosis in every case is somehow a sign of inferior clinical abilities

should take heart from a recent study from the School of Veterinary Medicine at the University of California (Kent et al., 2004). In this paper, clinical and post mortem diagnoses of 623 dogs treated between 1989 and 1999 at the Veterinary Teaching Hospital were compared. It was found that the post mortem diagnosis, presumed to be the correct diagnosis, differed from the clinical diagnosis in approximately $\frac{1}{3}$ of cases.

This book is organised into seven parts. Part 1 deals with signs likely to be uncovered during history taking. Part 2 deals with signs encountered at the physical examination. Part 3 deals with imaging findings, Part 4 with clinicopathological findings, and Part 5 electrophysiological findings. Part 6 outlines the techniques involved in some common diagnostic procedures and Part 7 contains some algorithms to aid in the diagnosis of common clinical presentations. Four appendices, containing checklists for diagnostic investigations, and a bibliography follow.

The individual lists are categorised as I felt was logical, for example by the DAMNIT-V organisation. DAMNIT-V is a mnemonic for remembering the various pathological processes that may cause a disease:

D – degenerative

A – anomalous (usually listed as congenital in this book)

M – metabolic

N – nutritional, neoplastic

I – inflammatory, infectious, immune-mediated, iatrogenic, idiopathic

T – traumatic, toxic

V – vascular

This categorisation is not appropriate in all cases, however. The individual lists are largely organised alphabetically. The more common conditions are labelled with an asterisk, but, as stated above, whether or not a condition is considered to be common is largely a matter of subjective opinion. Those conditions that are predominantly or exclusively found only in dogs are marked with a (D) and those in cats are marked with a (C).

Sources for the information in this book are wide ranging. A large number of textbooks, listed in the bibliography, were consulted, but in most cases it was necessary to expand the lists found in these sources, using information from veterinary journals and conference proceedings.

Although there are undoubtedly omissions from some of the lists, encompassing as this book does virtually the whole of small animal veterinary medicine, I have tried to make it as comprehensive as possible. I would be happy to hear of any omissions, corrections or comments on the text, which can be e-mailed with any supporting references to alex.gough@btconnect.com.

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Key

* = more common condition

(D) = condition seen exclusively or predominantly in dogs

(C) = condition seen exclusively or predominantly in cats

q.v. = more information can be found on this condition elsewhere in this book – see Index

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Chesney, C. (2003) Overdiagnosis in the veterinary field? *JSAP*, 44:421.

Kent, M. S., et al. (2004) Concurrence between clinical and pathologic diagnoses in a veterinary medical teaching hospital: 623 cases (1989 and 1999). *JAVMA*, 224:403–406.

PART 1

HISTORICAL SIGNS

1.1 General, systemic and metabolic historical signs

1.1.1 Polyuria/polydipsia

Physiological

Exercise
High environmental temperature

Diet

Increased salt intake
Very low protein diet

Electrolyte disorders

Hypercalcaemia *q.v.*
Hypokalaemia *q.v.*
Hypernatraemia *q.v.*

Endocrine disease

Acromegaly
Diabetes mellitus*
Diabetes insipidus

- Central
- Nephrogenic

Hyperadrenocorticism*
Hyperthyroidism* (C)
Hypoadrenocorticism (D)
Insulinoma
Pheochromocytoma
Primary hyperaldosteronism
Primary hyperparathyroidism

Hepatobiliary disease, e.g.

Hepatic neoplasia* *q.v.*
Hepatitis/cholangiohepatitis* *q.v.*

Infectious disease, e.g.

Toxaemia, e.g.

- Pyometra

Miscellaneous

- Congenital lack of ADH receptors
- Hypothalamic disease
- Pericardial effusion
- Polycythaemia
- Psychogenic

Neoplasia*

Renal disorders

- Acute renal failure* *q.v.*
- Chronic renal failure* *q.v.*
- Glomerulonephritis
- After urethral obstruction
- Primary renal glycosuria
- Pyelonephritis
- Renal medullary washout

Drugs/toxins

- Aminophylline
- Corticosteroids
- Delmadinone acetate
- Diuretics
- Ethylene glycol
- Indomethacin



Fig. 1.1 Dorsal T1 weighted MR scan of the adrenal glands of a dog with pituitary-dependent hyperadrenocorticism, showing mild bilateral enlargement. Reproduced with permission of Downs Referrals, Bristol.

Lithium
NPK fertilisers
Paraquat
Phenobarbitone
Potassium bromide
Primidone
Proligestone
Terfenadine
Theophylline
Vitamin D rodenticides

Note: Polyuria and polydipsia are considered together here, since one will lead to the other, with only a few exceptions. These include polydipsia in the face of obstructive lower urinary tract disease or oliguric renal failure, and polyuria which is not matched by fluid intake, in which case dehydration will rapidly follow. None of these scenarios are encountered commonly in practice.

References

- Garrett, L. D. (2003) Insulinomas: A review and what's new. *Proceedings, ACVIM, 2003*.
- Lunn, K. F. (2005) Avoiding the water deprivation test. *Proceedings, ACVIM, 2005*.
- Tobias, et al. (2002) Pericardial disorders: 87 cases of pericardial effusion in dogs (January 1, 1999 to December 31, 2001). *Proceedings, ACVIM, 2002*.

1.1.2 Weight loss

Decreased nutrient intake

Anorexia *q.v.*
Diet

- Poor-quality diet
- Underfeeding

Dysphagia *q.v.*

Increased nutrient loss

Burns
Chronic blood loss

- Epistaxis *q.v.*
- Haematemesis *q.v.*
- Haematuria *q.v.*
- Melaena *q.v.*

Diabetes mellitus*
Effusions *q.v.*
Fanconi syndrome (D)
Intestinal parasites*
Neoplasia
Protein-losing enteropathy*
Protein-losing nephropathy

Increased nutrient use

Endocrine, e.g.

Hyperthyroidism* (C)

*Neoplasia**

Physiological

Cold environment

Exercise

Fever *q.v.*

Lactation

Pregnancy*

Malassimilation

Cardiac failure*

Exocrine pancreatic insufficiency

Hepatic failure/bile salt deficiency* *q.v.*

Hypoadrenocorticism (D)

Neoplasia*

Renal failure* *q.v.*

Small intestinal disease* *q.v.*

Regurgitation and vomiting *q.v.*

Reference

Rutz, G. M., et al. (2001) Pancreatic acinar atrophy in German Shepherds. *Compend Contin Educ Pract Vet*, 23:347–56.

1.1.3 Weight gain

Fluid accumulation

Ascites* *q.v.*

Peripheral oedema *q.v.*

Pleural effusion

Increased body fat

Overeating

Boredom

Excessive appetite (normal in some breeds)*

High-calorie diets

Overfeeding*

Endocrinopathies

Acromegaly

Hyperadrenocorticism*

Hypogonadism

Hypothyroidism* (D)

Insulinoma

Increased organ size

Hepatomegaly* *q.v.*

Renomegaly *q.v.*

Splenomegaly* *q.v.*

Uterine enlargement *q.v.*

- Pregnancy*
- Pyometra*

Neoplasia

Large abdominal mass (often associated with poor body condition)*

Drugs, e.g.

- Corticosteroids

References

Garrett, L. D. (2003) Insulinomas: A review and what's new. *Proceedings, ACVIM*, 2003.

Peterson, M. E., et al. (1990) Acromegaly in 14 cats. *JVIM*, 4:192–201.

1.1.4 Polyphagia**Behavioural/psychological**

Normal in some breeds*

Boredom

Physiological

Cold environment

Increased exercise

Lactation*

Pregnancy*

Malassimilation***Increased nutrient loss****Increased nutrient use****Diet**

Highly-palatable food*

Poor-quality food

Endocrine

Diabetes mellitus*

Hyperadrenocorticism*

Hyperthyroidism* (C)

Insulinoma

Miscellaneous

Peritoneopericardial diaphragmatic hernia

Drugs/toxins

Aminophylline

Benzodiazepines
 Cannabis
 Cyproheptadine
 Delmadinone acetate
 Glucocorticoids
 Phenobarbitone
 Potassium bromide
 Primidone
 Proligestone

References

- Garrett, L. D. (2003) Insulinomas: A review and what's new. *Proceedings, ACVIM, 2003*.
- Rexing, J. F. & Coolman, B. R. (2004) A peritoneopericardial diaphragmatic hernia in a cat. *Vet Med, 99*:314–18.

1.1.5 Anorexia/inappetence

Difficulty with prehension

Blindness *q.v.*

Myopathy, e.g.

Masticatory myositis
 Tetanus

Pain on opening jaw, e.g.

Mandibular or maxillary fracture
 Retrobulbar abscess
 Skull fractures
 Soft tissue trauma
 Temporomandibular joint disease

Trigeminal nerve disease, e.g.

Neoplasia
 Trigeminal neuritis

Difficulty with mastication

Dental disease*
 Lingual disease
 Oral neoplasia*
 Oral ulceration, e.g.

- Ingestion of caustic or acidic substances*
- Renal disease

Difficulty with swallowing

Pharyngeal disease

Foreign body*
 Neoplasia
 Neurological disease
 Ulceration

Oesophageal disease, e.g.

- Foreign body*
- Neoplasia
- Ulceration
- Megaoesophagus
- Stricture
- Vascular ring anomaly

Primary anorexia

- Intracranial disease, e.g.
 - Hypothalamic neoplasia

Secondary anorexia

Anosmia

- Chronic rhinitis *q.v.*
- Nasal neoplasia
- Other nasal disease
- Neurological disease

Endocrine disease, e.g.

- Diabetic ketoacidosis
- Hypoadrenocorticism (D)

Fever* *q.v.*Gastrointestinal disease *q.v.*, e.g.

- Gastritis
- Inflammatory bowel disease*

Heart disease, e.g.

- Cardiac failure*

Hepatic disease* *q.v.*

Infection*

Metabolic abnormalities, e.g.

- Hypercalcaemia *q.v.*
- Hypokalaemia *q.v.*

Pain*

Pancreatic disease*, e.g.

- Pancreatitis

Respiratory disease, e.g.

- Airway disease* *q.v.*
- Diaphragmatic hernia
- Pleural effusion* *q.v.*
- Pneumonia *q.v.*

Renal disease* *q.v.*

Drugs

- Acetazolamide
- Amiodarone
- Amphotericin B
- Bethanechol
- Bromocriptine
- Butorphanol
- Cardiac glycosides
- Chlorambucil
- Diazoxide
- Doxorubicin
- Fentanyl

- Hydralazine
- Itraconazole
- Ketoconazole
- Melphalan
- Methimazole
- Mitotane
- Nicotinamide
- Oxytetracycline (C)
- Penicillamine
- Theophylline
- Trimethoprim/sulphonamide (C)

Diet

Recent dietary changes*
Unpalatable diet*

Psychological/behavioural* factors

Altered schedule
New family members
New house
New pets

Reference

Forman, M. A., et al. (2004) Evaluation of serum feline pancreatic lipase immunoreactivity and helical computed tomography versus conventional testing for the diagnosis of feline pancreatitis. *JVIM*, 18:807–15.

1.1.6 Failure to grow

With good body condition

Chondrodystrophy (normal in many breeds)* (D)
Endocrine disorders

- Congenital hyposomatotropism (pituitary dwarfism)
- Congenital hypothyroidism
- Hyperadrenocorticism

With poor body condition

Dietary intolerance
Exocrine pancreatic insufficiency*

Inadequate nutrient intake

Anorexia *q.v.*
Poor-quality diet
Underfeeding

Cardiac disorders, e.g.

Congenital
Endocarditis

Hepatic disorders, e.g.

Hepatitis *q.v.*
Portosystemic shunt

Oesophageal disorders, e.g.

Megaesophagus *q.v.*
Vascular ring anomaly (e.g. persistent right aortic arch)

Gastrointestinal disease, e.g.

Histoplasmosis
Obstruction, e.g.

- Foreign body*
- Intussusception*

Parasites*

Renal disease

Congenital kidney disease
Glomerulonephritis
Pyelonephritis

*Inflammatory disease**Endocrine disease*

Diabetes insipidus
Diabetes mellitus*
Hypoadrenocorticism (D)

Reference

Chastain, C. B., et al. (2001) Combined pituitary hormone deficiency in German shepherd dogs with dwarfism. *Sm Anim Clin Endocrinol*, 11:1–4.

1.1.7 Syncope/collapse (see Table 1.1)**Cardiovascular dysfunction**

Myocardial failure
Myocardial infarction
Shock *q.v.*

Bradyarrhythmias q.v., e.g.

High grade second degree heart block
Sick sinus syndrome (D)
Third degree heart block

Tachyarrhythmias q.v.

Supraventricular tachycardia*
Ventricular tachycardia*

Table 1.1 Differentiating seizures from syncope. This table is a guide to the differentiation of generalised seizures from syncopal episodes. However, there is a lot of overlap between the two: syncopal episodes may involve convulsions; seizures may occur on exercise; tonic-clonic motions may not always be observed with seizures.

	Syncope	Seizure (generalised)
Precipitating event/ timing	Exercise, excitement, stress, cough, urination, defecation	Often at rest or on waking
Pre-event	Acute weakness, staggering, vocalisation	Anxiety, attention-seeking
Event	Usually flaccid limbs but may be rigid	Jaw motions, hypersalivation, tonic-clonic limb motion or limb rigidity
	Duration less than 1 minute	Duration often greater than 1 minute
	Rarely urination/defecation	Urination and/or defecation
	Usually retain consciousness, but may lose consciousness	Loss of consciousness
	Abnormal heart rhythm or rate may or may not be palpatated/auscultated	Often sinus tachycardia
Post-event	Rapid recovery	Slow recovery Prolonged post-event disorientation

Obstruction to flow

Congenital, e.g.

- Aortic stenosis (D)
- Pulmonic stenosis (D)

Hypertrophic obstructive cardiomyopathy

Pericardial effusion* (D)

Pulmonary hypertension

Arterial obstruction, e.g.

- Neoplasia
- Thrombosis

Hypoxaemic disease

Carboxyhaemoglobinaemia

Methaemoglobinaemia

Respiratory disease

Upper airway, e.g.

- Brachycephalic obstructive airway syndrome
- Laryngeal paralysis
- Tracheal collapse
- Tracheal obstruction

Lower airway, e.g.

- Pneumonia
- Small airway disease

Ventilation-perfusion mismatch, e.g.

- Lung collapse

Pleural/thoracic disorders, e.g.

- Pleural effusion
- Pneumothorax
- Rib fractures

Right-to-left cardiac shunt, e.g.

Reverse-shunting patent ductus arteriosus

Severe anaemia

Neurological dysfunction

Brainstem disease

Glossopharyngeal neuralgia

Micturition-related collapse

Narcolepsy/cataplexy

Seizures *q.v.*

Swallowing-related collapse

Diffuse cerebral dysfunction, e.g.

Encephalopathy

Haemorrhage

Hydrocephalus

Inflammation

Oedema

Space occupying lesion

Trauma

Lower motor neurone disorders

Endocrine neuropathies, e.g.

- Diabetes mellitus*
- Hyperadrenocorticism
- Hypothyroidism* (D)

Lumbosacral disease

Paraneoplastic neuropathies, e.g.

- Insulinoma

Peripheral nerve neoplasia

Polyneuropathy

Polyradiculoneuropathy

Neuromuscular junction disorders

Botulism

Myasthenia gravis

Upper motor neurone disorders

Central vestibular disease

Cerebellar disease

Cerebral disease

Peripheral vestibular disease

Spinal disease

Miscellaneous

Carotid sinus stimulation, e.g.

- Neoplasia
- Tight collar

Hyperventilation

Postural hypotension

Tussive syncope

Metabolic disorders

Diabetic ketoacidosis

Hypercalcaemia/hypocalcaemia *q.v.*

Hypernatraemia/hyponatraemia *q.v.*

Hyperthermia/hypothermia *q.v.*

Hypoglycaemia *q.v.*

Hypokalaemia *q.v.*

Severe acidosis *q.v.*

Severe alkalosis *q.v.*

Myopathies

Corticosteroid myopathy

Exertional myopathy

Hypocalcaemic myopathy

Hypokalaemic myopathy

Malignant hyperthermia

Mitochondrial myopathy

Muscular dystrophy

Polymyopathy

Polymyositis

Protozoal myopathy

Skeletal/joint disorders

Bilateral cranial cruciate disease

Bilateral hip disease

Discospondylitis

Intervertebral disc disease

Multiple myeloma

Osteoarthritis

Panosteitis

Patellar luxation

Polyarthritis

Drugs

Anti-arrhythmics, e.g.

- Atenolol
- Digoxin
- Propranolol
- Quinidine

Sedatives, e.g.

- Phenothiazines

Vasodilators, e.g.

- ACE inhibitors
- Hydralazine
- Nitroglycerine

References

- Berendt, M. (2001) The diagnosis of epilepsy: seizure phenomenology and classification. *Proceedings of the World Small Animal Veterinary Association World Congress, 2001*.
- Shelton, G. D. (1998) Myasthenia gravis: lessons from the past 10 years. *JSAP*, 39:368–72.
- Ware, W. A. (2002) Syncope. *Proceedings, Waltham/OSU Symposium, Small Animal Cardiology, 2002*.
- Wray, J. (2005) Differential diagnosis of collapse in the dog. 1. Aetiology and investigation. *In Practice* 27:16–28.

1.1.8 Weakness

Metabolic disease

- Renal failure* *q.v.*
- Hepatic failure* *q.v.*
- Hypoglycaemia *q.v.*
- Electrolyte disorders*
 - Hypercalcaemia*/hypocalcaemia *q.v.*
 - Hyperkalaemia/hypokalaemia* *q.v.*
 - Hypernatraemia/hyponatraemia *q.v.*
- Acid–base disorders
 - Acidosis *q.v.*
 - Alkalosis *q.v.*

Infectious diseases*

- Bacterial
- Viral
- Fungal
- Rickettsial
- Protozoal
- Other parasitic diseases

Immune-mediated/inflammatory diseases

- Chronic inflammatory conditions*
- Immune-mediated haemolytic anaemia* *q.v.*
- Immune-mediated polyarthritis

Haematological diseases

- Anaemia* *q.v.*
- Hyperviscosity syndrome

Endocrine diseases

- Diabetes mellitus*
- Hyperadrenocorticism
- Hyperparathyroidism
- Hypoadrenocorticism (D)
- Hypoparathyroidism
- Hypothyroidism* (D)
- Insulinoma

Cardiovascular diseases

Bradyarrhythmias *q.v.*, e.g.

- High grade second degree heart block
- Sick sinus syndrome (D)
- Third degree heart block

Congestive heart failure*

Pericardial effusion* *q.v.*

Hypertension* *q.v.*

Hypotension* *q.v.*

Tachyarrhythmias *q.v.*, e.g.

- Ventricular tachycardia*

Respiratory diseases

Airway obstruction, e.g.

- Feline asthma* (C)
- Foreign body*
- Neoplasia *

Intrathoracic neoplasia*

- Pleural effusion*
- Pulmonary hypertension
- Pulmonary oedema* *q.v.*
- Pulmonary thromboembolism

Severe pulmonary parenchymal disease

Neuromuscular diseases

Epilepsy* *q.v.*

Myasthenia gravis

Myopathies

Vestibular disease* *q.v.*

Intracranial disease, e.g.

Cerebrovascular accident

Infection

Inflammation

Space-occupying lesions

Spinal cord disease q.v., e.g.

Infection

Inflammation

Intervertebral disc disease* (D)

Neoplasia

Trauma*

Peripheral polyneuropathies

Endocrine disorders, e.g.

- Diabetes mellitus*
- Hyperadrenocorticism
- Hypothyroidism* (D)

Polyradiculoneuritis

Paraneoplastic disorders

Drugs/toxins, e.g.

- Cisplatin
- Lead
- Vincristine

Infections

Botulism

Tick paralysis

Systemic disorders

Dehydration*

Fever* *q.v.*

Neoplasia*

Nutritional disorders

Cachexia, e.g.

Heart failure*

Neoplasia*

Inadequate calorie intake, e.g.

Anorexia* *q.v.*

Poor-quality diet

Specific nutrient deficiencies, e.g.

Minerals

Vitamins

Physiological factors

Over-exercise

Pain*

Stress/anxiety*

Drugs/toxins

Alphachloralose

Anticoagulant rodenticides

Anticonvulsants

Antihistamines

Blue-green algae

Cannabis

Diclofenac sodium

Glucocorticoids

Hypotensive agents, e.g.

- Beta-blockers
- Vasodilators

Ibuprofen

Insulin overdosage

Iron salts

Mistletoe

Opioids

Organophosphates
 Petroleum distillates
 Phenoxy acid herbicides
 Pyrethrin/pyrethroids
 Rhododendron
 Salbutamol
 Sedatives

References

- Sadek, D. & Schaer, M. (1996) Atypical Addison's disease in the dog: a retrospective survey of 14 cases. *JAAHA*, 32:159–63.
- Shelton, G. D. (1998) Myasthenia gravis: lessons from the past 10 years. *JSAP*, 39:368–72.

1.2 Gastrointestinal/abdominal historical signs

1.2.1 Ptyalism/salivation/hypersalivation

Physiological factors

Appetite stimulation*
 Fear*
 Stress*

Oral cavity disease

Dental disease*
 Foreign body*
 Neoplasia*

Inability to close mouth, e.g.

Mandibular trauma*
 Trigeminal nerve disease, e.g.

- Idiopathic trigeminal neuritis
- Infiltrating neoplasia, e.g.
 - Lymphoma
 - Nerve sheath tumours

Ulceration, e.g.*

Immune-mediated disease
 Ingestion of irritant substance
 Renal failure*

*Inflammation**

Faucitis*
 Gingivitis*
 Glossitis*
 Oesophagitis*
 Stomatitis*

Neurological disease

Cataplexy/narcolepsy
Hepatic encephalopathy
Intracranial neoplasia
Partial seizures

Nausea/regurgitation/vomiting q.v.**Salivary gland disease q.v.**

Salivary gland necrosis/sialadenitis
Salivary mucocoele
Sialadenosis

Normal breed variation, e.g.

St Bernards

Drugs/toxins

Adder bites
Alphachloralose
Baclofen
Batteries
Benzodiazepines
Bethanechol
Blue-green algae
Cannabis
Carbamate
Chocolate/theobromine
Cotoneaster
Cyanoacrylate adhesives
Daffodil
Dieffenbachia
Dinoprost tromethamine
Glyphosphate
Horse chestnut
Ivermectin
Ketamine
Laburnum
Levamisole (C)
Loperamide
Metronidazole
Mistletoe
NPK fertilisers
Organophosphates
Paracetamol
Paraquat
Phenoxy acid herbicides
Plastic explosives
Pyrethrin/pyrethroids
Pyridostigmine
Rhododendron
Rowan

Terfenadine
 Toads
 Trimethoprim/sulphonamide (C)
 Xylazine

References

- Patterson, E. E., et al. (2003) Clinical characteristics and inheritance of idiopathic epilepsy in Vizslas. *JVIM*, 17:319–25.
- Schroeder, H. & Berry, W. L. (1998) Salivary gland necrosis in dogs: a retrospective study of 19 cases. *JSAP*, 39:121–25.
- Sozmen, M., et al. (2000) Idiopathic salivary gland enlargement (sialadenosis) in dogs: a microscopic study. *JSAP*, 41:243–47.

1.2.2 Gagging/retching

Congenital disease

Achalasia, e.g.

- Cricopharyngeal achalasia (D)

 Cleft palate
 Hydrocephalus

Neuromuscular disease

Brainstem disease
 Cranial nerve defects (V, VII, IX, XII)
 Encephalitis
 Laryngeal paralysis*
 Muscular dystrophy
 Myasthenia gravis

Immune-mediated and infectious disease

Asthma* (C)
 Bacterial encephalitis
 Fungal disease

- Granuloma complex

 Idiopathic glossopharyngitis
 Laryngitis*
 Pharyngitis*
 Rabies
 Rhinitis*
 Sialadenitis
 Viral encephalitis

Systemic disorders

Hypocalcaemia
 Renal failure*

Trauma

Foreign body*
 Pharyngeal haematoma

Styloid apparatus trauma
Tracheal rupture

Neoplasia

Central nervous system
Epiglottis
Inner ear
Nasal
Pharyngeal
Tonsillar

Nutrition

Food texture and size

Respiratory disease (expectoration), e.g.

Bronchitis*
Haemorrhage
Pulmonary oedema*

Toxic

Botulism
Ingestion of irritant chemical
Smoke

Reference

Schroeder, H. & Berry, W. L. (1998) Salivary gland necrosis in dogs: a retrospective study of 19 cases. *JSAP*, 39:121–25.

1.2.3 Dysphagia

Infectious/inflammatory disease

Oral disease

Dental disease*
Osteomyelitis of jaw
Periodontitis*
Pharyngitis*
Rabies
Retrobulbar abscess
Severe gingivitis*
Tooth root abscess*
Ulceration, e.g.

- Ingestion of irritant substance
- Renal disease*

Obstruction

Foreign body*
Granuloma

Neoplasia
Sialocele

Trauma

Fracture*
Haematoma
Laceration*

Temporomandibular joint disease

Neuromuscular disease

Cricopharyngeal achalasia
Myasthenia gravis
Myopathy, e.g.

- Masticatory myopathy

Trigeminal nerve disease, e.g.

- Intracranial disease
- Trigeminal neuritis

References

Meomartino, L., et al. (1999) Temporomandibular ankylosis in the cat: a review of seven cases. *JSAP*, 40:7–10.
Preifer, R. M. (2003) Cricopharyngeal achalasia in a dog. *Can Vet J*, 44:993–5.

1.2.4 Regurgitation

Salivary gland disease

Sialadenitis

Oesophageal disease

Foreign body*
Megaoesophagus

- Idiopathic
- Acquired

Neoplasia
Oesophageal diverticulum
Oesophageal fistula
Oesophageal inclusion cysts
Oesophagitis*
Stricture
Vascular ring anomaly, e.g.

- Persistent right aortic arch

Gastric disease

Gastric dilatation-volvulus* (D)
Hiatal hernia
Pyloric outflow obstruction, e.g.

- Foreign body*
- Neoplasia
- Pyloric stenosis

Neuromuscular disease

Peripheral neuropathies, e.g.

- Giant cell axonal neuropathy (D)
- Lead poisoning
- Polyneuritis
- Polyradiculoneuritis

Central nervous system disease, e.g.

- Brainstem disease
- Infection
- Inflammation
- Intracranial space occupying lesion
- Trauma

Neuromuscular junctionopathies, e.g.

- Acetylcholinesterase toxicity
- Botulism
- Myasthenia gravis
- Tetanus

Immune-mediated disease

- Dermatomyositis (D)
- Polymyositis
- Systemic lupus erythematosus

Endocrine disease

- Hypoadrenocorticism (D)
- Hypothyroidism* (D)

References

- Han, E., et al. (2003) Feline esophagitis secondary to gastroesophageal reflux disease: clinical: signs and radiographic, endoscopic and histopathological findings. *JAAHA*, 39:161–7.
- Hodges, J., et al. (2004) Recurrent regurgitation in a young cat with an unknown history. *Vet Med*, 99:244–51.
- Schroeder, H. & Berry, W. L. (1998) Salivary gland necrosis in dogs: a retrospective study of 19 cases. *JSAP*, 39:121–5.
- White, R. N., et al. (2003) Vascular ring anomaly with coarctation of the aorta in a cat. *JSAP*, 44:330–34.

1.2.5 Vomiting

ACUTE VOMITING

Dietary

- Dietary indiscretion*
- Dietary intolerance*
- Sudden change in diet*

Gastrointestinal disease

Colitis*
Constipation/obstipation* *q.v.*
Foreign body*
Gastric dilatation/volvulus*
Gastric or duodenal ulceration*
Gastritis/enteritis*
Haemorrhagic gastroenteritis*
Infection, e.g.

- Bacterial*
- Parasites*
- Viral*

Inflammatory bowel disease*
Intestinal volvulus
Intussusception
Neoplasia*

Endocrine disease, e.g.

Diabetic ketoacidosis*
Hypoadrenocorticism (D)

Metabolic/systemic disease

Hypercalcaemia/hypocalcaemia *q.v.*
Hyperkalaemia/hypokalaemia* *q.v.*
Hyperthermia* *q.v.*
Liver disease* *q.v.*
Pancreatitis*
Peritonitis*
Prostatitis*
Pyometra* (D)
Renal disease* *q.v.*
Septicaemia*
Urinary obstruction*
Vestibular disease*

Miscellaneous conditions

Central nervous system disease
Diaphragmatic hernia
Motion sickness
Psychogenic

Drugs/toxins

Acetazolamide
Adder bite
Allopurinol
Alpha-2 agonists
Aminophylline
Amphotericin B
Apomorphine
Aspirin
Atipamezole
Atropine