Intravenous infusion of phenytoin sodium 5% in a female dog for the treatment of diazepam refractory convulsive status epilepticus - case report. [Portuguese]

Acta Veterinaria Brasilia; 2013. 7(Suppl. 1):389-391. 6 ref.

It was attended a Labrador female dog of 9 years presenting convulsive crisis in intervals of 30 minutes (status epilepticus) due to a atropine intoxication. The treatment was established with oxygen, Ringer-lactate IV infusion, neostigmine in the dose of 0.05 mg/kg IM as antidote of the atropine and diazepam for control of the convulsions in the dose of 1 mg/kg IV bolus and repeated the same dose for more 3 times in intervals of 30 minutes. The animal began to present ventricular arrhythmia and lidocaine IV infusion was accomplished in the dose of 25 micro g/kg/min. The convulsions continued of 30 in 30 minutes and then it was done diazepam IV infusion in the dose of 0.5 mg/kg/min for more 2 hours without success in the control of the convulsions. So, It was accomplished the protocol used in the Medicine in the treatment of diazepam refractory convulsive status epilepticus with phenytoin sodium 5% IV infusion, in 500 mL of saline solution 0.9% in the dose of 20 mg/kg, for 3 hours. After 3 hours of IV infusion the animal returned the conscience without presenting more convulsions, ventricular arrhythmia, just some ataxia and somnolence. The animal recovered well and two days after exams were accomplished to evaluate the patient's general state and to verify possible sequels, blood count, urea, creatinine, ALT and AST dosage, electrocardiogram and thoracic X-Ray, and no abnormality was detected. This is the first report in the literature using this protocol in dog.

More studies should be accomplished with the use of phenytoin in IV infusion in dogs with status epilepticus refractory to the diazepam, and could be in the future one more effective protocol in the control of this convulsion type in this species.

Publication Type
Journal article
Conference paper.
The nature and occurrence of remission, and conversely, pharmacoresistance following epilepsy treatment is still not fully understood in human or veterinary medicine. As such, predicting which patients will have good or poor treatment outcomes is imprecise, impeding patient management. In the present study, we use a naturally occurring animal model of pharmacoresistant epilepsy to investigate clinical risk factors associated with treatment outcome. Dogs with idiopathic epilepsy, for which no underlying cause was identified, were treated at a canine epilepsy clinic and monitored following discharge from a small animal referral hospital. Clinical data was gained via standardised owner questionnaires and longitudinal follow up data was gained via telephone interview with the dogs’ owners. At follow up, 14% of treated dogs were in seizure-free remission. Dogs that did not achieve remission were more likely to be male, and to have previously experienced cluster seizures. Seizure frequency or the total number of seizures prior to treatment were not significant predictors of pharmacoresistance, demonstrating that seizure density, that is, the temporal pattern of seizure activity, is a more influential predictor of pharmacoresistance. These results are in line with clinical studies of human epilepsy, and experimental rodent models of epilepsy, that patients experiencing episodes of high seizure density (cluster seizures), not just a high seizure frequency pre-treatment, are at an increased risk of drug-refractoriness. These data provide further evidence that the dog could be a useful naturally occurring epilepsy model in the study of pharmacoresistant epilepsy.

Publication Type
Journal article.
Tokyo
Country of Publication
Japan
Abstract
A 9-month-old intact female Yorkshire terrier dog was presented with episodic partial seizure-like cramping of the limbs. The patient's episodes began six months previously; the interval between episodes became shorter, and the duration of the episodes increased. Various tests including neurologic examination, blood examination, abdominal radiography, ultrasonographic examination, angiographic computed tomography (CT) and brain magnetic resonance imaging (MRI) detected no remarkable changes. After these tests were conducted, the patient's condition was suspected to be canine epileptoid cramping syndrome (CECS), which could be a form of paroxysmal dyskinesia (PD), and as a trial therapy, Science Diet k/d (Hill's Pet Nutrition, Topeka, KS, U.S.A.) was prescribed. The clinical signs were dramatically reduced after diet therapy, and we diagnosed the patient with CECS. This is the first case report of CECS in a Yorkshire terrier dog.

Publication Type
Journal article.

Imepitoin as novel treatment option for canine idiopathic epilepsy: pharmacokinetics, distribution, and metabolism in dogs.

Source

Publisher
Wiley-Blackwell
Location of Publisher
Oxford
Country of Publication
UK
Abstract
Imepitoin is a novel anti-epileptic licensed in the European Union for the treatment of canine idiopathic epilepsy. The aim of this study was to characterize the pharmacokinetics of imepitoin in dogs and to evaluate the interaction with drug metabolizing enzymes. Upon administration of imepitoin tablets at a dose of 30 mg/kg to beagle dogs, high plasma levels were observed within 30 min following oral dosing, with maximal plasma concentrations of 14.9-17.2 micro g/mL reached after 2-3 h. In a crossover study, co-administration of imepitoin tablets with food reduced the total AUC by 30%, but it did not result in significant changes in $T_{\text{max}}$ and $C_{\text{max}}$, indicating lack of clinical relevance. No clinically relevant effects of sex and no accumulation or metabolic tolerance were observed upon twice daily dosing. Following single dose administration of 10-100 mg/kg, dose linearity was found. Administering [14C] imepitoin, high enteral absorption of 92% and primary fecal excretion were identified. Plasma protein binding was only 55%. At therapeutic plasma concentrations, imepitoin did not inhibit microsomal cytochrome P450 family liver enzymes in vitro. In rats, no relevant induction of liver enzymes was found. Therefore, protein binding or metabolism-derived drug-drug interactions are unlikely. Based on these data, imepitoin can be dosed twice daily, but the timing of tablet administration in relation to feeding should be kept consistent.

Publication Type
Journal article.
Canine idiopathic epilepsy has an estimated prevalence of 0.62 per cent in primary veterinary practice (Kearsley-Fleet and others 2013) and as such is one of the most common chronic neurological diseases. Descriptions of 'epilepsy of unknown origin... where no symptom characteristic of any other condition has as yet presented' can be found in early veterinary textbooks (Kirk 1922) and although our knowledge is now considerably greater, and we are no longer treating it with arsenic, we are still a long way from preventing or curing this enigmatic disease. This article describes the diagnosis, management and considerations to take when dealing with this condition.

Diagnostic evaluation of the patient with seizures. (Focus Issue: Seizures in companion animals.)

A rapid and rational clinical reasoning approach will not only help to identify the possible underlying pathology of an epileptic dog, but will also help to give the likely prognosis and allow treatment to be initiated swiftly to ensure the best possible outcome for the patient. This article will provide a step-by-step approach for clinical reasoning to improve clinical efficiency and to maximise patient care.
Pathophysiology of epileptic seizures. (Focus Issue: Seizures in companion animals.)

Epilepsy represents the most common chronic neurological condition in the dog. As our understanding of the underlying pathophysiology improves, we are better able to describe the neuroanatomical diagnosis, select the best medication for an individual patient and predict the potential for pharmacoresistance to antiepileptic drugs (AEDs). An epileptic seizure is a clinical sign of neurological disease (similar to any other neurological abnormality, such as ataxia or paresis), whereas epilepsy is defined as recurrent epileptic seizures (i.e., a patient does not have epilepsy until it has had repeated seizures). Epileptogenesis is the process whereby a seizure focus develops or increases in size, with an associated increase in seizure frequency or severity. While the effect of early instigation of treatment with AEDs on epileptogenesis is still to be elucidated, it is apparent that early treatment results in the development of less long term adverse behaviour effects in the patient. The main risk factors for pharmacoresistance to AEDs include breed (in particular the border collie) and severe or progressively worsening seizures.

Canine and feline epilepsy: diagnosis and management.

The authors of this 591-paged book collaborated in order to provide information on multiple aspects of canine and feline seizures and epilepsy such as pathophysiology, classification, aetiologies and differential diagnoses, epidemiology, diagnostic investigations and emergency and maintenance treatment. Mechanism of action, metabolism and pharmacokinetics, pharmacokinetic interactions and adverse reactions, dosing, monitoring recommendations and efficacy of old and new generation antiepileptic medications are presented in detail. The book consists of 25 chapters and includes a glossary on pharmacological terminology at the end of the book to help readers understand this particular subject area. The authors hope that knowledge of this complex subject would aid veterinarians to improve the care of dogs and cats with seizure activity. This book is designed to help veterinary students, veterinary general practitioners, as well as veterinary interns, residents and specialists in neurology or in disciplines related to neurology (e.g. internal medicine, oncology, surgery, behavioural medicine and pharmacology).
The aim of this retrospective study was to assess prevalence, risk factors, clinical presentation and outcome of phenobarbitone induced haematological abnormalities (PBIHA) in dogs. The medical records of two veterinary referral institutions were searched for dogs diagnosed with idiopathic epilepsy and treated with PB as monotherapy or polytherapy between March 2003 and September 2010. Sixteen dogs had PBIHA; the median age at diagnosis was 69.5 months. Phenobarbitone was administered at a median dose of 3 mg/kg twice a day for a median period of 100.5 days and the median serum phenobarbitone level was 19 micro g/ml. Two dogs had neutropenia, three had anaemia and thrombocytopenia, two had anaemia and neutropenia; the remaining nine had pancytopenia. All dogs were referred for non-specific clinical signs. Phenobarbitone was discontinued after diagnosis, and the median time to resolution of PBIHA was 17 days. The prevalence and risk factors for PBIHA were evaluated from a questionnaire survey of referring practices to obtain more detailed follow-up on cases diagnosed with idiopathic epilepsy. The prevalence rate of PBIHA was 4.2%, and the condition occurred in dogs treated with standard therapeutic doses often within the first three months after starting treatment. Serial haematological evaluations should be therefore considered from the beginning of phenobarbitone therapy to allow early diagnosis and treatment of PBIHA.
This article gives an overview on imepitoin, the first antiepileptic agent developed for the treatment of epilepsy in dogs. The pharmacology, pharmacodynamics, pharmacokinetics, mode of action, indications, contraindications and adverse effects of this drug are discussed.

Abstract
This article gives an overview on imepitoin, the first antiepileptic agent developed for the treatment of epilepsy in dogs. The pharmacology, pharmacodynamics, pharmacokinetics, mode of action, indications, contraindications and adverse effects of this drug are discussed.

Abstract
The mainstay of comparative research for epilepsy has been rodent models of induced epilepsy. This rodent basic science is essential, but it does not always translate to similar results in people, likely because induced epilepsy is not always similar enough to naturally occurring epilepsy. A good large animal, intermediate model would be very helpful to potentially bridge this translational gap. Epilepsy is the most common medical neurologic disease of dogs. It has been proposed since the 1970s that dogs with naturally occurring epilepsy could potentially be used as a comparative model for people of the underlying basis and therapy of epilepsy. There have been sporadic studies in the decades since then, with a relative surge in the last 10 years. These canine studies in the areas of genetics, drug therapy, dietary therapy, electroencephalogram research, and devices for epilepsy show proof of concept that canine epilepsy can be a very good model for comparative research for many, but not all, facets of epilepsy. Results of research in canine epilepsy can and have benefited the improvement of treatment for both people and dogs.
Canine epilepsy - characterised by recurrent epileptic seizures (more than two seizures at least 48 hours apart), unremarkable interictal neurological examination and routine diagnostic tests - can be defined as "idiopathic epilepsy". Idiopathic epilepsy should not be seen as one single disease, but rather a variety of brain diseases in which the lesion was not identified on routine diagnostics. It is likely idiopathic epilepsy represents a complex interplay between genetic predisposition and intrinsic and extrinsic environmental factors. Therefore, it is not surprising dogs with idiopathic epilepsy will vary in their response to treatment. In the past year, many articles have been published about canine epilepsy - especially about drug treatment. This review article will not solely focus on first line antiepileptic drug treatment, but discuss what can be expected from an antiepileptic drug in terms of efficacy, treatment of co-morbidities such as neurobehavioural disorders, and the impact of epilepsy and treatment on quality of life. Furthermore, the influence of diet on canine epilepsy will be discussed in greater detail.
treatment in the form of constant medication can help control and prevent progression in the severity of the condition in many cases. If untreated, epilepsy can lead, in extreme cases to cluster seizures and status epilepticus (a state when the animal is in a prolonged damaging seizure that does not resolve or occurs at very short intervals) and death. The aims of this study were to describe EEG recording using as a sleep activation method to determine the diagnostic value of electroencephalographic recordings in dogs suffering of epilepsy. Electroencephalograms were performed on 23 dogs of mixed breeds. Anaesthesia was induced with medetomidine hydrochloride. EEGs were obtained via five subdermal needle electrodes. The EEG was recorded with sensitivity = 70 micro V/cm; time constant = 0.3 seconds; Hf = 70 Hz; Lf = 0.5 Hz; notch filter inserted; impedance of all electrodes < 10 kilo ohms. The results revealed that interictal epileptiform discharges detection recorded using as a sleep activation method confirmed the presence of an epileptic focus in the absence of clinical signs.

Publication Type
Journal article.

<15>
Accession Number
20143226276
Author
Bush, W.
Title
The canine seizure patient: four important questions.
Source
Today's Veterinary Practice; 2014. 4(3):31-36. 34 ref.
Publisher
VetMed Communications
Location of Publisher
Glen Mills
Country of Publication
USA
Publication Type
Journal article.

<16>
Accession Number
20143185552
Author
Breton, A.
Title
Seizures!
Source
Publisher
North American Veterinary Community (NAVC)
Location of Publisher
Gainesville
Country of Publication
USA
Publication Type
Conference paper.
<17>
Accession Number  
20143185228  
Author  
Fischer, A.; Wahle, A.  
Title  
Feline epilepsy.  
Source  
Publisher  
North American Veterinary Conference  
Location of Publisher  
Gainesville  
Country of Publication  
USA  
Publication Type  
Conference paper.

<18>
Accession Number  
20143185224  
Author  
Bush, W.  
Title  
Idiopathic epilepsy.  
Source  
Publisher  
North American Veterinary Conference  
Location of Publisher  
Gainesville  
Country of Publication  
USA  
Publication Type  
Conference paper.

<19>
Accession Number  
20143185074  
Author  
Xie, H. S.  
Title  
How to use TCVM for the treatment of seizures.  
Source  
Publisher  
North American Veterinary Conference  
Location of Publisher
Gainesville
Country of Publication
USA
Publication Type
Conference paper.

Accession Number
20143168581
Author
Volk, H. A.
Title
Epilepsy treatment - the past, the present and the future.
Source
Publisher
Veterinary Ireland
Location of Publisher
Dublin
Country of Publication
Irish Republic
Publication Type
Journal article.

Accession Number
20143159770
Author
Volk, H.
Title
Seizures.
Source
Publisher
British Small Animal Veterinary Association
Location of Publisher
Quedgeley
Country of Publication
UK
Publication Type
Conference paper.

Accession Number
20143171196
Author
Martle, V.; Ham, L. van; Raedt, R.; Vonck, K.; Boon, P.; Bhatti, S.
Title
Non-pharmacological treatment options for refractory epilepsy: an overview of human treatment modalities and their potential utility in dogs.

Source

Publisher
Elsevier Ltd

Location of Publisher
Oxford

Country of Publication
UK

Abstract
Refractory epilepsy is a common disorder both in humans and dogs and treatment protocols are difficult to optimise. In humans, different non-pharmacological treatment modalities currently available include surgery, the ketogenic diet and neurostimulation. Surgery leads to freedom from seizures in 50-75% of patients, but requires strict patient selection. The ketogenic diet is indicated in severe childhood epilepsies, but efficacy is limited and long-term compliance can be problematic. In the past decade, various types of neurostimulation have emerged as promising treatment modalities for humans with refractory epilepsy. Currently, none of these treatment options are used in routine daily clinical practice to treat dogs with the condition. Since many dogs with poorly controlled seizures do not survive, the search for alternative treatment options for canine refractory epilepsy should be prioritised. This review provides an overview of non-pharmacological treatment options for human refractory epilepsy. The current knowledge and limitations of these treatments in canine refractory epilepsy is also discussed.

Publication Type
Journal article.

Accession Number
20143171019

Author
Wessmann, A.; Volk, H. A.; Parkin, T.; Ortega, M.; Anderson, T. J.

Title
Evaluation of quality of life in dogs with idiopathic epilepsy.

Source
Journal of Veterinary Internal Medicine; 2014. 28(2):510-514. 9 ref.

Publisher
Wiley-Blackwell

Location of Publisher
Boston

Country of Publication
USA

Abstract
Background: The impact of epilepsy and its treatment on the quality of life (QoL) is considered an important part of treatment supervision in human epilepsy. Objectives: To develop a list of key questions evaluating QoL in dogs with idiopathic epilepsy (IE) and their carers. Animals: One hundred fifty-nine dogs with IE. Methods: Cross-sectional study. An online project questionnaire was developed containing 90 QoL-associated questions that were initially allocated to 14 themes representing specific areas associated with the treatment and care of an epileptic dog. Principal component analysis was applied with the aim of refining the questionnaire to the least number of questions representing useful themes without loss of descriptive value. Carers were recruited by paper mail, primary practices, and canine epilepsy websites. Data were acquired from January to November 2011. Results: Principal component analysis removed 54 questions, leaving 7 themes with 36 questions with a minimum Cronbach's alpha value of 0.7 indicating a good internal consistency; "Seizure severity and frequency", "Adverse effects of antiepileptic drug (AED)", "Restrictions on the carer's life", "Frustrations over caring for a dog with IE", "Carer distaste of AED adverse effects", "Carer anxiety around the seizure event", "Perceptions on rectal diazepam use". Conclusions and Clinical
Importance: Principal component analysis successfully reduced the number of questions without loss in descriptive value. The remaining questions correlate well with each other in capturing valuable details about aspects of QoL and represent valuable key questions (EpiQoL) in the assessment of QoL for the carers of dogs with IE.
Publication Type
Journal article.

Accession Number
20143171018
Author
Peters, R. K.; Schubert, T.; Clemmons, R.; Vickroy, T.
Title
Levetiracetam rectal administration in healthy dogs.
Source
Journal of Veterinary Internal Medicine; 2014. 28(2):504-509. 34 ref.
Publisher
Wiley-Blackwell
Location of Publisher
Boston
Country of Publication
USA
Abstract
Background: Levetiracetam is used to manage status epilepticus (SE) and cluster seizures (CS) in humans. The drug might be absorbed after rectal administration and could offer a practical adjunct to rectal administration of diazepam in managing SE and CS. Hypothesis: Levetiracetam is rapidly absorbed after rectal administration in dogs and maintains target serum concentrations for at least 9 hours. Animals: Six healthy privately owned dogs between 2 and 6 years of age and weighing 10-20 kg. Methods: Levetiracetam (40 mg/kg) was administered rectally and blood samples were obtained immediately before (time zero) and at 10, 20, 40, 60, 90, 180, 360, and 540 minutes after drug administration. Dogs were observed for signs of adverse effects over a 24-hour period after drug administration. Results: CLEV at 10 minutes was 15.3+or-5.5 micro g/mL (mean, SD) with concentrations in the target range (5-40 micro g/mL) for all dogs throughout the sampling period. Cmax (36.0+or-10.7 micro g/mL) and Tmax (103+or-31 minutes) values were calculated and 2 disparate groups were appreciated. Dogs with feces in the rectum at the time of drug administration had lower mean Cmax values (26.7+or-3.4 micro g/mL) compared with those without (45.2+or-4.4 micro g/mL). Mild sedation was observed between 60 and 90 minutes without other adverse effects noted. Conclusions and Clinical Importance: This study supports the use of rectally administered levetiracetam in future studies of clinical effectiveness in the management of epileptic dogs.
Publication Type
Journal article.

Accession Number
20143170984
Author
Pakozdy, A.; Halasz, P.; Klang, A.
Title
Epilepsy in cats: theory and practice.
Source
Journal of Veterinary Internal Medicine; 2014. 28(2):255-263. 70 ref.
Publisher
Wiley-Blackwell
The veterinary literature on epilepsy in cats is less extensive than that for dogs. The present review summarizes the most important human definitions related to epilepsy and discusses the difficulties in applying them in daily veterinary practice. Epileptic seizures can have a wide range of clinical signs and are not necessarily typical in all cases. Whether a seizure event is epileptic can only be suspected based on clinical, laboratory, and neuroimaging findings as electroencephalography diagnostic techniques have not yet been developed to a sufficiently accurate level in veterinary medicine. In addition, the present review aims to describe other diagnoses and nonepileptic conditions that might be mistaken for epileptic seizures. Seizures associated with hippocampal lesions are described and discussed extensively, as they seem to be a special entity only recognized in the past few years. Furthermore, we focus on clinical work-up and on treatment that can be recommended based on the literature and summarize the limited data available relating to the outcome. Critical commentary is provided as most studies are based on very weak evidence.

Publication Type
Journal article.

Accession Number
20143161952

Author
Platt, S.

Title
Genetics and idiopathic canine epilepsy: is successful treatment out of our control?

Source

Publisher
Elsevier Inc.

Location of Publisher
Philadelphia

Country of Publication
USA

Publication Type
Journal article.

Accession Number
20143145472

Author
Cuff, D. E.; Bush, W. W.; Stecker, M. M.; Williams, D. C.

Title
Use of continuous electroencephalography for diagnosis and monitoring of treatment of nonconvulsive status epilepticus in a cat.

Source
Journal of the American Veterinary Medical Association; 2014. 244(6):708-714. 48 ref.

Publisher
American Veterinary Medical Association

Location of Publisher
Schaumburg

Country of Publication
USA
Case Description: A 10-year-old domestic shorthair cat was evaluated because of presumed seizures. Clinical Findings: The cat had intermittent mydriasis, hyperthermia, and facial twitching. Findings of MRI and CSF sample analysis were unremarkable, and results of infectious disease testing were negative. Treatment was initiated with phenobarbital, zonisamide, and levetiracetam; however, the presumed seizure activity continued. Results of analysis of continuous electroencephalographic recording indicated the cat had nonconvulsive status epilepticus. Treatment and Outcome: The cat was treated with phenobarbital IV (6 mg/kg [2.7 mg/lb] q 30 min during a 9-hour period; total dose, 108 mg/kg [49.1 mg/lb]); treatment was stopped when a burst-suppression electroencephalographic pattern was detected. During this high-dose phenobarbital treatment period, an endotracheal tube was placed and the cat was monitored and received fluids, hetastarch, and dopamine IV. Continuous mechanical ventilation was not required. After treatment, the cat developed unclassified cardiomyopathy, azotemia, anemia, and pneumonia. These problems resolved during a 9-month period. Clinical Relevance: Findings for the cat of this report indicated electroencephalographic evidence of nonconvulsive status epilepticus. Administration of a high total dose of phenobarbital and monitoring of treatment by use of electroencephalography were successful for resolution of the problem, and treatment sequelae resolved.

Publication Type
Journal article.
Netherlands

Abstract
A decision tool to determine the cause of epilepsy in dogs is described, based on extracranial and intracranial research. Risk factors for poor drug response are discussed, including genetical and clinical. Drug resistance and side effects are briefly discussed.

Publication Type
Journal article.

<30>
Accession Number
20143083893
Author
Lavely, J. A.
Title
Pediatric seizure disorders in dogs and cats. (Special Issue: Pediatrics.)
Source
Publisher
W.B. Saunders
Location of Publisher
Philadelphia
Country of Publication
USA
Abstract
Seizure disorders in young animals pose different considerations as to cause and therapeutic decisions compared with adult animals. Infectious diseases of the nervous system are more likely in puppies and kittens compared with adults. The diagnosis of canine distemper is often based on clinical signs. Idiopathic epilepsy typically occurs in dogs between 1 and 5 years of age; however, inflammatory brain diseases such as necrotizing encephalitis and granulomatous meningoencephalomyelitis also commonly occur in young to middle-aged small-breed dogs. The choice of which anticonvulsant to administer for maintenance therapy is tailored to each individual patient.

Publication Type
Journal article.

<31>
Accession Number
20143065809
Author
Finnerty, K. E.; Heller, H. L. B.; Mercier, M. N.; Giovanella, C. J.; Lau, V. W.; Rylander, H.
Title
Source
Publisher
American Veterinary Medical Association
Location of Publisher
Schaumburg
Country of Publication
USA
Abstract
Objective - To determine the percentage of cats with a phenobarbital (PB) concentration between 15 and 45 micro g/mL that had a >=50% reduction in the number of seizures and to investigate applicability of the 2011 International League Against Epilepsy (ILAE) classification system in cats. Design - Retrospective case series. Animals - 30 cats with suspected or confirmed epilepsy. Procedures - Medical records for 2004 to 2013 at 3 veterinary hospitals were searched. Information collected included signalment, duration of observation before treatment, frequency of seizures before PB administration, seizure phenotype, dose of PB, serum PB concentration, number of seizures after PB administration, duration of follow-up monitoring, and survival time. A modified 2011 ILAE classification system was applied to all cats. Results - Seizure control was achieved in 28 of 30 (93%) cats with a serum PB concentration of 15 to 45 micro g/mL. This comprised 10 of 11 cats with structural epilepsy, 14 of 15 cats with unknown epilepsy, and 4 of 4 cats with presumptive unknown epilepsy. Thirteen cats had no additional seizures after initiation of PB treatment. Conclusions and Clinical Relevance - Seizure control was achieved in most cats with a serum PB concentration between 15 and 45 micro g/mL, regardless of the cause of the seizures. A modified 2011 ILAE classification was applied to cats with seizures and enabled classification of cats without specific genetic testing and without identified structural or inflammatory disease. This classification system should be incorporated into veterinary neurology nomenclature to standardize communication between veterinarians and improve comparisons among species.

Publication Type
Journal article.

<32>
Accession Number
20143057964
Author
Gindiciosi, B.; Palus, V.; Eminaga, S.; Villiers, E.; Cherubini, G. B.
Title
Serum bromide concentrations following loading dose in epileptic dogs.
Source
Publisher
Wiley-Blackwell
Location of Publisher
Oxford
Country of Publication
UK
Abstract
Objective: To determine serum bromide concentrations following an oral loading dose in dogs. Methods: Retrospective review of clinical records of dogs suffering from seizures that were treated with bromide. A loading dose of 600 mg/kg potassium bromide was administered orally in 17 to 48 hours together with a maintenance dose of 30 mg/kg/day. Blood samples were collected within 24 hours after completing the protocol and serum bromide concentrations were determined by ultra-violet gold chloride colorimetric assay. Results: Thirty-eight dogs were included in the study. The median age was 3 (range, 0.2 to 10) years and bodyweight 21.8 (3.45 to 46.2) kg. The median serum bromide concentration was 1.26 (0.74 to 3.6) mg/mL. Thirty-two dogs (84.2%) had serum bromide concentrations within the therapeutic interval (1 to 3 mg/mL). The serum concentration in five dogs (13.2%) was just under the minimal therapeutic value and in one dog (2.6%) it exceeded the maximal therapeutic value (3.6 mg/mL). Clinical Relevance: Following this oral loading dose protocol, serum bromide concentrations reach the therapeutic range in the majority of dogs. This indicates that the suggested protocol is effective in achieving therapeutic concentrations rapidly in epileptic dogs.
Publication Type
Journal article.
Placement of deep brain electrodes in the dog using the brainsight frameless stereotactic system: a pilot feasibility study.

Background: Deep brain stimulation (DBS) together with concurrent EEG recording has shown promise in the treatment of epilepsy. A novel device is capable of combining these 2 functions and may prove valuable in the treatment of epilepsy in dogs. However, stereotactic implantation of electrodes in dogs has not yet been evaluated. Objective: To evaluate the feasibility and safety of implanting stimulating and recording electrodes in the brain of normal dogs using the Brainsight system and to evaluate the function of a novel DBS and recording device. Animals: Four male intact Greyhounds, confirmed to be normal by clinical and neurologic examinations and hematology and biochemistry testing. Methods: MRI imaging of the brain was performed after attachment of fiducial markers. MRI scans were used to calculate trajectories for electrode placement in the thalamus and hippocampus, which was performed via burr hole craniotomy. Postoperative CT scanning was performed to evaluate electrode location and accuracy of placement was calculated. Serial neurologic examinations were performed to evaluate electrode location and accuracy of placement was calculated. Serial neurologic examinations were performed to evaluate neurologic deficits and EEG recordings obtained to evaluate the effects of stimulation. Results: Electrodes were successfully placed in 3 of 4 dogs with a mean accuracy of 4.6±1.5 mm. EEG recordings showed evoked potentials in response to stimulation with a circadian variation in time-to-maximal amplitude. No neurologic deficits were seen in any dog. Conclusions and Clinical Importance: Stereotactic placement of electrodes is safe and feasible in the dog. The development of a novel device capable of providing simultaneous neurostimulation and EEG recording potentially represents a major advance in the treatment of epilepsy.
Objective: To describe a case of status epilepticus believed to be a consequence of inadvertent intrathecal administration of cefazolin in a dog undergoing a myelogram. Case Summary: A 4-year-old, 6.5 kg, male neutered Dachshund was referred for evaluation of an acute onset hind limb paraparesis. While performing a lumbar myelogram, cefazolin was inadvertently injected into the ventral subarachnoid space. Subsequent refractory seizure activity was attributed to the epileptogenic effects of intrathecally administered cefazolin. Supportive therapy led to eventual complete recovery. New or Unique Information Provided: Although epileptogenic effects of intrathecally administered cefazolin are well documented in the human and experimental animal model literature, to the authors' knowledge this has not been characterized in the veterinary literature. This case highlights the need to be diligent and mindful when one administers medications, and describes the management of a dog adversely affected as a consequence of a medical error.

Publication Type
Journal article.

<35>
Accession Number
20143002565
Author
Carpinisan, L.; Ratiu, L.; Degi, J.; Ghise, A.
Title
An alternative approach to cat's epilepsy treatment - case report.
Source
Medicamentul Veterinar / Veterinary Drug; 2013. 7(2):44-46. 8 ref.
Publisher
Romanian National Association of the Veterinary Products Manufacturers
Location of Publisher
Bucharest
Country of Publication
Romania
Abstract
Angel, a female British Shorthair cat, would be euthanized at the recommendation of three veterinarians, after she manifested epileptic seizures starting from seven months old. Due to her owner and one veterinarian love and effort, she well passed through many seizures and a non-regenerative anemia episode and she survived for five years from the onset of the disease. The mineral-vitamin supplements improved the life quality for four years and the homeopathic therapy successfully removed the seizures for one more year.
Publication Type
Journal article.

<36>
Accession Number
20133390056
Author
Volk, H.; Penderis, J.
Title
Canine epilepsy: what is perfect AED?
Source
Veterinary Times; 2013. 43(46):13...16. 17 ref.
Publisher
Veterinary Business Development Ltd
Location of Publisher
Peterborough
Country of Publication
UK

Abstract
Traditionally, most treatment trials in veterinary medicine - and, therefore, the basis for the choice of veterinary antiepileptic drug (AED) - have primarily focused on the ability of a particular medication to reduce the seizure frequency, with deleterious side effects considered to a lesser extent. In contrast, the agreed International League Against Epilepsy outcome measures in human patients define treatment efficacy as "seizure-free" status, as well as recording the coincidence of drug-induced adverse effects. The limitations of purely focusing on seizure reduction in veterinary species is the animal's and owner's needs are largely ignored in the quest for improved seizure control, and unrealistic drug compliance demands are often made on the owners. A study has shown either seizure-free status or a seizure frequency of not greater than one episode every three to six months is perceived as the minimum tolerable seizure frequency by the majority of owners. Many of our veterinary AEDs - while undoubtedly effective medications for the reduction of seizure frequency - also have a number of marked adverse effects that impact deleteriously on our patients and their owners. In the same study, around half of pet owners stated they thought their dog's and their own quality of live (QoL) was negatively affected by the adverse effect profile of the standard AEDs used in veterinary medicine. Some veterinary AED trials have concentrated on patients' and owners' QoL, rather than just seizure frequency. An ideal veterinary AED should, therefore, not just be efficacious, but also be safe, highly tolerable and not negatively influence the pet and owner's QoL.

Publication Type
Journal article.

<37>
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Author
Mukesh Srivastava; Singh, N. K.; Ashish Srivastava
Title
Management of phenobarbital refractory idiopathic epilepsy by potassium bromide in dogs.
Source
Publisher
Nexus Academic Publishers (NAP)
Location of Publisher
Lahore
Country of Publication
Pakistan
Abstract
Phenobarbital refractory idiopathic epilepsy was diagnosed and treated with potassium bromide in 6 male dogs (3 German shepherd, 2 Labrador and 1 Mongrel). Mean age of onset of epilepsy was 2.13±0.24 years. The presenting signs were chronic recurrent seizures, inappetence, in-coordination, icterus, ascites, polypuria, polydypsia, and polyphagia. Serum biochemistry showed an increase in liver enzymes, alkaline phosphatase (69.17±15.80), aspartate transaminase (100.00±23.98), alanine amino transferase (134.17±28.91) and bile salts (10.79±1.38). The patients were refractory to phenobarbital 4.25 mg/kg in two divided doses at 12 hr. Potassium bromide 30 mg/kg/day was used in addition to phenobarbital @ 2 mg/kg b.wt./day in two divided doses. For reversal of hepatic dysfunction, hepatoprotective drugs were used. After 3 month of therapy a reduction of 50% was done in the dose of phenobarbital along with previously used dose of potassium bromide, which was continued for next 3 month. After 6 month of therapy phenobarbital was completely withdrawn and dogs were maintained on potassium bromide alone. Appreciable results were observed in 5 dogs, while in one dog reduction in frequency was seen but fits were still present after 1 year of therapy.
Publication Type
Journal article.
Objective - To determine the phenotype, inheritance characteristics, and risk factors for idiopathic epilepsy (IE) in Finnish Spitz dogs (FSDs). Design - Prospective epidemiological study. Animals - 2,141 FSDs. Procedures - From 2003 to 2004, questionnaires (n=5,960) were sent to all owners of 1- to 10-year-old FSDs in Finland. Phone interviews were performed 1 to 2 years later. Results - Estimated prevalence of IE was 5.36% (111/2,069 of FSDs that were still alive). Males were predisposed to IE. The median age of onset was 3 years (range, 0.6 to 10 years). The median seizure frequency was 2 seizures/y (range, 0.5 to 48 seizures/y), and the median duration of the seizure episode was 11.75 minutes (range, 1.5 to 90 minutes). The majority (85%) of the seizures had a focal onset, and 54% were characterized as generalized secondary. A generalized seizure phase was determined to be a risk factor for development of progressive disease. Factors associated with the occurrence of a generalized phase were the age of onset, duration of the seizure, number of feeding times per day, and whether the dog was used for hunting. The seizures were not progressing in 67.8% of the dogs and were easily controlled by antiepileptic treatment in 78.9% of the dogs. The heritability estimate of IE in FSDs was 0.22; IE was best explained as a polygenic trait. Conclusions and Clinical Relevance - In the present study conducted in Finland, complex focal seizures were the most common seizure type for FSDs with IE, and a generalized seizure phase was a risk factor for progression of the disease. Results suggested a benign course of epilepsy in FSDs.
Objectives: To evaluate the efficacy and safety of topiramate as an add-on therapy in dogs with refractory idiopathic epilepsy. Method: Prospective, open label, non-comparative clinical trial of topiramate in dogs with idiopathic epilepsy and poor seizure control despite therapeutic serum concentrations of phenobarbital and potassium bromide. The efficacy of topiramate was evaluated by comparing seizure and seizure day frequencies during a retrospective 2-month period with a prospective short-term follow-up of 6 months. An additional long-term follow-up period ranging from 3 to 9 months was conducted on dogs that responded to topiramate therapy during the short-term follow-up. Results: Ten dogs were included. Five (50%) responded to topiramate therapy during the short-term follow-up showing a significant (P=0.04) decrease of 66% in seizure frequency. Three of the five dogs remained responders during the long-term follow-up. Weight loss, sedation and ataxia were the most common adverse effects of topiramate therapy, but in dogs with moderate sedation or ataxia, signs subsided in a few weeks to few months to mild sedation or ataxia. Clinical Significance: Topiramate may be effective as an add-on medication in treating canine idiopathic epilepsy. Apart from sedation and ataxia reported in some of the dogs, topiramate was well-tolerated.

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Journal article.

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20133352581
Author
Munana, K. R.
Title
Management of refractory epilepsy.
Source
Publisher
Elsevier Inc
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Orlando
Country of Publication
USA
Abstract
The term refractory epilepsy is utilized in veterinary medicine to describe a condition in which an animal with epilepsy fails to attain satisfactory seizure control or suffers intolerable side effects despite appropriate therapy with conventional antiepileptic drugs. Refractory epilepsy is an important problem in small animal practice as it occurs in approximately one-third of dogs with epilepsy. Consequently, there is much interest in identifying ways to more effectively treat this population of animals. More than a dozen new antiepileptic drugs have been approved for humans over the last 2 decades, and several of these drugs, including gabapentin, zonisamide, levetiracetam, and pregabalin, have been evaluated for the treatment of refractory seizures in veterinary patients. Nonmedical methods to treat poorly controlled epilepsy are also being explored. The 2 alternative forms of therapy that have shown the most promise in humans with epilepsy are electrical stimulation of the brain and dietary modification, both of which have also been evaluated in dogs. This overview summarizes the available data on pharmacologic as well as nonmedical treatment options for dogs and cats with refractory epilepsy. Although many forms of therapy are currently being utilized in clinical practice, our knowledge of the safety and efficacy of these treatments is limited. Additional randomized controlled trials are needed to better evaluate these novel therapies for refractory epilepsy in dogs and cats.

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Journal article.

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20133352580
Over the past 2 decades, the number of antiepileptic drugs (AEDs) available to veterinarians has grown exponentially. Coupled with this increase is the ability to rapidly and accurately diagnose underlying brain disease with readily accessible magnetic resonance imaging. As a result, the veterinary community is attuned to the need for early treatment intervention. As more treatment choices become available, the unrelenting questions still arise are when should treatment begin, which initial drug therapy is best for our patients, when should treatment changes be considered, and finally, what are the advantages that newer drugs provide for our patients. The purpose of this chapter is to review decision-making strategies for AED therapy, provide an overview of the applicability of current AED available, and present information on the therapeutic advances in epilepsy.

Epilepsy is the most common neurologic disease in dogs and many forms are considered to have a genetic basis. In contrast, some seizure disorders are also heritable, but are not technically defined as epilepsy. Investigation of true canine epilepsies has uncovered genetic associations in some cases, however, many remain unexplained. Gene mutations have been described for 2 forms of canine epilepsy: primary epilepsy (PE) and progressive myoclonic epilepsies. To date, 9 genes have been described to underlie progressive myoclonic epilepsies in several dog breeds. Investigations into genetic PE have been less successful, with only 1 causative gene described. Genetic testing as an aid to diagnosis, prognosis, and breeding decisions is available for these 10 forms. Additional studies utilizing genome-wide tools have identified PE loci of interest; however, specific genetic tests are not yet developed. Many studies of dog breeds with PE have failed to identify genes or loci of interest, suggesting that, similar to what is seen in many human genetic epilepsies, inheritance is likely complex, involving several or many genes, and reflective of environmental interactions. An individual dog’s response to therapeutic intervention for epilepsy may also be genetically
complex. Although the field of inherited epilepsy has faced challenges, particularly with PE, newer technologies contribute to further advances.

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Journal article.

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Author
Patterson, E. E.
Title
Epileptogenesis and companion animals.
Source
Publisher
Elsevier Inc
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Orlando
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USA
Abstract
Epileptogenesis is the process by which a normal brain develops into an epileptic brain. There are 3 distinct phases of epileptogenesis - the latent period before seizures occur, the occurrence of recurrent seizures, and in about 30% of patients, the development of refractory epilepsy. Understanding the basic epileptic circuit abnormalities associated with recurrent seizures via aberrations in glutamate, gamma-aminobutyric acid, and ligand- and voltage-gated ion channel activity can help the small-animal practitioner understand the mechanism of action of the antiepileptic drugs currently used for dogs and cats for new-onset and refractory epilepsy. Understanding the latest research results and theories about the pathophysiology of the latent period of epileptogenesis, where recurrent seizures have not yet developed, would help the practitioner understand possible target areas for future treatments to treat epilepsy by preventing it rather than just symptomatically preventing recurrent seizures. The current areas of focus of research on the latent period include neurodegeneration, neurogenesis, axonal sprouting, glial cell activation, invasion of inflammatory cells, angiogenesis, and subclinical alteration of ligand- and receptor-gated ion channels.
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Journal article.

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20133328516
Author
Palus, V.; Eminaga, S.; Cherubini, G. B.
Title
Seizuring cat: what to ask, what to do?
Source
Publisher
UK Vet Publications
Location of Publisher
Newbury
Country of Publication
UK
Abstract
A seizuring cat can be a challenging case for every veterinarian and, therefore, the correct diagnosis and the appropriate management of such a case requires understanding of the most common causes of feline seizures. The underlying cause of the seizures should be investigated by a thorough questioning of the diagnostic approach and most likely diagnoses. If the cause of the seizures can be found then the appropriate therapeutic approach may improve the prognosis. The treatment of the feline seizures is similar to the canine patients; however, the differences should be kept in mind. This article is tailored to answer the most common questions that veterinary surgeons should ask themselves when dealing with a seizuring cat.
Symes, J. B.
Title
Idiopathic epilepsy - the dietary solution and the role of the G.A.R.D.
Source
Publisher
North American Veterinary Conference
Location of Publisher
Gainesville
Country of Publication
USA
Publication Type
Conference paper.

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Accession Number
20133165695
Author
Byrne, A. M.
Title
Treating the epileptic patient.
Source
Veterinary Ireland Journal; 2013. 3(5):269-275. 5 ref.
Publisher
Veterinary Ireland
Location of Publisher
Dublin
Country of Publication
Irish Republic
Publication Type
Journal article.

<49>
Accession Number
20133142316
Author
Schwartz, M.; Munana, K. R.; Nettifee-Osborne, J.
Title
Assessment of the prevalence and clinical features of cryptogenic epilepsy in dogs: 45 cases (2003-2011).
Source
Publisher
American Veterinary Medical Association
Location of Publisher
Schaumburg
Country of Publication
USA
Abstract
Objective - To determine the prevalence and clinical features of cryptogenic epilepsy among dogs. Design - Retrospective case series. Animals - 214 client-owned dogs with onset of epileptic seizures at ≥7 years of age. Procedures - A diagnostic imaging database was searched for dogs with symptomatic or cryptogenic
epilepsy. Signalment, seizure history, and diagnostic information were recorded. Information regarding seizure frequency, administration of antiepileptic drugs (AEDs), owners' perceptions regarding quality of life, survival times, and causes of death for dogs with cryptogenic epilepsy was obtained via questionnaire. Variables were compared among dogs grouped according to diagnosis and age. Results - 45 (21%) dogs had a diagnosis of cryptogenic epilepsy, and 169 (79%) had symptomatic epilepsy. In dogs 7 to 9 years and >=10 years of age at the time of seizure onset, 31 of 106 (29%) and 14 of 108 (13%), respectively, had a diagnosis of cryptogenic epilepsy. At last follow-up, most (40 [89%]) dogs with cryptogenic epilepsy were receiving >=1 AED. Thirty-one of 37 (84%) dogs typically had <=1 seizure/mo following hospital discharge. Death was confirmed in 20 (44%) dogs with cryptogenic epilepsy and was related to seizures or AEDs in 7. Median survival time from onset of seizures was 52 months for all dogs with cryptogenic epilepsy. Median quality-of-life score (scale, 1 [poor] to 10 [excellent]) indicated by 34 owners of dogs with cryptogenic epilepsy was 10 before diagnosis and initiation of AED treatment and 8 afterward. Conclusions and Clinical Relevance - Cryptogenic epilepsy was diagnosed in a substantial proportion of dogs with an onset of epileptic seizures at >=7 years of age. Seizure control was considered acceptable in most dogs.
Choosing the right drug 1. Anticonvulsants used for first-line therapy.

Source

Publisher
BMJ Publishing Group
Location of Publisher
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Abstract
This article aims to give the general practitioner a step by step approach to first-line medical management of epilepsy in both cats and dogs. The licensed drugs, bromide and phenobarbital, are discussed in detail with particular reference to the common problems that might be observed. A second article in this two-part series, to be published in a subsequent issue of In Practice, will discuss second-line medical management of epilepsy.

Publication Type
Journal article.