

OSVS Vitals

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Behavioral Changes in the Aging Dog and Cat Vint Virga, DVM, Dipl. ACVB

Introduction

In considering behavioral changes associated with aging, colleagues frequently ask me about differentiating normal behavioral changes from senility or cognitive decline. Cognition refers to mental processes occurring in animals (and humans) that cannot be directly observed and may include memory, learning, awareness, and perception. Cognitive dysfunction syndrome (CDS), as it applies to the small animal patient, has been described as an age-related compromise in cognitive processes beyond that which can be attributed to sensory or motor impairment or general medical conditions.

The term age-related cognitive decline as used in human psychiatry describes a decrease in cognitive functioning consequent to the aging process that is within *normal* limits given a person's age. Unlike with age-related cognitive decline in humans, a diagnosis of cognitive dysfunction or decline does not recognize normal limits of cognitive loss.

Humans with dementia experience multiple cognitive deficits beyond that which would be expected with age-related cognitive decline. To make a diagnosis of dementia, these deficits must be sufficiently severe to compromise a person's occupational and/or social functioning. A necessary criterion for a diagnosis of dementia is memory impairment and at least one of the following cognitive disturbances: aphasia (deterioration of language function), apraxia (impaired ability to execute motor activities), agnosia (failure to recognize or identify objects), or a disturbance in motor functioning (the ability to think abstractly and to plan, initiate, sequence, monitor, and stop complex behaviors). It is important to recognize that, unlike a diagnosis of dementia in humans, no specific behavioral change must be consistently present for a diagnosis of CDS; neither are any of these criteria singularly sufficient to identify the existence of CDS. In other words, each of these behavioral changes is nonspecific for cognitive dysfunction and could be reflective of an underlying medical condition, sensory or motor impairment.

In human psychiatry, patients presenting with clinical signs of dementia secondary to neurological or medical conditions are categorized as having reversible dementia. With human patients, it is estimated that up to 30% of the cases are secondary to other conditions. While the prevalence is unknown in dogs and cats, similar reversible dementias may result from neurologi-

cal or medical conditions which compromise cognitive functions. As with human dementia patients, potential medical and neurological causes of relevant clinical signs must be ruled out before confirming a diagnosis of CDS.

Neuropathology

Neuropathological changes in aging dogs include: primary central white matter degeneration, apoptosis, and cerebral beta-amyloid (Ab) deposition. Amyloid deposition in animals and humans has been correlated with losses in cognitive function. While the amino acid sequence of Ab in aging dogs and cats is identical to that in humans, dogs and cats differ from humans in that the amyloid tends to be deposited only in diffuse plaques and not in a neurofibrillar form. Although beta-amyloid deposition is recognized to contribute to neuronal damage, it is possible that this protein may merely be an indicator of underlying neuropathological changes. Additional changes that are observed in both dogs and humans include cerebral vascular changes, dilatation of the ventricles, thickening of the meninges, age-related reactive gliosis, and significant decreases in a number of neurotransmitters (including acetylcholine, dopamine, serotonin, and norepinephrine.) Cholinergic and dopaminergic dysfunction, particularly, may contribute to clinical signs associated with cognitive deficits.

Clinical Signs

Clinical signs attributed to cognitive dysfunction have been categorized as behavioral changes associated with one or more of the following: decreased activity, disorientation, reduced interaction with family members, decreased responsiveness to sensory input, problems in performing previously learned behaviors (e.g. housetraining), irritability, increased nocturnal activity and alterations in the sleep-wake cycle from previously established patterns.

Commonly reported behavioral problems in older dogs include anxiety related behaviors (including separation anxiety), aggressive behaviors, fears and phobias, house soiling, excessive vocalization, and ritualistic behaviors. In older cats, commonly reported behavioral problems include house soiling, marking/spraying, aggressive behaviors, anxiety related behaviors, fears

Dear Colleagues,

Although all of our prior newsletters have contained clinical and practical articles, I wanted to use my space in this issue to give a sincere thank you to all the hospitals and veterinarians that have allowed us to grow so quickly. The trust you have shown us by referring your clients and their pets is genuinely appreciated and we are not unaware of the fact that our success has depended almost entirely on your confidence in our ability to provide high quality, compassionate veterinary care. As we have grown, we have tried to maintain our accessibility in taking your calls, helping with consults and not losing sight of the reasons we opened the hospital in the first place. As every veterinarian and practice owner knows, sometimes the "business of business" can become overwhelming and stressful. With 23 doctors on staff and over 90 employees, I must admit that at times I am reminded of that old quote "be careful what you wish for-you may get it". On rare occasions we have actually had to defer emergencies when we were out of cage space or those times when it seems like every patient in the hospital is a 150 lb Great Dane and all we have are cat cages available! Hopefully this hasn't been too much of an inconvenience.

As the hospital has grown we do worry at times about losing contact with the local veterinary community. We will always try to have an actual person on the other end of the phone and a doctor to talk to you when you call for a consult or with a referral, or just for an update on one of your patients. While we try to achieve 100% client and referring veterinarian satisfaction, we know that on occasion, this doesn't occur. Although it may seem awkward or uncomfortable to complain or question a colleague, I (and all the OSVS doctors) would much prefer to hear about a problem than to be ignorant of it. While I am never happy to hear about these situations, I do appreciate those of you who have taken the time to share your concerns and constructive criticism. It has made the hospital and the doctors who work here better clinicians and better communicators.

As for the future at OSVS, we are in the process of recruiting an oncologist to join our specialist staff and are close to formalizing an arrangement to offer MRI services at the hospital. We also hope to offer laparoscopy and arthroscopy in the near future. We will keep you apprised of these updates and encourage any suggestions regarding new services that you believe we should offer to you and your clients.

For those hospitals that have not utilized our referral or emergency services I ask that you consider giving us the opportunity. Our doctors and/or our hospital manager Cheryl Rizzo would gladly visit your hospital to speak with you and/or your hospital manager. If you would like information regarding our referral and emergency services, please do not hesitate to call.

Respectfully,

Gary Block DVM, MS, DACVIM

Radio-Iodine Therapy

*For Feline Hyperthyroidism
At OSVS*

Total Cost - \$1,200

Includes:

-Bicavity Ultrasound by Boarded Radiologist
-5 to 7 Days Hospitalization
Post Injection



Call For Appointment
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Reminder ...

OSVS is hosting a Continuing Education Seminar for Veterinarians on September 17, 2003 at 6:30 pm with a one-hour lecture beginning at 7:15 pm.

Topic to be covered:

Perioperative Analgesia

Presented by:

Dave Sweet VMD, DACVS

Anyone who is interested in attending and has not yet responded can contact Betsy Hall at OSVS.

Radiology Film Interpretation

with

Sue Newell DVM, Diplomate of the American
College of Veterinary Radiology

Lunchtime Seminars at OSVS

2nd & 4th Thursday each month from

12 noon to 3pm

Bring your troublesome (and not so troublesome) cases, hobnob with your peers, and eat lunch!

\$75 per session

*Space is limited, so reserve your spot!
Contact Amy Cardwell at (401) 886-6787*

and phobias. *Recognizing the impact of memory and cognitive processes in social functioning, it is critical to consider clinical signs beyond those which have been classically associated with CDS may result from cognitive deficits in the veterinary patient.* Consequently, rather than limiting consideration to specific categories of behavioral changes, it is valuable to the practitioner to think in the broader context of cognitive processes when evaluating a patient for geriatric-onset problem behaviors. As such, it is important to differentiate between geriatric onset behaviors from CDS when evaluating an older animal presenting for such problems as anxiety related behaviors, fears/phobias, house soiling, and aggressive behaviors.

It is important to recognize that any condition that is associated with pain or discomfort may contribute to an animal's irritability, anxiety, and/or fear of being handled or approached. A patient's lack of response, upon palpation and manipulation during physical examination, does not rule out the potential for disorders which contribute to general discomfort, malaise, or chronic pain – all of which may, in turn, contribute to patient irritability, anxiety, or fear.

Clinical Management

Once a tentative diagnosis of cognitive decline is suspected, any medical or neurological condition that could be contributing to the patient's overall cognitive status should be effectively addressed. After reversible cognitive deficits have been thoroughly addressed, specific management directed at optimizing cognitive function may be implemented.

Behavior and Environmental Modification

With concurrent diagnoses of cognitive decline and specific problem behaviors (e.g. separation anxiety), standard protocols for behavior modification (as described in current behavioral medicine references) should be utilized to address clinical signs and provide cognitive retraining. It is important that the client understands the role of cognitive loss in the manifestation of the patient's clinical signs. In developing a plan for behavior modification, the clinician should stress that compromises in memory and/or learning may require the client to retrain and reinforce behaviors which were previously learned by the pet.

Environmental modifications should be considered with appropriate attention to the capabilities and limitations of the patient. Enrichment of the environment through auditory, tactile, kinesthetic, oral, and olfactory stimulation is strongly recommended in the behavioral management of human dementia patients. The physical and tactile presence of a pet is widely recognized as a valuable aid in pet-assisted therapy. Exercise, appropriate in intensity and duration to the patient's condition, has been demonstrated to facilitate socialization. Calming music has been documented to reduce agitation and increase comfort levels. Small animal patients may, similarly, benefit from attention to these modalities of stimulation.

Pharmacotherapy

Pharmacologic treatment must consider the patient's cognitive deficits and medical status concurrently. In the geriatric patient, intestinal absorption, distribution, plasma protein binding,

metabolic pathways, serum half-life of the primary compound and intermediate metabolites, and routes of excretion become especially important considerations in pharmacological management. Medication dosage and administration interval may need to be adjusted appropriately to avoid accumulation of the parent compound or active metabolites. Considering potential physiological changes in the geriatric animal, a minimum data base of a CBC, serum chemistry profile, urinalysis and electrocardiogram should be performed for premedication evaluation and at six to twelve month intervals during the course of therapy. The practitioner should be aware of potential side effects and the client should be well advised. Rational approaches to the selection of medications for behavioral problems that may occur concurrently with cognitive disorders are addressed in depth in current behavioral medicine references.

Selegiline has been approved by the US Food and Drug Administration for the treatment of canine cognitive dysfunction (Anipryl[®]: Pfizer Animal Health). Selegiline has been shown to be effective in improving short-term memory, reducing clinical signs associated with CDS, and enhancing longevity in elderly dogs. At the recommended dosage range of 0.5 – 1.0 mg/kg PO QD in the morning, minimal adverse effects have been observed in canine patients. Concurrent treatment with monoamine oxidase inhibitors, amitraz, meperidine or other opioids, tricyclic or other antidepressants, selective serotonin reuptake inhibitors is contraindicated. Morning administration is recommended, particularly in dogs with sleep/wake cycle disturbances. Response to therapy may be noted within a few days, although typically most owners report improvements within the first 2 - 3 weeks of therapy. Although selegiline administration in cats constitutes extra-label use, response rates to a dosage regimen of 1 mg/kg PO QD in the morning are similar to that noted for dogs.

While no additional medications at this time are labeled for veterinary use in the management of cognitive disorders by the FDA, evidence supports the use of alpha-tocopherol for observed neuroprotective and clinical effects. Alpha-tocopherol may be provided by means of dietary supplementation. A commercially available prescription diet (Hills[®] Prescription Diet b/d[®]) incorporating antioxidants (mixed tocopherols, vitamin C, beta-carotene, carotenoids, flavenoids) and omega-3 fatty acids (EPA, DHA) may effectively reduce clinical signs associated with CDS in dogs. Clinical research and experience with this diet to date is quite promising, even in patients refractory to selegiline. No similar prescription diet has yet become available for feline patients. Last month at the AVMA Annual Convention in Denver, preliminary literature on both canine and feline over-the-counter diets (Hills[®] Science Diet[®] Advanced Protection Senior Canine and Feline Formulas) with substantially augmented anti-oxidants (carotenoids, tocopherols, Vitamin C) and omega-3 fatty acids (presumably for membrane stabilization) were released to veterinarians. While data is still pending for clinical efficacy of these diets in managing early or pre-cognitive decline, the premise for these diets in managing patients before the development of clinical cognitive decline is sound. Based on basic and clinical research to date in lab animals and humans, standard dietary augmentation with antioxidants and omega-3 fatty acids for all patients over 7 years of age may be a rational approach to reducing the incidence of cognitive decline and associated behavioral changes in animals.

OCEAN STATE



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Deva Prather DVM
Tricia Ross DVM

Hospital Manager

Cheryl Rizzo

Staff Spotlight

Cheryl Rizzo, Hospital Manager



Cheryl Rizzo has been the hospital manager at OSVS since our beginning. Cheryl received a bachelor's degree from Rhode Island College where she majored in social work. She worked for ten years as a certified medical assistant in an OB/GYN practice, and then three years as the office manager before seeing the light and coming to veterinary medicine. Cheryl had two years of experience as a veterinary hospital manager before she played an integral role in starting OSVS. While the hospital is running fairly well, Cheryl's main role is to keep trying to make it run better. She is responsible for managing our burgeoning staff, overseeing hospital finances, and marketing the practice. She is always interested in feedback from veterinarians so that she can improve our referral and emergency services.

Many of us also rely on Cheryl to manage our social lives, our health, and our mood swings, making her an irreplaceable member of the OSVS team.