



# Tremors

## Basics

### OVERVIEW

- Repetitive, rhythmic, oscillatory (swinging back and forth), involuntary movements of all or part of the body
- The spine is composed of multiple bones with disks (intervertebral disks) located in between adjacent bones (vertebrae); the disks act as shock absorbers and allow movement of the spine; the vertebrae are named according to their location—cervical vertebrae are located in the neck and are numbered as cervical vertebrae one through seven or C1–C7; thoracic vertebrae are located from the area of the shoulders to the end of the ribs and are numbered as thoracic vertebrae one through thirteen or T1–T13; lumbar vertebrae start at the end of the ribs and continue to the pelvis and are numbered as lumbar vertebrae one through seven or L1–L7; the remaining vertebrae are the sacral and coccygeal (tail) vertebrae

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Dogs
- Cats

#### Breed Predilections

- Generalized tremor syndrome—small- to medium-breed dogs (less than 15 kg or 33 pounds)
- Decreased amounts or absence of myelin, the protective covering of many nerve fibers (condition known as “hypomyelination”)—chow chows, English springer spaniels, Samoyeds, Weimaraners, and Dalmatians
- Brief head tremor of unknown cause (so-called “idiopathic transient head tremor”)—Doberman pinschers, English bulldogs, and Labrador retrievers

#### Mean Age and Range

- Age depends on cause
- Generalized tremor syndrome—usually young adult dogs (less than 5 years of age)
- Decreased amounts or absence of myelin, the protective covering of many nerve fibers (hypomyelination)—6–8 weeks of age

### SIGNS/OBSERVED CHANGES IN THE PET

- Localized or generalized tremors
- Localized tremors—most often involve the head or the rear legs

### CAUSES

#### Head Tremors

- Abnormality of part of the brain, the cerebellum—degenerative; congenital (present at birth); inflammatory; immune-mediated; toxic causes

- Unknown cause (so-called “idiopathic disease”)—Doberman pinschers and English bulldogs are more likely to develop head tremors of unknown cause than other breeds
- Genetic
- Inflammatory—inflammation of the brain (known as “encephalitis”)
- Trauma
- Drug administration—doxorubicin (a chemotherapy drug); diphenhydramine (an antihistamine); metoclopramide (medication used to control nausea and vomiting)

### **Rear Leg Tremors**

- May be a sign of weakness or pain in the lumbosacral area of the spine
- Metabolic—kidney failure; inadequate production of parathyroid hormone, leading to abnormalities in blood calcium and phosphorus levels (condition known as “hypoparathyroidism”); decreased levels of glucose (sugar) in the blood (known as “hypoglycemia”)
- Compressive lesions of the spine or nerve roots—narrowing of the spinal canal in the lumbosacral spine (known as “lumbosacral stenosis”); pressure to or damage of the nerves within the spinal canal in the area of the junction between the lumbar and sacral vertebrae—at this level of the spine, spinal nerves are located in the spinal canal (rather than spinal cord), these spinal nerves within the spinal canal are known as the “cauda equina” (condition known as the “cauda equina syndrome”); spinal cord tumor; bacterial or fungal infection of the intervertebral disks and adjacent bone of the spine (vertebral bodies; condition known as “diskospondylitis”)
- Disorder involving the nerves to the rear legs (known as a “peripheral neuropathy”); neuromuscular junction abnormality; disorder involving the muscles of the rear legs (known as a “myopathy”)
- Poor blood flow to the muscles of the rear legs—right-to-left shunting of blood flow through a birth defect, known as a “patent ductus arteriosus”; other diseases of the heart and lungs
- Unknown cause (so-called “idiopathic disease”)—rear leg tremors in older dogs (so-called “senile tremor”)

### **Generalized Tremors**

- Decreased amounts or absence of myelin, the protective covering of many nerve fibers (hypomyelination)
- Poisons—organophosphates (type of insecticide); hexachlorophene (an antiseptic product); bromethalin (product used to kill rodents); topical product for killing parasites that contains moxidectin and imidacloprid
- Degenerative nervous system disease—inherited metabolic diseases in which harmful levels of materials accumulate in the body's cells and tissues (known as “storage diseases”); a disorder characterized by progressive deterioration of nervous tissue, causing the formation of numerous tiny holes in the brain (known as “spongiform encephalopathy”)
- Generalized tremors of unknown cause (so-called “idiopathic generalized tremor syndrome”)—generalized body tremors seen in young, predominantly small-breed dogs, initially described in white dogs (such as Maltese and West Highland white terriers, leading to the name, “white shaker dog syndrome”)

## **RISK FACTORS**

- Any inflammation of the brain (encephalitis) or degenerative nervous system disease—inherited metabolic diseases in which harmful levels of materials accumulate in the body's cells and tissues (storage disease); a disorder characterized by progressive deterioration of nervous tissue, causing the formation of numerous tiny holes in the brain (spongiform encephalopathy)
- Treatment with doxorubicin (a chemotherapy drug); diphenhydramine (an antihistamine); metoclopramide (medication used to control nausea and vomiting)

## **Treatment**

### **HEALTH CARE**

- Treat the underlying primary disease
- Outpatient, unless surgical treatment is indicated (such as lumbosacral disease that requires decompression and stabilization)
- Avoid excitement and exercise—may worsen many tremors
- Generalized tremor of primary brain origin—pet may lose weight; monitor weight and modify oral intake accordingly
- Drug-induced tremors—consider an alternate drug

- Suspected poisoning—remove pet from further exposure; contact your pet's veterinarian immediately; consult with a poison control center for possible antidote

## **SURGERY**

- Surgery may be indicated for some causes of tremor (such as diseases involving the lumbosacral spine)

## **Medications**

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Usually do not respond to muscle relaxants or drugs to control seizures (such as phenobarbital or diazepam)
- Steroids—to decrease the immune response (known as giving an “immunosuppressive dose” of steroids) to treat generalized tremor syndrome
- Antibiotics—for bacterial infection of the intervertebral disks and adjacent bone of the spine (vertebral bodies; condition is diskospondylitis); chosen on the basis of bacterial culture and sensitivity testing results of samples from the spinal lesion, blood, or urine
- Diseases of part of the brain, the cerebellum—depends on the diagnosis
- Gabapentin may be helpful in treatment of some tremors

## **Follow-Up Care**

### **PATIENT MONITORING**

- Monitor the primary disease
- Steroids for generalized tremor syndrome—monitor weekly initially to assess response to treatment

### **PREVENTIONS AND AVOIDANCE**

- Avoid excitement and exercise—may worsen many tremors

### **EXPECTED COURSE AND PROGNOSIS**

- Most causes of tremors in adult dogs are treatable
- Degenerative nervous system diseases (such as inherited metabolic diseases in which harmful levels of materials accumulate in the body's cells and tissues [storage disease]; a disorder characterized by progressive deterioration of nervous tissue, causing the formation of numerous tiny holes in the brain [“spongiform encephalopathy”])—no treatment available
- Decreased amounts or absence of myelin, the protective covering of many nerve fibers (hypomyelination)—generally not treatable; some breeds (such as the chow chow) improve with maturity
- Head tremor of unknown cause (idiopathic head tremor)—no effective treatment available; benign tremor that occurs sporadically; has few health consequences

## **Key Points**

- Repetitive, rhythmic, oscillatory (swinging back and forth), involuntary movements of all or part of the body
- Localized tremors—most often involve the head or the rear legs
- Most causes of tremors in adult dogs are treatable

# Notes

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