

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



GENETICS

- The role of genetics is largely unknown with the exception of X-linked hypomyelination in male springer spaniels

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predispositions

- Generalized tremor syndrome (white shaker syndrome); corticosteroid-responsive tremor syndrome—small- to medium-breed dogs (less than 15 kg or 33 pounds); young adult dogs (less than 5 years) regardless of coat color; a similar syndrome has recently been identified in 2 cats
- Decreased amounts or absence of myelin, the protective covering of many nerve fibers (condition known as “hypomyelination”)—in puppies, chow chows, springer spaniels, Samoyeds, Weimaraners, and Dalmatians
- Brief head tremor of unknown cause (so-called “idiopathic transient head tremor”)—Doberman pinschers, English bulldogs, French bulldogs, Boxers, and Labrador retrievers
- Orthostatic tremors in young adult giant-breed dogs
- Benign pelvic limb tremors in older dogs, terriers predisposed
- Any dog or cat may develop tremors

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); metabolic; infectious; inflammatory (inflammation of the brain known as “encephalitis”); immune-mediated; cancer; trauma; toxic; blood supply (vascular) causes
- Unknown cause (so-called “idiopathic disease”)
- Genetic

Rear Leg Tremors

- Orthostatic tremors—seen when standing, disappear when walking and lying down—unknown cause
- Metabolic—causing weakness—low adrenal gland hormone production (known as “Addison’s disease or hypoadrenocorticism”); 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”); intervertebral disc disease; 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”)
- 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—metoldehyde (snail bait); organophosphates (type of insecticide); pyrethrin/pyrethroids; lead; 5-fluorouracil; macadamia nuts; theobromine; marijuana; zolpidem; clozapine; castor beans; carbon monoxide; hexachlorophene (an antiseptic product); bromethalin (product used to kill rodents); topical product for killing parasites that contains moxidectin, ivermectin; mycotoxins (fungal toxins)
- 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”)
- Fear
- Low body temperature (hypothermia)

RISK FACTORS

- Metabolic disease affecting sugar and mineral balances in the bloodstream
- Exposure to a toxin known to produce tremors
- Exposure to fear producing stimuli or low body temperature inducing situations
- Any brain disease involving inflammation of the brain (encephalitis) or degenerative nervous system disease—storage disease; spongiform encephalopathy; spinal or neuromuscular disease; others

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

- 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
- Treat toxin—for example metaldehyde, consider methocarbamol
- Steroids for corticosteroid responsive tremors 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 cause
- 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
- Avoid re-exposure or exposure to toxins

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
- Corticosteroid responsive tremor syndrome—most respond to medication; some may need low dose steroid therapy indefinitely
- Orthostatic tremors slowly progressive
- Hind limb tremors of senior dogs, can be slowly progressive
- 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—excellent prognosis

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