



# Myelopathy—Paresis and Paralysis in Cats

## (Disorder of the Spinal Cord Leading to Weakness and Paralysis in Cats)

### Basics

#### OVERVIEW

- “Myelopathy”—any disorder or disease affecting the spinal cord; a myelopathy can cause weakness or partial paralysis (known as “paresis”) or complete loss of voluntary movements (known as “paralysis”)
- Paresis or paralysis may affect all four limbs (known as “tetraparesis” or “tetraplegia,” respectively), may affect only the rear legs (known as “paraparesis” or “paraplegia,” respectively), the front and rear leg on the same side (known as “hemiparesis” or “hemiplegia,” respectively) or only one limb (known as “monoparesis” or “monoplegia,” respectively)
- Paresis and paralysis also can be caused by disorders of the nerves and/or muscles to the legs (known as “peripheral neuromuscular disorders”)
- 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
- The brain stem is the part of the brain that is connected to the spinal cord that controls functions like breathing and heart rate

#### GENETICS

- Lysosomal storage diseases (inherited metabolic diseases in which harmful levels of materials accumulate in the body's cells and tissues)—examples include gangliosidosis GM1/GM2, sphingomyelinosis (Niemann-Pick disease), mucopolysaccharidosis type VI, and glycogenosis type IV that cause weakness (paresis) or paralysis—autosomal recessive pattern of inheritance
- Disorder characterized by progressive changes in the part of the nerve that carries impulses away from the nerve

cell body and toward the muscles (known as “neuroaxonal dystrophy”) and disorder characterized by loss of nerve cell bodies in the brainstem and spinal cord (known as “spinal muscular atrophy”)—degenerative diseases of the spinal cord reported as autosomal recessive conditions

- Disorders characterized by a cavity in the spinal cord (known as “syringohydromyelia”) or defective development of the spinal cord (known as “myelodysplasia”) may be associated with congenital (present at birth) defects of the spine and spinal cord (known as “sacrocaudal or sacrococcygeal dysgenesis”), an autosomal dominant condition in the Manx

## **SIGNALMENT/DESCRIPTION OF PET**

### **Species**

- Cats

### **Breed Predilections**

- Gangliosidosis GM1/GM2—Siamese, Korat, and domestic shorthair
- Glycogen storage disease type IV—Norwegian Forest cats
- Syringohydromyelia/myelodysplasia—Manx and Manx crosses with sacrocaudal or sacrococcygeal dysgenesis
- Sphingomyelinosis (Niemann-Pick disease)—Siamese, Balinese, and domestic shorthair
- Mucopolysaccharidosis type VI—Siamese and domestic shorthair
- Idiopathic complex polysaccharide storage disease—Abyssinian; “idiopathic” means of unknown cause
- Neuroaxonal dystrophy—Siamese and domestic shorthair

## **SIGNS/OBSERVED CHANGES IN THE PET**

- Signs vary with location and severity of the spinal cord lesion
- Cervical syndrome (spinal lesion is located in the neck)—weakness of all four legs (tetraparesis) or paralysis of all four legs (tetraplegia); weakness of the front and rear leg on one side of the body (hemiparesis) or paralysis of the front and rear leg on one side of the body (hemiplegia); wobbly, incoordinated or “drunken”-appearing gait or movement (known as “ataxia”); abnormalities in which the normal subconscious awareness of the location of the legs and movement is altered (known as “proprioceptive deficits”); normal reflexes or exaggerated reflexes (known as “hyperreflexia”); the cat may be overly sensitive to pain or touch (known as “hyperesthesia”) around the neck and Horner's syndrome (condition in which one pupil is small or constricted, the eyelid droops, and the eyeball is withdrawn into the socket) also may be present
- Cervicothoracic syndrome (spinal lesion involves the area of the lower part of the neck and/or the chest)—weakness of all four legs (tetraparesis) or paralysis of all four legs (tetraplegia); weakness of the front and rear leg on one side of the body (hemiparesis) or of the front and rear leg on one side of the body (hemiplegia); wobbly, incoordinated or “drunken”-appearing gait or movement (known as “ataxia”); abnormalities in which the normal subconscious awareness of the location of the legs and movement is altered (known as “proprioceptive deficits”); decreased reflexes (known as “hyporeflexia”) or lack of reflexes (known as “areflexia”), decreased muscle tone (known as “hypotonus”), and loss of muscle mass (known as “muscle atrophy”) on one or both front legs and normal reflexes or exaggerated reflexes (known as “hyperreflexia”) and increased muscle tone (known as “hypertonus”) of the rear legs; the cat may be overly sensitive to pain or touch (hyperesthesia) along the spine around the area of the junction of the neck and chest; and Horner's syndrome (condition in which one pupil is small or constricted, the eyelid droops, and the eyeball is withdrawn into the socket) also may be present
- Thoracolumbar syndrome (spinal lesion involves the area of the spine from the end of the ribs to the pelvis)—normal front legs; weakness of the rear legs (paraparesis) or paralysis of the rear legs (paraplegia); wobbly, incoordinated or “drunken”-appearing gait or movement (ataxia) of the rear legs; abnormalities in which the normal subconscious awareness of the location of the rear legs and movement is altered (proprioceptive deficits); increased muscle tone (hypertonus) and normal reflexes or exaggerated reflexes (hyperreflexia) of the rear legs; the cat may be overly sensitive to pain or touch (hyperesthesia) along the spine at the area from the end of the ribs to the pelvis; the cat may have absent or decreased sensation below the spinal lesion; lack of control or urination (known as “urinary incontinence”) also may be present—urinary incontinence is characterized by a tense bladder that is difficult to express (so-called “upper motor neuron bladder”)
- Lumbosacral syndrome (spinal lesion involves the area of the spine at the pelvis)—normal front legs; weakness of the rear legs (paraparesis) or paralysis of the rear legs (paraplegia); weakness of one rear leg (monoparesis) or

paralysis of one rear leg (monoplegia); mild rear leg wobbly, incoordinated, or “drunken”-appearing gait; abnormalities in which the normal subconscious awareness of the location of the rear legs and movement is altered (proprioceptive deficits); decreased reflexes (known as “hyporeflexia”) or lack of reflexes (areflexia); decreased muscle tone (hypotonus); and loss of muscle mass (muscle atrophy) of the rear leg(s); the cat may be overly sensitive to pain or touch (hyperesthesia) along the spine around the area of the pelvis; the cat may have decreased or absent sensation below the lesion as well as decreased or absent tail and anal tone; lack of ability to control urination (urinary incontinence) and bowel movements (known as “fecal incontinence”) also may be present—urinary incontinence is characterized by large and flaccid bladder that is easy to express (so-called “lower motor neuron bladder”)

## CAUSES

- Degenerative disease of the spinal cord
- Inherited disease of the spinal cord
- Abnormal structural development of the backbones (vertebrae) or spinal cord
- Metabolic abnormalities
- Tumors or cancer (such as lymphoma, osteosarcoma, fibrosarcoma, and cancer that has spread to the spine/spinal cord [known as “metastatic cancer”])
- Inflammatory or infectious disease (such as feline infectious peritonitis [FIP], toxoplasmosis, and feline leukemia virus (FeLV)-associated disorder of the spinal cord [known as “FeLV-associated myelopathy”])
- Trauma (such as fractures or dislocations of the backbones [vertebrae] and penetrating wounds [bite wounds, BB pellets])
- Abnormal blood flow to the spine/spinal cord

## RISK FACTORS

- Outdoor cats—at risk for traumatic and infectious inflammation of the spinal cord (known as “myelitis”)
- Feline leukemia virus (FeLV)-positive cats—at risk for lymphoma and FeLV-associated myelopathy

## Treatment

### HEALTH CARE

- Emergency evaluation and possible surgery—when a traumatic cause of weakness (paresis)/paralysis is suspected
- Inpatient medical management—for severe nervous system deficits, such as paralysis and lack of control of urination (urinary incontinence)
- Cats that cannot walk (known as being “non-ambulatory”) should be confined to a soft padded crate or enclosed area, they should be kept dry and clean and turned every 6 hours, if they are unable to stay lying on their chests
- If the cat has lack of control of urination (urinary incontinence), the bladder should be emptied every 6–8 hours
- Prevent/treat “bed sores” (known as “decubital ulcers”) and skin lesions that develop due to contact with urine, when the hair and skin remain damp (known as “urine scald”)
- Treat constipation
- Physical therapy is useful to prevent loss of muscle mass (muscle atrophy) and to keep joints flexible, especially for post-operative rehabilitation

### ACTIVITY

- Restricted—especially when a traumatic cause of weakness (paresis)/paralysis is suspected, but also to prevent spinal trauma secondary to the paresis/paralysis

### SURGERY

- Surgical management—for fractures or dislocations of the backbones (vertebrae), intervertebral disk disease, and some tumors or cancer

## 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

- Not recommended until a diagnosis has been established
- Spinal trauma—methylprednisolone administered within 8 hours from the time of injury
- Antibiotics, if the cat develops a urinary tract infection

## **Follow-Up Care**

### **PATIENT MONITORING**

- Repeat nervous system examination—at a frequency determined by the severity and progression of the cat's nervous system status

### **PREVENTIONS AND AVOIDANCE**

- Depend on underlying cause
- Keep cat indoors or on leash when outside to avoid spinal trauma

### **POSSIBLE COMPLICATIONS**

- Urinary tract infection
- Skin lesions that develop due to contact with urine, when the hair and skin remain damp (urine scald)
- Constipation or lack of control of bowel movements (fecal incontinence)
- Loss of muscle mass (muscle atrophy)
- “Bed sores” (decubital ulcers)

### **EXPECTED COURSE AND PROGNOSIS**

- Depend on underlying cause

## **Key Points**

- If the cat is treated as an outpatient, it is important to understand all aspects of nursing care and possible complications; discuss the care of your cat with the veterinarian

# Notes

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