

Feline Health Topics

for veterinarians

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Inherited Myopathy of Devon Rex Cats

Nena J. Winand, D.V.M., M.S.

Since 1974, an inherited myopathy has been recognized to occur in Devon Rex cats. This disorder, termed spasticity by cat breeders, is characterized by ventroflexion of the head and neck, dorsal protrusion of the scapulae, megaesophagus, generalized appendicular weakness and fatigability.

Signs of muscle weakness become evident between three and 23 weeks of age and considerable variation in both the severity of clinical manifestations and their rate of progression are reported.¹ Neurological findings in affected animals are unremarkable. Muscle tone, deep tendon and withdrawal reflexes are normal. Serum biochemistries may initially seem of limited value in establishing a diagnosis because elevations of the muscle leakage enzymes creatine kinase (CK) and aspartate aminotransferase are not observed. However, this may aid in distinguishing Devon Rex myopathy

Request for Inherited Myopathy Cases

Dr. Winand is studying the molecular mechanisms responsible for several inherited myopathies affecting companion animals as part of an ongoing research program at the College of Veterinary Medicine, Cornell University. Results from these studies will aid in identifying carrier cats and possible treatment of affected cats. Questions or consultations regarding suspected cases of Devon Rex myopathy should be referred to Dr. Winand c/o The Feline Health Center, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853; FAX (607) 253-3419; or call (607) 253-3414.

from X-linked muscular dystrophy due to dystrophin deficiency and from nemaline myopathy—inherited disorders resulting in elevated serum CK levels. Hypokalemic polymyopathy, which is characterized by clinical signs strikingly similar to those of Devon Rex myopathy, may be excluded from the differential diagnosis by the findings of normokalemia and normal serum CK levels. Lack of improvement or exacerbation of muscle weakness following anticholinesterase administration may serve to clinically differentiate Devon Rex myopathy from congenital myasthenia gravis.

Clinical diagnosis of this disorder is strengthened by histological examination of skeletal muscle biopsy specimens that show changes typical of muscular dystrophy. These changes are most pronounced in the

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m. triceps brachii and dorsal cervical muscles which are recommended for biopsy.

Pedigree analysis and test mating programs have demonstrated an autosomal recessive pattern of inheritance.² Despite research efforts, the mutation and pathogenetic mechanisms responsible for Devon Rex myopathy remain unknown. ■

References:

¹ Malik R et al.: Hereditary myopathy of Devon Rex cats. *J Small An Pract* 34:539-546, 1993.

² Robinson R: 'Spasticity' in the Devon Rex cat. *Vet Rec* 132:302, 1992.

Dr. Winand is a postdoctoral research fellow in the department of veterinary pathology at Cornell University.

Research Briefs

Ovulation without Cervical Stimulation in Domestic Cats

The following data collected by Ralston Purina's pet nutritional research department suggest that intact cats do not always require cervical stimulation to induce ovulation when they are housed in proximity to other cats. Serum progesterone of 24 adult female American shorthair cats (ages 2.5 to 11 years old) was measured by radioimmunoassay at monthly intervals for nine months (April-December). Twenty cats were intact and four were ovariohysterectomized controls. One of the intact queens was ovariohysterectomized after seven months due to pyometra.

The cats could see and hear one another, and could see and hear male cats housed individually in the same room. Direct contact with other cats was prevented. The handlers avoided tactile stimulation of the cat's hindquarters or perineal regions during the study.

Serum progesterone concentration of > 4.8 nmol l⁻¹ was defined as evidence of ovulation. This concentration was exceeded in seven of the intact queens (35%) at one or more occurrences of non-coital ovulation, totaling one to three occurrences per queen. Serum progesterone concentration ranged from 0.2 to 103.4 (mean 14.09 ± 2.0) nmol l⁻¹ in these seven cats, and was significantly greater than concentrations in the other intact and neutered cats. In the remaining 13 intact and four ovariohysterectomized cats, serum progesterone concentrations ranged from 0.2 to 3.2 (mean 1.24 ± 1.46) nmol l⁻¹.—(*Resource: J Reproduc Fertil*, 57-61, 1993)

Evaluation of Iohexol as a Gastrointestinal Contrast Medium in Normal Cats

The non-ionic, iodinated contrast medium, iohexol (240 mg I/ml) was evaluated as a gastrointestinal (GI) contrast medium in cats by researchers at The Ohio State University. Iohexol (undiluted and diluted with tap water) was administered by a percutaneous endoscopically-placed gastrotomy (PEG) tube to four clinically-normal adult cats. The dilution of contrast medium administered was 1:1, 1:2 and 1:3, and doses were 10 ml/kg and 5 ml/kg body weight. All combinations of dilution and dose of iohexol provided adequate visualization of the contrast medium column within the GI tract. The results were similar to using 30 percent w/v barium sulfate. Dehydration and diarrhea were not observed after contrast medium administration, but vomiting occurred within 15 to 30 minutes after administration of undiluted iohexol in all experimental cats. Renal opacification did not occur on exposures made during a two-hour period, and dilution in transit was not apparent.—(*Resource: Vet Radiol Ultrasound* 34:310-314, 1993)

Age-related Changes in the Feline Cardiac Silhouette

An exaggerated horizontal alignment of the heart (increased sternal contact) and tortuous redundant aorta are often seen on thoracic radiographs of older cats. The Virginia-Maryland Regional College of Veterinary Medicine studied 85 cats, divided into three age groups [young (6 to 15 months); middle-aged (3 to 7 years),

and old (10 to 17 years)]. All cats were normal based on history, auscultation, electrocardiogram and echocardiogram. Lateral and ventral-dorsal thoracic radiographs were examined and measured for evidence of these changes. Forty percent of the older cats were found to have the horizontal cardiac alignment, and 28 percent had the redundant aorta. These changes were not seen in the younger and middle-aged cats. The angle between the heart and sternum in the older cats was significantly smaller than the same angle in younger cats. Systemic hypertension and hyperthyroidism, possible pathologic causes for this variation, were unlikely related to the cardiovascular changes due to the large number of older cats with this change and lack of evidence of left ventricular hypertrophy.—(*Resource: Vet Radiol Ultrasound* 34:315-320, 1993)

Feline Health Topics

A publication for veterinary professionals

The ultimate purpose of the Cornell Feline Health Center is to improve the health of cats everywhere, by developing methods to prevent or cure feline diseases, and by providing continuing education to veterinarians and cat owners. All contributions are tax-deductible.

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Effects of Dietary Protein and Calorie Restriction in Clinically Normal Cats and in Cats with Surgically Induced Chronic Renal Failure

A study was conducted at Purdue University to determine the effects of long-term dietary protein restriction in cats with chronic renal failure (CRF). The study included four healthy adult cats and seven cats with surgically induced CRF fed a high-protein (HP, 51.7% protein) diet, and four healthy adult cats and seven cats with surgically induced CRF were fed a low-protein (LP, 27.6% protein) diet for one year.

Cats with induced CRF that were fed the LP diet had reduced serum urea nitrogen concentrations despite lower glomerular filtration rates compared with cats with CRF fed the HP diet. Despite a five-sixths reduction in renal mass, reduced glomerular filtration rate, and azotemia, 13 of the 14 cats with induced CRF retained the ability to concentrate urine and produced urine with a specific gravity >1.035. Cats fed the HP diet consumed significantly more calories than did cats fed the LP diet, presumably because the HP diet was more palatable. As a result of the lower caloric intake in cats fed the LP diet, these cats were protein and calorie restricted compared with cats fed the HP diet. Cats fed the HP diet weighed significantly more than did cats fed the LP diet. Mean hematocrit and mean serum albumin concentration were significantly lower in control cats and in cats with CRF fed the LP diet, compared with control cats and cats with CRF fed the HP diet. Hypokalemia developed in four of seven cats with CRF fed the HP diet (containing 0.3% potassium). Hypokalemia did not develop in control cats fed the same diet or in cats with CRF fed the LP diet containing 0.4% potassium. Excessive kaliuresis, hypomagnesemia, and metabolic acidosis did not appear to contribute to the hypokalemia. Subsequent supplementation of the HP diet with potassium gluconate prevented hypokalemia in cats with CRF.—(*Resource: Amer Journ Vet Res* 54:1653-1662, 1993) ■

Radiology Case Review

Victor Rendano, V. M. D. , M. S. and James Richards, D. V. M.

This radiology case is offered for your interpretation. Drs. Rendano and Richards interpretive comments are on page 8.

History

An eight-year-old, altered male, domestic longhair cat was presented for lameness of the right thoracic limb. The cat had been lame for five days. Clinical evaluation revealed the tissues surrounding the third phalanx of the fourth digit to be swollen and painful. Harsh lung sounds were evident but there was no dyspnea. A needle aspirate biopsy of the swollen digit and radiographs of the chest were obtained (figures A and B).

What is your diagnosis?

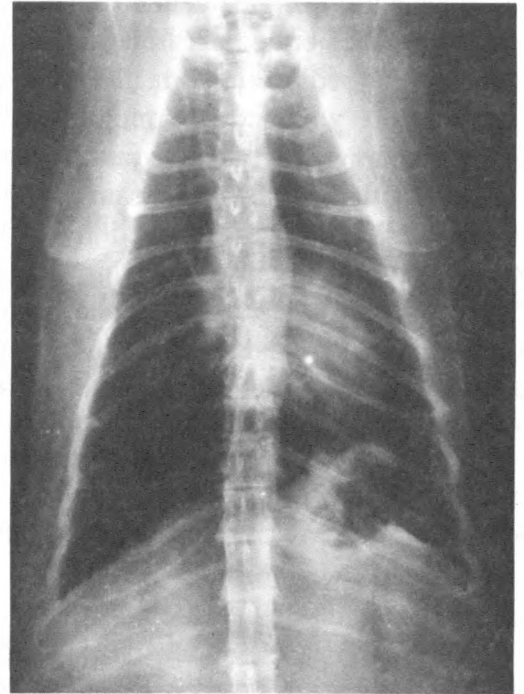


Figure A

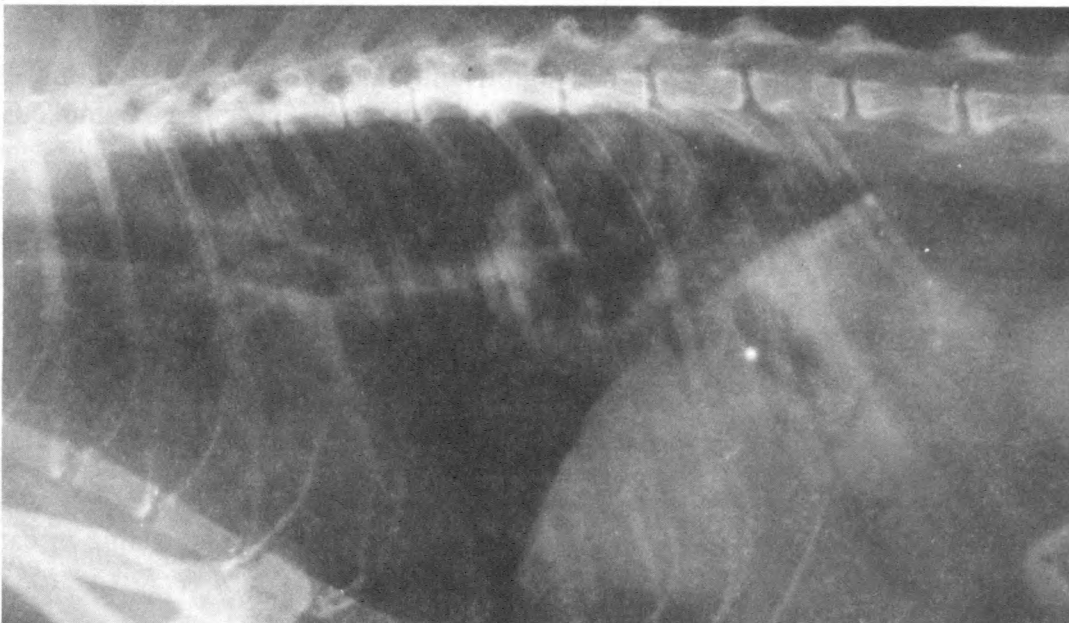


Figure B

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Program

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Faculty

Program instructors are faculty and staff members of the College of Veterinary Medicine, Cornell University: **Dr. John E. Saidla**, Assistant Director, Feline Health Center, and Director, Veterinary Continuing Education; **Dr. James R. Richards**, Consulting Veterinarian and Assistant Director, Feline Health Center; **Dr. Arleigh J. Reynolds**, Assistant Professor, Veterinary Nutrition; and **Dr. Vicki N. Meyers-Wallen**, Assistant Professor, Theriogenology, The James A. Baker Institute for Animal Health.

Program Charge

The program charge is \$285 and includes tuition; course materials; a formal Cornell University certificate of completion; and meals throughout the program.

Further Information

Comprehensive Seminar for Cat Breeders, Cornell University Feline Study Seminars, Box 226, B20 Day Hall, Ithaca, NY 14853-2801; telephone: (607) 255-7259; fax: (607) 255-8942.

For You and Your Practice

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Information Brochure Order Blank		0	0
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TOTAL			\$

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Orders, Cornell Feline Health Center, College of Veterinary Medicine, 618 VRT, Ithaca, NY 14853-6401.

Radiology Case Review *(continued from page 4)*

Radiographic Findings

In the radiographs presented, the following are noted:

- The trachea, mediastinum, heart, and pleura are normal.
- The lungs have mild generalized peribronchiolar disease; and a cavitated lesion in left caudal lobe.
- Osseous-spondyle formation involving thoracic vertebrae.
- Artifact-white dot.

Comments

The lesion in the paw was diagnosed as being a bronchogenic carcinoma. The owner elected not to pursue the histopathologic character of the cavitated lung lesion or amputation of the digit. The animal was eventually euthanatized.

A cavitated lung lesion with a thick wall and irregular interface between the radiolucent tissue in the cavity and the soft tissue opacity wall of the lesion is most frequently associated with neoplasia, abscess or parasitism. A lung bulla or bleb usually has a thin, smooth wall. A bulla can be partially filled with fluid giving it a thick wall appearance; however, the inter-

face between the gas and fluid in the bulla is usually smooth in contour.

Metastatic bronchogenic carcinoma has been reported in the literature.¹⁻⁴ According to Dr. Danny Scott, clinical dermatologist at Cornell University, "Cats typically are presented for clinical signs of pedal disease, the primary lung tumor usually being asymptomatic. Multiple digits of multiple paws usually are involved. Digits are painful and swollen, and the nailed regions are exudative and ulcerative. The cats usually are misdiagnosed as having paronychia. Radiology reveals bony destruction of the phalanges and a lung mass. Skin biopsy reveals metastatic carcinoma."⁵ ■

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