

Cases of Feline Central Retinal Degeneration Decline

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Feline central retinal degeneration (FCRD) is a diagnosis which is satisfying to give because of its known cause and potential treatment. Clinical FCRD has been linked to experimental nutritional retinopathy in kittens and cats by feeding them a semipurified diet containing casein as the only source of dietary protein.^{5,8} The experimental casein diet contained no taurine. The diet produced a marked fall in the plasma and retinal taurine concentrations within 10 weeks. This results in an increased cone electroretinogram (ERG) implicit time and reduced ERG amplitude. Retinal DNA concentrations decrease as the retinopathy progresses, indicating the loss of cells in the retina.⁹ These nutritional retinopathies were unresponsive to vitamin A therapy. The progression of FCRD can be stopped by dietary change or taurine supplements³ (daily taurine can be given in capsule [250 mg SID] or powder form), but the existing degeneration of the retina is permanent.

Even though taurine is present in meat, seafood and dairy products, food processing destroys its availability to the cat. Furthermore, studies in the late 1970s demonstrated that the cat's liver has extremely low levels of cysteine-sulfinic acid decarboxylase, limiting endogenous taurine biosynthesis.⁹ During the 1980s pet food industries began to supplement their cat foods because of concern over retinopathy and cardiomyopathy due to taurine-deficient diets.

Signs of FCRD

Cats with FCRD appear and act normal in the early stages of retinopathy. However, ERG evaluations demonstrate cone dysfunction in the early stages. The cone disease is present over the entire retina even though the lesions may be relatively small, round or elliptical.²

The ophthalmoscopic features of FCRD are characterized in the early cases by tapetal granularity especially in the area centralis, temporal to the optic disc. Interestingly, ERGs at this stage show small or nondetectable waveforms. With progression of the disease, there is a marked increase in tapetal reflectivity and the size of hyperreflectivity. The zone of degeneration extends horizontally on either side of the optic disc. The lesions are bilaterally symmetrical ranging from round to elliptical (see figs. 1-6). Regardless of the size or shape of the lesion, the center is always hyperreflective

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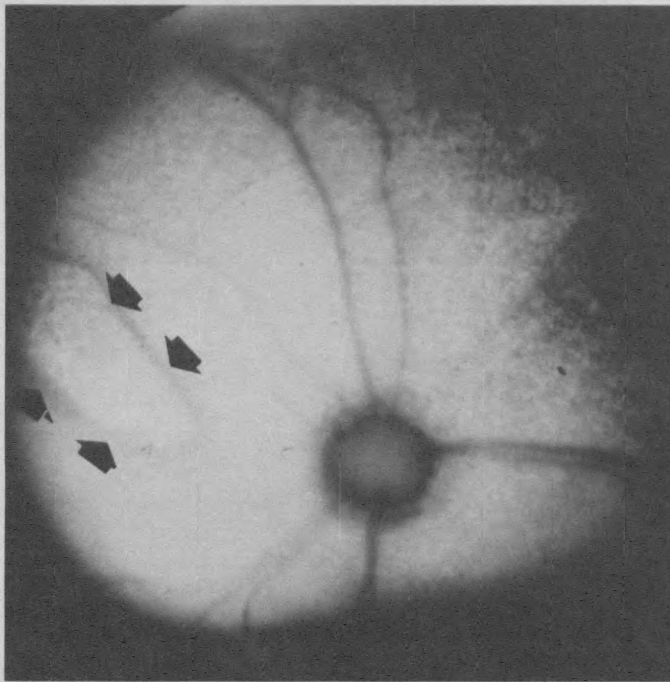


Fig. 1: FCRD Stage I in the earliest stage affecting the area centralis, outlined by the solid black arrows.



Fig. 3: FCRD Stage III with a broader horizontal hyperreflective band outlined by solid black and white arrows. Optic disc is highlighted by a white dot.

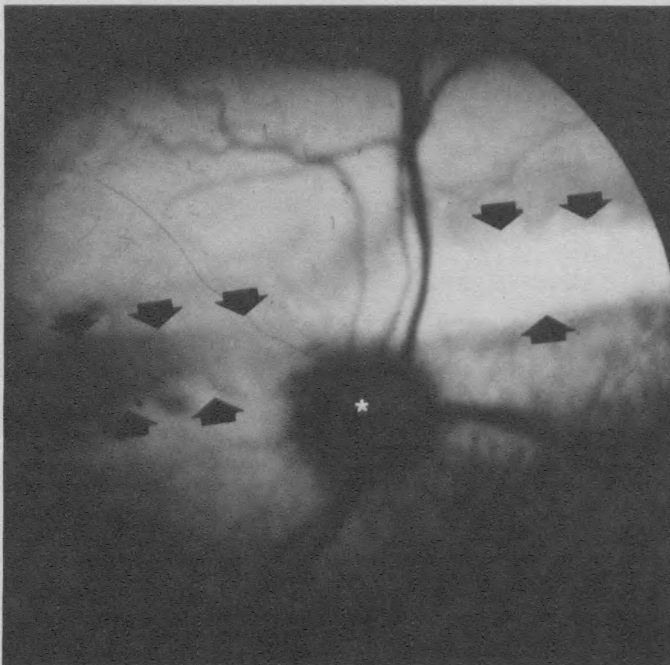


Fig. 2: FCRD Stage II, characterized by a horizontal hyperreflective band on both sides of the optic disc. (Starred dark circle with vessels entering.)

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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while the edges are darker than adjacent tapetum. The appearance of the lesion changes in reflectivity depending on the angle of incident light entering the eye. Supplementation with taurine at Stages I, II, and III have preserved the ERG amplitudes if rhodospin levels remain as determined by early receptor potential.^{4,6}

Veterinary Data Base Shows FCRD Declining

A recent search of reported cases of FCRD in the Purdue University Veterinary Medical Data Base (VMDB) has shown a marked decreasing trend of this nutritional retinopathy (see table 1 and figs. 7 and 8). This decline relates to the supplementation of cat foods with taurine by the pet food industry in the late 1980s. The data base can be questioned because codes do not allow for types of retinal degenerations or stages of FCRD. Usually only those diagnoses entered on the client discharge form are coded for the data base. Many times FCRD is noted by the veterinarian and entered only on a problem list and not dealt with if more serious medical problems overshadow this incidental finding.

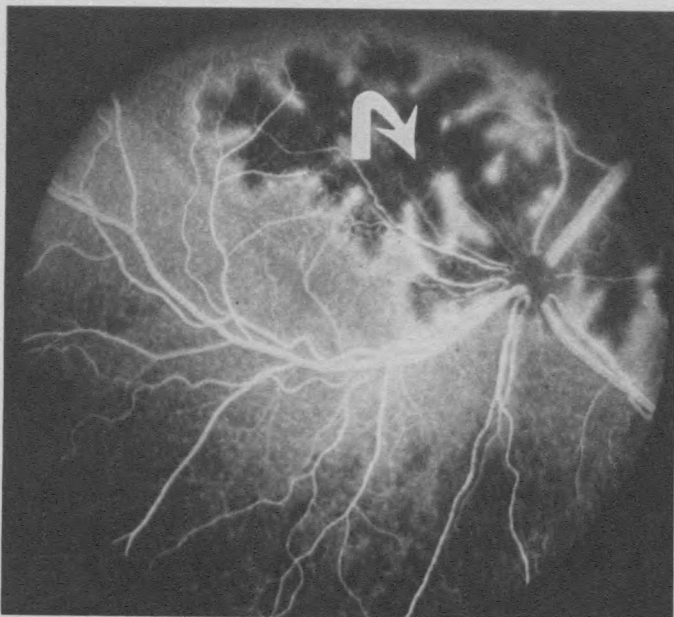


Fig. 4: FCRD Stage III fluorescent dye study outlines the retinal vessels white. The darkly scalloped area (white arrow) illustrates the lack of viable retinal tissue in the hyperreflective zone. The cat still has vision.

Summary

FCRD should be diagnosed in the future, but less frequently than in the last 15 years.⁷ A pos-

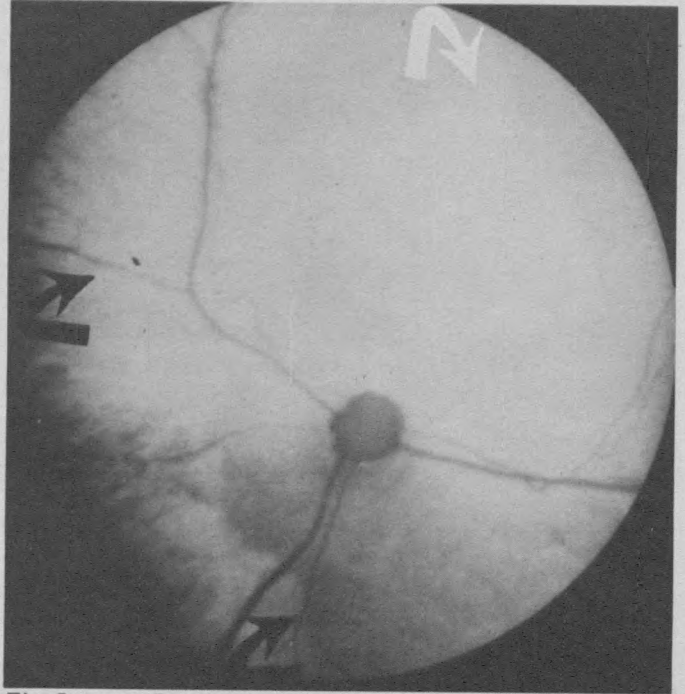


Fig. 5: FCRD Stage IV, outlined by arrows, indicates the extent of involvement of hyperreflectivity, i.e., retinal degeneration. Note the small vessel diameters. The cat has severe visual impairment.



Fig. 6: FCRD Stage V shows complete retinal and optic nerve degeneration. The general appearance of the fundus is hyperreflective and avascular. The cat is blind.

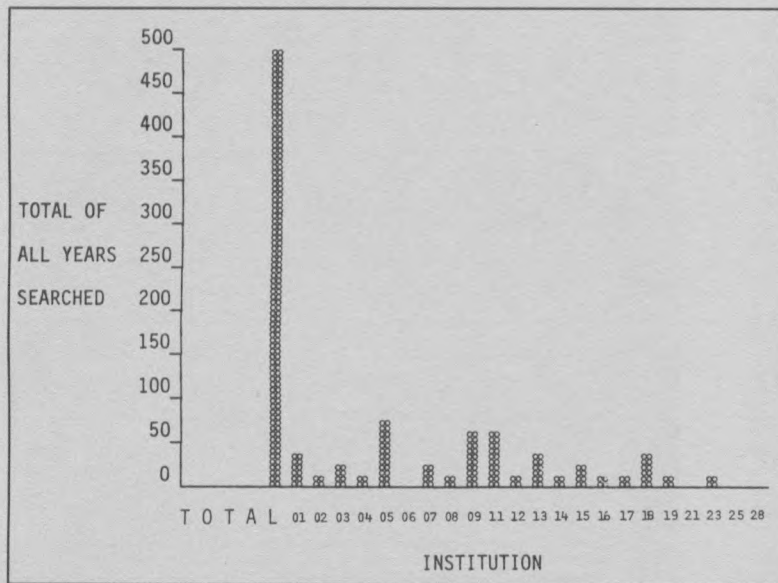


Fig. 7: Total number of FCRD cases reported through 1990 ; see table 1 for number key.

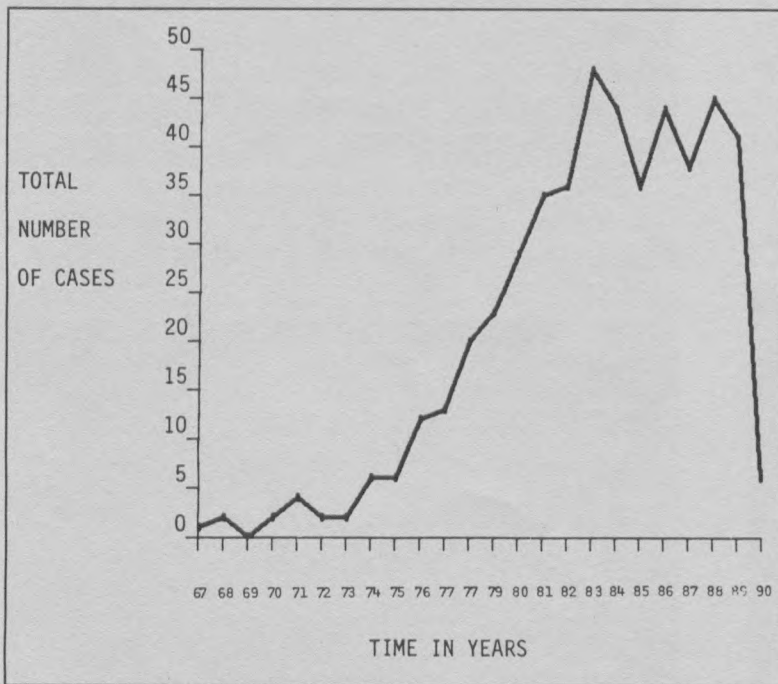


Fig. 8: Total FCRD cases from all reporting VMDB institutions through 1990, showing a sharp decline in last year reported.

Table 1. Number Key to Institutions

1—Michigan State	13—Illinois
2—Missouri	14—Saskatchewan
3—Minnesota	15—Colorado State
4—Iowa State	16—Auburn
5—Cornell	17—Texas A&M
6—Ontario	18—Tennessee
7—Purdue	19—Louisiana State
8—Georgia	21—Virginia-Maryland
9—California	23—Wisconsin
11—Ohio State	25—Tuskegee
12—Kansas State	28—Oklahoma

Note: North Carolina, Pennsylvania, Tufts, Montana, and Washington are not on the Purdue University VMDB.

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sible clinical situation might exist in cats fed solely dog food which is lower in protein content, or if the taurine has been destroyed and the food unsupplemented.¹ Fewer young house cats will be diagnosed with FCRD, but whether the VMDB is predictably accurate depends on the accuracy of our records and coding. ■

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Memorial Program Is Modified

The Feline Memorial Program has remained unchanged since 1979. But beginning this month the program will become more streamlined. It will no longer be necessary to send a contribution with the memorial card(s). Instead, participants in the memorial program will be invoiced monthly, based on the "pledge" amount indicated on the newly revised memorial card (see insert). We will continue to send acknowledgment letters to your clients each week as we receive the cards to ensure that your clients receive immediate notification. At the beginning of the following month we will send you an invoice for the previous month's memorials. The invoice will include the cat's name, client's name, your pledged donation, and a total amount due to the Cornell Feline Health Center. We will no longer return the memorial cards to you as the invoice will provide a complete record of each month's memorials. The invoice system will save you additional time and paperwork by allowing you to write only one check each month rather than a check for each memorial donation.

The new memorial card is slightly larger to allow more space for additional information such as your phone number and your preference regarding a follow up letter to your client.

We expect the changes will help you save time and money, and will help us handle the memorials more efficiently. To receive a Feline Memorial packet write to:

**Feline Memorial Program
Cornell Feline Health Center
College of Veterinary Medicine
Ithaca, NY 14853-6401**

Feline In Memoriam



Please type or print clearly:

I pledge \$ _____ in memory of:

cat's name _____ age _____ breed _____

Mr. Mrs.

Ms. Miss

Dr. Mr. & Mrs.

(Circle Title)

Owner's Name _____

Street Address/Apt. # _____

City _____

State _____

ZIP _____

Please acknowledge this gift in the following name:

Veterinarian or Hospital Name _____

Address: _____

(_____) _____

Phone # _____

Optional: Vet. college _____

Do not send client follow up solicitation letter.

Send card to: **Cornell Feline Health Center
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Do not enclose a check. An invoice will be sent next month for payment.

The Cat's Meow



When giving subcutaneous fluids to cats, it is tempting to administer the fluids under pressure or with a large gauge needle (e.g., 18 gauge). Many cats tolerate this technique without much complaint, but discomfort occurs as the tissues are quickly expanded by the rapid instillation of fluid.

Even though it is more time-consuming, it is better to let the fluid flow in by gravity. Many cats will sit quietly in their cage or on the examination table during the administration of fluids without requiring excessive restraint. By reducing the stress caused by any treatment or diagnostic procedure, we may be able to reduce hospitalization time and enable more complete recovery.

Send your practical tips and ideas on feline health management for the next issue to:

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