

What science knows today about the ECG ailment in mink herds

By DAVID T. SHEN & JOHN R. GORHAM*

Epizootic catarrhal gastroenteritis (ECG) was first reported in 1975 by Larsen and Gorham¹. The disease probably occurred before that time and was diagnosed as food poisoning or the "waste basket" diagnosis — non-specific enteritis, which means we didn't have a clue as to the cause. Several million mink have been affected in the United States, Canada, Scandinavia, USSR, and China in the last 15 years.

Maternal antibody seems to play a major role in determining the susceptibility of mink. Possibly maternal antibody declines sufficiently to allow infection of kits after they reach four months of age. However, ECG can occur at any time of the year. G.R. Hartsough has observed that the disease tends to occur on the same farm at the same time of year in successive years.

It appears that there is a genetic predisposition to the disease, since the prevalence is always higher in dark mink. Since there is no test for disease antibodies, most of the observations are speculative.

CLINICAL SIGNS

Five to eight days after exposure, both male and female mink partially or completely go off feed for one to five days^{2,3}. Some mink show signs for as long as two to three weeks. At least 50 per cent of the mink with depressed appetites develop diarrhea characterized by green-, yellow-, or pink-tinged mucus.

Blood or intestinal casts in the feces as seen in mink virus enteritis are rarely observed. Affected mink show no other signs; although many mink are affected, few die. However, fatalities may occur when mink are affected concurrently with ECG and Aleutian disease.

Those mink affected with Aleutian disease lack an effective immune system. According to farmers, female mink with nursing sickness and ECG have a higher death rate. Abortions and reduction in litter size have not been associated with the disease, but if the outbreak occurs when the females are nursing, the kit losses may be severe due to starvation.

AUTOPSY FINDINGS

The stomachs of affected animals



GORHAM

seldom contain food. The linings of the stomach and intestines are reddened and covered by sticky, thick, clear-to-white mucus.

The abdominal lymph nodes are moderately enlarged. In mink virus enteritis, the intestines usually are markedly reddened, often ballooned, and hemorrhagic.

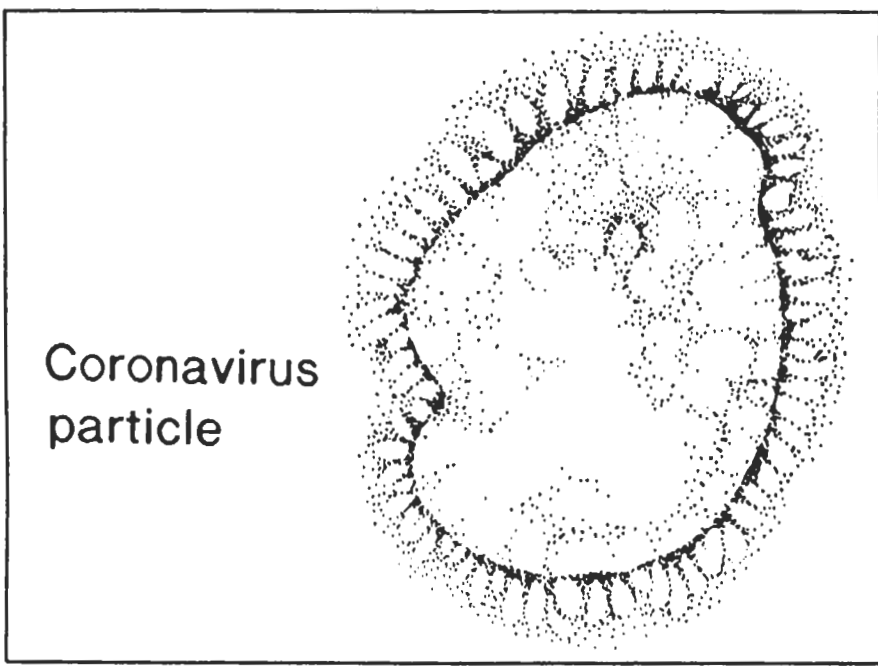
CAUSE & DIAGNOSIS

Further studies are necessary to determine definitely the cause, but we feel that coronaviruses play an important role in the disease⁴. Workers in China and at the North Dakota state diagnostic laboratory also have demonstrated coronaviruses in cases of ECG. However, other viruses such as rotaviruses, parvoviruses, calciviruses, and bacteria could add to the severity of the disease.

Because the signs of ECG, loss of appetite and mucus in the feces, are similar to that of mink virus enteritis (MVE), it can be easily confused with MVE, particularly in adults that have not been vaccinated against MVE.

There are laboratory tests to diagnose MVE. At the present time, mink coronaviruses can be detected only by demon-

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Coronavirus particle

From the Fur Rancher 70 (1990) 5-7

ECG ailment

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stration of virus particles by electron microscopy. Even then, we are not always certain because occasionally we can see coronavirus by electron microscopy in healthy mink on farms with no history of an ECG outbreak.

TRANSMISSION OF ECG

Susceptible mink can be infected either by direct or indirect contact with feces from infected mink. Although a fecal-oral route is the most-likely source of transmission, the rapid spread in some outbreaks suggests that airborne transmission may also occur.

It is possible that birds carry infected mink feces on their feet, thereby setting up new foci of disease on ranches or starting new outbreaks on farms with susceptible mink.

While there is some evidence that mink recovering from ECG infections carry the agent for months, the period of infectivity is unknown. Farmers have reported that the disease occurred within a relatively-short period of time after the purchase of new breeding stock. Some farms are known to be a continual source of the disease. We cannot make any firm recom-

mendations for its control. It is difficult to prevent the disease from entering a farm by quarantine measures.

Because thousands of mink are raised on a single acre of ground, it is doubtful that environmental sanitation could break the chain of transmission on farms. Vigorous cleaning using steam, sodium hydroxide, and formalin has not been unsuccessful in preventing outbreaks of the disease.

STUDY OF A NATURAL OUTBREAK

On Dec. 18, we orally exposed five mink to ECG. These mink were housed in a small building located about one mile from the sheds where our stock mink were maintained. Five days after exposure, all five mink showed diarrhea.

The veterinary student who cared for these mink took the usual precautions to prevent disease transmission, changes of coveralls, disinfection of boots, etc. The student made daily trips to the feed room located at the main facility.

On Jan. 15 of the following year we observed cases of ECG in a shed at our main facility, about two miles away. We assume from the initial outbreak of cases that exposure probably occurred about Jan. 10. New cases appeared almost daily throughout January. A peak of 60 new cases was observed on Jan. 17 (Day 3 of the outbreak).

The disease spread throughout 210 predominantly black mink; only four mink showed no signs of the disease. The explosive nature of the outbreak is shown in the accompanying illustration. We believe that the source of infection in this outbreak was the veterinary student who

cared for the experimentally-infected mink. The outbreak on our farm demonstrated the highly-infectious nature of the disease. Many outbreaks do not exhibit such an explosive nature. The disease occurs in clusters in different sheds over a period of a couple of months.

VACCINE PROTECTION

Several years ago, a formalin-inactivated vaccine was made from the tissue of acutely-infected ECG mink. Because of the danger of transmitting Aleutian disease with the vaccine, the use of such vaccines cannot be justified.

There will be no commercial vaccine until the cause, most likely a coronavirus, can be grown in the laboratory using tissue cultures. Mink that have had the disease appear to be immune to second attacks.

Mink infected in the spring do not show signs of the disease during the following late summer and fall when the kits are susceptible. Of course, the age factor independent of active immunity must be taken into consideration. It is highly likely that the iceberg phenomenon occurs in this disease.

In other words, while only a few animals become sick (tip of the iceberg), many mink are infected subclinically. This becomes a real problem when attempting to do experimental work because the researcher never can be sure that he/she is dealing with mink that are susceptible to ECG.

TREATMENT & SUMMARY

When an outbreak occurs, clinically-infected mink are treated for secondary



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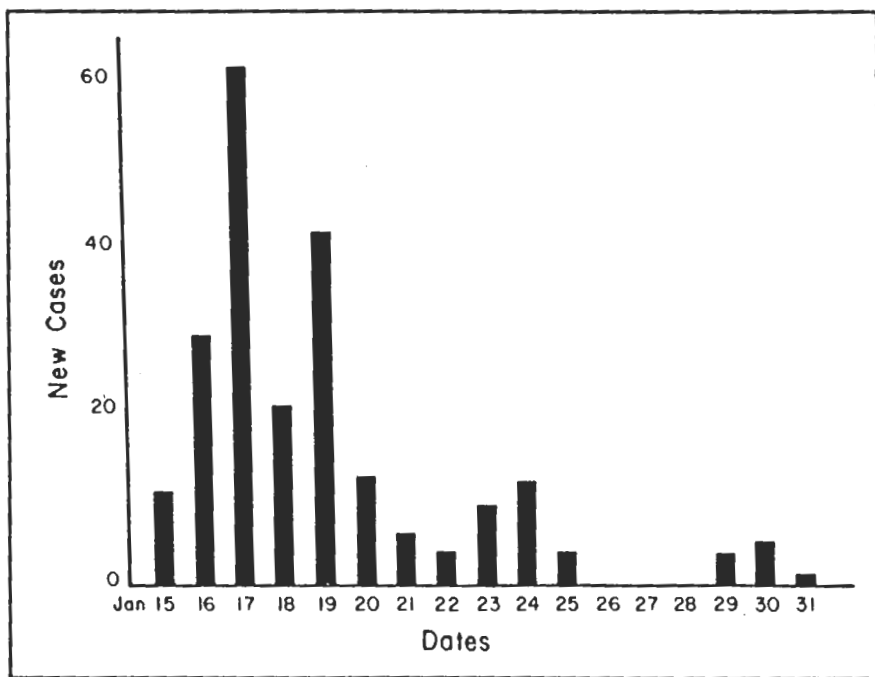


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THIS FIGURE SHOWS distribution of cases during an outbreak of epizootic catarrhal gastroenteritis on the experimental mink farm at Washington State University. ■

bacterial infections. We feel that the coronavirus "paves the way" for bacterial invasion. Since the mink go off feed, neomycin often is advised to be added to the water cups.

Neomycin and Terramycin may be added to the wet feed. Check with a veterinarian who is familiar with mink diseases for specific instructions on how to use these antibiotics.

Epizootic catarrhal gastroenteritis is a common disease of adult dark mink in which coronavirus is believed to play a role. At the present time, there are no vaccines or specific treatments available. The disease agent is likely transmitted from ranch to ranch by healthy carriers.

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State lieutenant head Wisconsin Fur speaker

When the Wisconsin Fur Breeders association held its 68th annual meeting at Marathon, Scott McCallum, Wisconsin's lieutenant governor, was the featured speaker. He stressed that it is important that the entire agenda of the animal rights movement be exposed to the general public. He also stated that natural products, including fur, are much superior to synthetics from an environmental standpoint.

McCallum also pointed out that animal activists are largely urban and have little knowledge about farm animals and wildlife. He concluded his remarks by stating that it is the responsibility of government to provide an environment that allows responsible agriculture to flourish and to continue to allow people a choice in the products they use.

Tim Sullivan of the Fur Farm Animal Welfare Coalition reported that 90 per cent of mink produced in the United States are from certified farms. He said the coalition plans to stress environmental pluses of fur in the coming year.

Tricia Ann Luedtke, the current Miss Wisconsin, entertained by playing the piano. She thanked WFBA for the Lunarine mahogany mink jacket presented to her when she won the state pageant.

National Board President Skip Lea reported on the proposed excise tax on furs selling for \$5,000 or more. He outlined the history of the proposal and industry efforts in fighting it.

Harold DeHart, Wayne Short, and Robert Czech were re-elected to three-year terms on the board of directors. ■

Gallery of wild fur-bearers: marten

The marten that are found in Siberia and China are called by the fur trade "Russian Sable," while a similar animal that is confined to Canada usually is described as marten or sometimes as Canadian sable.

The baum marten is found distributed widely in Europe, Asia Minor, and the Himalayan regions. The stone marten has a similar range to that of the baum marten except that it is not found so far north. A type of marten found in Japan is known to the trade as Japanese marten.

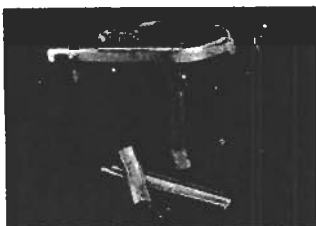
With the exception of the stone marten, the animals generally shun proximity to man and live in the depths of forests.

Larger than the ermine but considerably smaller than its cousin the fisher (*AUGUST FUR RANCHER*, page 15), it is a restless and agile animal. Almost, but not entirely, arboreal in its habits, it easily can catch the squirrel, which is its favorite food. It also eats other small mammals, birds, and sometimes insects and berries.

Except at mating time, it is solitary and although fierce is not a wanton killer.

From "The HBA Book of Furs," published years ago by the old Hudson's Bay & Annings, Ltd., of London, England. ■

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