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Hog Cholera

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In recent years hog cholera has been very prevalent in Missouri. It is the most important disease of hogs and probably causes heavier losses than all of the other swine diseases combined. The extent of the disease is directly proportional to the hog population. Traffic or movement of swine increases the number of cases. It has been reported by the Bureau of Animal Industry that the losses average at least $20,000,000 a year in the United States, and in peak years may run even as high as $65,000,000.

When hog population is increased and the physical equipment on a farm is crowded one may naturally expect an increase in the amount of disease. Unless proper precautions are taken, losses from hog cholera infection may be very great. Although this disease usually reaches its greatest height during the fall months, it may occur at any time of the year.

CAUSE

The agent causing hog cholera is ultra-microscopic in size—meaning that it cannot be seen with high-powered microscopes. It is usually designated as a filtrable virus because it passes through porcelain filters. This causative agent may be found in the blood of animals sick with the disease, as well as in the organs and body excretions, particularly the urine. Infection gains entrance to a hog's body by way of the digestive tract with contaminated feed and water. The only place the virus will grow and multiply is in the body of the live hog. So far it has not been found practical to cultivate it in the laboratory.

Hogs of all breeds and ages, and both sexes, are susceptible to this disease. Young hogs are more susceptible than older hogs, and particularly is this true in areas where hogs have been raised continuously for a great many years. Although all breeds of hogs are susceptible, it appears that the better bred animals have the disease in a more severe form if they once become affected.

Hog cholera virus is usually introduced into a herd through the purchase or addition of new animals. Infective material may be carried from one farm to another on the shoes of attendants, or on the wheels of farm vehicles, such as wagons and trucks. It may also be carried short distances by streams. Dogs and foxes have

been charged with carrying the infection from one farm to another. Trucks, shipping crates, and railroad cars that have contained infected animals are particularly dangerous in the spread of the disease unless they have been properly cleaned and disinfected.

Because of the practice of many hog raisers selling their hogs on the market if any in the herd show illness, most of the public yards are badly contaminated. Any hogs going through a public yard or loading place are very likely to be exposed to the disease.

SYMPTOMS OF HOG CHOLERA

The length of time between exposure to a disease and the appearance of the first symptom is known as the period of incubation. The period of incubation for hog cholera is usually from three to seven days, but may be somewhat longer than this. The increase in length of time may be due in some cases to the fact that the hogs did not pick up the infection at the time they were first exposed. Usually, in outbreaks of hog cholera, only one hog is affected at first; then this hog exposes the rest of the herd, with the result that a large number of hogs sicken after a period of about two weeks has elapsed.

Always the first symptom in this disease is an elevation of temperature, but since this may occur from one to three days before other symptoms are noticed it is nearly always overlooked by the hog owner. Temperatures of 104° to 106° F., or even higher are not uncommon.

The first symptom usually noticed by the hog owner is loss of appetite. The hog may come to the feed trough as usual but is easily satisfied, or it may refuse to come to its feed unless urged to do so. There is a tendency for the sick animals to hide in the litter or remain in darkened corners. When forced to move out of these places they move with reluctance and may stand with back arched and the head down after moving only a few steps. The eyes are filled with a sticky discharge and sometimes the eyelids are glued together.

In the first stages of the disease there is a tendency toward constipation but this is followed in a few days with diarrhea. The hogs lose weight rapidly and have a gaunt, tucked-up appearance. The thinner skinned parts of the body, such as the underside of the neck and abdomen, the inner side of the front legs and thighs, may show areas which are dark red or even purplish in appearance. If the lungs are affected there will be a cough and difficulty in breathing. As the disease progresses the animals develop a weak, wobbly gait, particularly noticeable in the hind legs. They finally lie on the ground

exhausted and usually die in convulsions. The symptoms of this disease are so variable that any one hog may not show all the symptoms described. When several hogs are affected all of the symptoms described will be observed.

The disease occurs in two types—acute and chronic—differing mainly in the length of time the animals are sick. Generally the first cases that appear in an outbreak of hog cholera will be of the acute type, in which death takes place in seven days or less after the animal is first affected. The chronic cases last longer and the animals may be sick for two or three weeks, or even show evidence of disease and live for several weeks or months before they die. Not all hogs with cholera will die, but a few will make recoveries, while others make only incomplete recoveries.

The death loss from cholera is quite variable but one may expect the following to take place: On farms or in communities where cholera has not been present for the past few years and then breaks out in a herd, the mortality rate is likely to be very high—even approaching in some cases 80 to 90 per cent. On farms or in communities where the disease has been more or less prevalent year after year the losses from cholera seldom run over 30 to 40 per cent, and may be considerably lower. Sort of Immunity

CHANGES OBSERVED AFTER DEATH

There are certain changes in body tissues observed on postmortem examination which aid in the diagnosis of hog cholera, but sometimes it is difficult even for trained veterinarians to diagnose the disease from the lesions or changes observed after death. It may be necessary to examine more than one animal to be sure of a diagnosis and it may be necessary to kill one of the visibly affected animals in order to arrive at a proper diagnosis.

The most outstanding change observed after death is the appearance of small hemorrhages, which vary from pin point to a pin head in size, or even larger. These hemorrhages may be few or very numerous. They, as well as other typical lesions, may be entirely absent in the very acute cases of the disease. In other words, in some animals death may take place so quickly that there is little or no tissue change to be observed by the naked eye.

Hemorrhages are particularly noticeable in the kidney, both under the capsule or connective tissue covering, and on the inner cut surface of the kidney structure. They vary from one or a few up to a number that makes the kidney have a turkey egg appearance. These small hemorrhages may also be found on the inner surface of the

bladder, in the lungs, in the larynx, and in the mucous membrane of the stomach and intestinal tract. When the lungs have been affected, lesions of pneumonia will also appear. In cases of somewhat longer duration the so-called "button ulcers" may be observed in the stomach and intestinal tract. Since postmortem changes in this disease may be confused with changes occurring in other diseases, postmortem examination should be conducted by a graduate veterinarian.

TREATMENT OF SICK ANIMALS

Unfortunately, there is no drug treatment of any kind which is of significant value in treating animals already sick with hog cholera. Some benefit may be expected in the early stages of an outbreak when large doses of anti-hog cholera serum are administered. It appears to be a waste of money and labor to attempt to treat hogs which are already showing well developed symptoms of the disease. Since curative treatment is of questionable value, it is best to place most of the emphasis upon preventive measures.

PREVENTION OF HOG CHOLERA

If hogs can be properly protected from exposure to hog cholera virus they could be raised free of this disease without resorting to vaccination. Since this is difficult on the average farm or in the feed lot, the best thing to do is to immunize the animals. This can be done by proper vaccination. One of the best ways to prevent heavy losses would be to have an accurate early diagnosis made by a veterinarian when the first sick hog is noticed, rather than wait until large numbers of the animals have become exposed or are showing symptoms. If a diagnosis is made early, heavy losses can be prevented and most of the herd saved by vaccination.

The use of anti-hog cholera serum alone gives only a passive immunity which may last for a short time, but which cannot absolutely be depended upon for much over two weeks. The injection of anti-hog cholera serum with potent hog cholera virus, but given in different parts of the body, will develop an immunity in hogs usually sufficient to protect them against ordinary field exposure for the life of the animal. This is the so-called double treatment.

When the disease is present in a herd before vaccination is started, larger doses of serum are absolutely essential. Many veterinarians increase the dosage under these conditions to 1½ or 2 times the normal dosage recommended on the label of the container. Extra serum does no harm. Smaller doses of serum can be used with safety only when the vaccination is done while the herd is still healthy

and has not been exposed to hog cholera infection. Strict sanitary measures should be taken when hogs are vaccinated. To avoid infection, the animals should be kept in clean pens or turned on pastures free from mud wallows.

Hogs may be vaccinated at any age but the cost increases with increased age and weight. For economy, if for no other reason, vaccination should be done while the hog is small, or about weaning age. When properly vaccinated at this age, pigs will usually develop a lifetime immunity against the usual field exposure. Some veterinarians prefer to vaccinate just before weaning time, while others recommend its use just after weaning. Both methods seem to develop satisfactory immunity. Pigs nursing immune sows are not always resistant to the disease but they generally carry some passive immunity which has been transmitted through the milk of the mother. Since passive immunity rapidly disappears, however, after weaning, it is best not to defer vaccination too long. Occasionally, when subjected to very virulent exposure, nursing pigs will develop the disease even though the mother is immune. In outbreaks of this kind it would be advisable to have the pigs vaccinated at an early age.

The advisability of vaccinating pregnant sows is often questioned. If it is a matter of keeping the sow from dying with cholera she should be vaccinated whether pregnant or not. It is best to plan so it is not necessary to vaccinate pregnant animals, particularly in the last half of the gestation period. It is possible to use serum alone on pregnant sows during the last few weeks of gestation and then give them the double treatment along with the pigs after the pigs are born. When herds are kept properly immunized it never becomes necessary to vaccinate pregnant animals.

It is not safe to feed uncooked garbage or kitchen refuse to hogs unless the hogs have been immunized against cholera. This kind of feed is potentially dangerous, as it may contain scraps of uncooked meat, bacon rind, trimmings, etc., which are always considered questionable.

CARE FOLLOWING VACCINATION

Even though hog cholera vaccination develops a very satisfactory form of immunity, it should be kept in mind that such immunity may break down under drastic conditions. Further, unless hogs are properly managed the maximum amount of immunity would not be obtained, even though vaccination had been properly carried out.

Sudden changes in feed should always be avoided whenever possible, and especially is this true within the first two or three

weeks following vaccination by the so-called double method. It is best to reduce the grain feed at least one-half, particularly when the pigs are on heavy feed. This reduction in grain is advisable for at least two weeks, After that, the grain ration can gradually be increased—getting the animals back on full feed not less than three weeks after vaccination. In their effort to fatten hogs as rapidly as possible, most hog raisers are inclined to put their animals on full feed too soon after vaccination.

All operations, such as castration, ear notching, and ringing, should be avoided at the time hogs are vaccinated for cholera. If these operations cannot be done long enough before vaccination for the wounds to heal by the time vaccination is given, it is best to wait two or three weeks after the administration of hog cholera serum and virus. Some hog raisers claim to have vaccinated and castrated at the same time without any losses, but sooner or later they have generally experienced some bad results following this practice.

When swine have been poorly managed or mismanaged following vaccination and bad results from the so-called "serum breaks" have occurred there is a tendency for the herd owner to blame the product used. Hog cholera serum and virus are produced under federal supervision and federal license, and the products on the market at the present time are dependable. Improper handling of serum and virus between the time it is produced and the time it is used on the hogs should be avoided. The virus should be potent, and along with the serum should be kept cool (ordinary refrigerator temperature) until it is used.

Hogs that have received the double treatment or anti-hog cholera serum and virus will eliminate virus for two to three weeks following vaccination. This virus is eliminated largely in the urine of the hogs. Pigs that are not immunized against cholera should not be put in the same pen or come in contact with pigs that have been recently vaccinated. After a 30-day period there is comparatively little danger of vaccinated hogs eliminating virus from their systems if they have remained healthy during this period.

Hogs that are sick with cholera should be isolated to avoid further spread of disease and all hogs that have died from the disease should be destroyed by complete burning, or they should be covered with lime and buried deeply. It is not safe to put unvaccinated pigs in pens which have recently been occupied by hogs sick with cholera, unless the pens are thoroughly cleaned and disinfected. Pastures become relatively safe after a few months if hogs are not allowed access to them. The length of time it takes a pasture

to clear up under natural conditions is somewhat variable, but this will be much quicker during the summer months than in the winter months. Probably under average conditions most pastures in Missouri become reasonably safe in from 3 to 6 months. Since livestock, other than hogs, are not susceptible to hog cholera infection, these animals may use such pastures with safety.

In the control of hog cholera, cleanliness of hog pens and lots, good fencing, proper feeding practices, good housing, and the occasional disinfection of quarters are important factors to be considered.

Newly purchased hogs should be held in isolation for a period of 30 days. This is always a good practice and safeguards the home herd against disease, particularly cholera and other infectious diseases.

HOG CHOLERA VACCINES

For some time veterinarians have been using hog cholera vaccines to immunize swine instead of hog cholera serum and virus. The very distinct advantage in this form of immunization is that no live virus is introduced into the herd or upon the premises. There is no systemic reaction following the use of vaccine and its use is now internationally recognized to be of value in establishing active immunity against cholera. The use of vaccines however is purely a prophylactic measure but there are some limitations to its use which will be outlined in this bulletin. The two forms of hog cholera vaccine now in general use are known as crystal violet vaccine and tissue vaccine (B.T.V.). Since neither of these two products contains any live virus, they can be used with safety and with no fear of causing hog cholera. On some farms the use of virus has been entirely discontinued.

If this form of immunization is to be used there are certain limitations to keep in mind and some precautions that must be taken in order to secure the desired results. The immunity produced by the vaccine can not be depended upon until three weeks have elapsed following vaccination. The vaccine should not be used on a herd in which there are hogs sick with cholera. It should not be used on herds in which there are hogs that have received hog cholera serum and virus within the previous three or four weeks. It should not be used on herds known to have been exposed to hog cholera within recent weeks. Vaccine should not be used on herds which have an unknown history regarding exposure to hog cholera virus. It should not be used along with hog cholera serum as this serum interferes with

the production of immunity by the vaccine. If the two are used together the hogs should be revaccinated 30 days later with vaccine alone. Pigs should not be vaccinated with the vaccine for two or more weeks following weaning. If pigs receive vaccine before weaning, a second vaccination should be given two or more weeks after weaning. It has already been stated that immunity is not established until three weeks after vaccination; therefore this product should not be used on hogs that will be exposed within three weeks following its use.

The vaccine does not confer as lasting immunity as does hog cholera serum and virus but it does produce a strong resistant immunity for at least 6 to 8 months, which usually is long enough to get the pigs on the market. If the pigs so vaccinated are to be kept as breeding stock then they should be revaccinated at the end of 6 months and once every 12 months thereafter.

It has been proved that virus can be eradicated from a farm by the proper and continuous use of hog cholera vaccine. Best results are obtained when only healthy pigs are vaccinated.

In any form of immunization, unthriftiness, concurrent infections with other disease, and endoparasites interfere with the immunity produced. For this reason, the vaccine should be administered by a graduate veterinarian so that he will be able to determine and appraise such conditions. Hogs which are receiving uncooked garbage should not receive vaccine.

OTHER DISEASES RESEMBLE HOG CHOLERA AND COMPLICATE CONTROL

There are several other diseases which may resemble hog cholera or may even occur at the same time some of the hogs are sick with cholera. This tends to complicate the diagnosis. When other diseases are present in a herd at the time it becomes infected with hog cholera the losses from the latter disease are likely to be much higher.

Probably one of the most serious diseases in hogs, besides cholera, is swine erysipelas. This disease resembles hog cholera very closely in both symptoms and lesions. Only within recent years has swine erysipelas been important in this state but it is spreading at the present time. Most of the cases of swine erysipelas now are found in the northwest part of the state, or at least in the northern half, but unless proper precautions are taken this disease will gradually spread to other parts. It can also be controlled by vaccination. Vaccination for swine erysipelas should not be used, however, unless this disease has been definitely diagnosed in a herd of hogs.

Since this latter disease is so easily confused with hog cholera,

the services of a competent veterinarian should be obtained in order to arrive at an early correct diagnosis, and the herd treated accordingly. Other diseases, such as swine flu, anthrax, necrotic enteritis, pneumonia and pleurisy, enteritis, and the presence of worms have in some instances complicated the diagnosis of hog cholera.