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HOG CHOLERA AND ALLIED DISEASES

By Geo. H. Glover

Colorado Agricultural College
Colorado Experiment Station
Fort Collins

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HOG CHOLERA AND ALLIED DISEASES

By Geo. H. Glover

The purpose of this bulletin is to meet a demand for practical information respecting hog cholera and allied diseases, their recognition, and first aid measures looking to their control.

A characteristic feature of hog cholera is its periodic appearance, and just now it is spreading rapidly in many of the states. The classical hog cholera as a conception of former days is no longer seen and we now have to deal with several mixed infections that either accompany cholera or follow closely in its wake. The losses from this disease are enormous, and this in face of well-established facts concerning its control by timely sanitary measures, quarantine and vaccination.

Delayed diagnosis, or recognition of the disease, is no doubt responsible, more than any other one factor, for the repeated outbreaks and heavy losses. **Hog cholera is the only common disease among hogs in this country that spreads rapidly and is highly fatal.** For this reason farmers and veterinarians should always go on the assumption that every outbreak of disease among hogs that is spreading rapidly and has a deadly aspect, is cholera, and should immediately proceed on that assumption without waiting for a definite diagnosis based on characteristic symptoms and postmortem findings.

Specific Cause

The specific cause of hog cholera is a virus that will pass thru dense filters. This virus is the immediate or exciting cause of cholera. Indirect or predisposing causes are such things as neglect, exposure, parasites, unbalanced food ration and insanitary conditions. In other words, such things increase their susceptibility to cholera as it does to all other diseases. We cannot grow a crop of potatoes without planting potato seed, and no more can there be cholera in hogs without the implanting of the specific germs or virus in the body of the animal. However, the fact remains that no matter how thrifty hogs may be they are nevertheless highly susceptible to cholera.

Cholera Dissemination

The most common method of introducing hog cholera into a neighborhood is thru the importation of breeding or stock hogs that carry the infection. For all practical purposes it must be assumed that all stock cars and stockyards are infected. There

is no other way in which hogs are so sure to contract cholera as by actual contact.

The next most common means of conveying the infection is running water, like rivers and irrigating ditches. This applies of course in a special way to conditions in Colorado. Hogs that have access to the upper reaches of an irrigation ditch endanger hogs down stream for many miles.

No doubt new centers of infection result from garbage that contains pork rinds from infected hogs, and entrails from chickens shipped from cholera infested farms.

Presumably cholera is also spread by birds, especially pigeons and magpies, by the wheels of vehicles, on the feet of itinerant hog buyers and inquisitive neighbors, and by animals allowed to run at large.

Lastly, and perhaps the most serious aspect of hog cholera control, is the dissemination of the disease by the careless use of virus in vaccination.

Symptoms

The length of time between exposure and the appearance of the first symptoms is on the average 6 to 10 days. The symptoms will vary according to the type of the disease. Fever always goes in advance of outstanding symptoms and one should always be suspicious when hogs "go off feed" as indicated by trailing the herd when coming to the feed trough or remaining buried in their litter. The first symptoms usually noticed are loss of appetite and chills. Soon they manifest marked weakness in their hind quarters, the eyes become inflamed and there is gumming of the eyelids. First there is constipation followed in a day or two by diarrhea. Breathing is labored and usually there is a persistent cough. Reddening of the skin on the belly and inside of the thighs is usually seen. Unfortunately a positive diagnosis cannot always be made on living animals, and for this reason much valuable time may be lost. In peracute cholera, most often seen at the beginning of an outbreak, they sometimes die within a few hours without having had time to develop the characteristic symptoms or lesions. In chronic hog cholera, usually following the acute, there is a persistent cough, poor appetite, emaciation, diarrhea and indications of pneumonia.

Mixed Infections

Pure hog cholera probably never exists. What we know as hog cholera these days is a disease process caused by mixed infection. If it were pure cholera the losses would not be so great.

The disease in itself is not so very malignant but becomes exceedingly fatal as a result of secondary inflammatory processes in the intestines and lungs.

The intestinal complications seem to invariably follow in the wake of hog cholera. The microorganism responsible for this condition (Salmonella suipestifer) was at one time thought to be the specific cause of hog cholera, but it was later repeatedly demonstrated that the disease could be produced artificially by the filtrate of cholera blood. In other words, after the blood had been forced thru dense filters and the S. suipestifer with all other bacteria held back, the filtrate still contained an ultra visible virus that, when inoculated into hogs, would cause cholera.

The suipestifer disease may appear independent of cholera, in which case it is known as swine dysentery, pig typhoid, paratyphoid, necrotic enteritis, etc. This will be treated later in the discussion on necrotic enteritis.

The secondary inflammatory processes in cholera involving the lungs is usually a manifestation of swine plague which is the same thing as hemorrhagic septicemia. This pneumonia complication is commonly seen in cholera, save in the peracute type (septicemic) when the animal dies before pneumonia has had time to develop. The almost constant appearance of these secondary infections in cholera makes it seem probable that both the paratyphoid and swine plague organisms are normally present in the intestinal tract of hogs. They ordinarily do not cause disease but may do so when the resistance of the animal is lowered by an attack of cholera, by exposure, improper feed, parasites, cold or various infections. It seems that hog cholera lowers the resistance in a particular or unusual way that renders them especially susceptible to these secondary infections.

Control Measures

Prevention of hog cholera is the principal thing and many farmers have maintained healthy herds even when adjacent to cholera-infested farms. When cholera is threatening, watch your hogs, maintain a strict quarantine, keep people and animals away from them, and hogs brought to the farm should be kept in isolated quarters for at least 3 weeks. However, when cholera is threatening the security of your herd to this extent, vaccination should not be delayed.

When cholera is suspected in the herd, immediate action is imperative. Aside from the curative value of large doses of serum, under certain conditions, there is no known cure for hog cholera. Time is the essence of the contract in this instance. If

the herd is vaccinated on the day, or the day following the first appearance of the disease, most of them can be saved. If treatment is delayed a week or more there is the question as to whether vaccination is worth while since most of them may be expected to die regardless of treatment.

Naturally the first thing to do is to call a veterinarian and demand immediate action. If the diagnosis of hog cholera is affirmed, the office of State Veterinarian at Denver should be notified. Should you be in a remote district where veterinary service is not immediately available, communicate with the state veterinarian by telephone or telegraph. Failing to reach him get in touch with the United States Bureau of Animal Industry, Federal Building, Denver. The veterinarians at the agricultural college do not go into the field to vaccinate hogs but always stand ready to assist in every other possible way.

Hogs from a cholera-infested herd should not be shipped to market. By the time they reach their destination some of them will be dead, others sick, and the salvage will be less than it would be if they were kept on the farm and immediately vaccinated. Hog cholera can never be controlled until this practice is legally prohibited. The highways over which the diseased hogs are transported are very sure to become contaminated by the excreta containing the cholera-producing germs.

Hogs that are not thrifty should not be vaccinated; the consequences of such a mistake are very sure to be unsatisfactory. In the vaccination of healthy herds, in cholera-infested districts, the double treatment (serum and virus) is recommended. **The important thing in this connection is the amount of serum used.**

Economy in serum too often proves to be the height of extravagance. Larger doses of both serum and virus are given than formerly.

In the vaccination of infected herds the procedure is different. The temperature of each hog is taken. Those that show a temperature around 104°F. should be given the serum. The assumption is that they will get sufficient virus by contact with sick animals to insure them a lasting immunity. Some contend that it is better to give the double treatment in this class of hogs in order to insure a uniform and lasting immunity. Hogs that have a temperature of 106-8°F. had better be destroyed, since there is no chance for their recovery, and they simply increase the menace of the herd. Those hogs that show only a slight fever should be given double doses of the serum alone with the hope of saving at least some of them.

Following vaccination, and the disposal of hopelessly infected hogs, attention should be directed to cleaning and disinfecting the premises. **It is far better to burn hogs that are slaughtered for cholera than to bury them.** The carcasses are quickly consumed by a fairly hot flame. If they are buried they should be placed deep with several buckets of quicklime covering them. All litter and waste from the pens should be burned and if possible the ground in the hog lots should be plowed. To make the job of disinfection more thoro, the woodwork of the pens and hog houses might be whitewashed and quicklime used freely in the pens and yards. A 3 percent solution of compound cresol is a very reliable disinfectant for general use. The hogs that remain and have been vaccinated should then be provided with dry, clean and comfortable quarters. In well-known cholera districts vaccination of all pigs at weaning time is a cheap insurance if practiced consistently.

Necrotic Enteritis

Infectious necrotic enteritis probably causes a greater loss in the aggregate than does hog cholera.

Pig typhoid, bacillary hog cholera, swine typhus, intestinal necrobacillosis, swine dysentery, paratyphoid and necrotic enteritis are terms that probably relate to one and the same disease. This disease which appears both associated with hog cholera and independently must not be confused with coccidiosis which is sometimes mentioned as infectious enteritis of swine.

Pigs weighing from 30 to 50 pounds are most susceptible, and the quality and nature of the food seem to have very little influence upon the prevalence of the disease. The heavy losses that occasionally follow vaccination for cholera are largely due to necrotic enteritis.

It seems to have been demonstrated beyond a reasonable doubt that the specific microorganism, S. suipestifer, is the causative factor in infectious necrotic enteritis of swine. It occurs mostly as either an acute or chronic affection.

In the acute form (septicemia) there is a high temperature, inappetence, arched back, "blue belly" and diarrhea. This type is very fatal. In the chronic type, which is most common, the animals first appear dull, are less active, and have a diminished appetite, altho this may not be noticed by the caretaker. Digestive disorders soon appear, manifested by a persistent diarrhea. They appear unthrifty, stand around with their heads down, the hind quarters weave from side to side from weakness, and they finally die from emaciation and exhaustion, or a few may, after hanging on a long time, make a questionable recovery.

Control Measures.—All curative measures have been very discouraging. The acute cases are especially hopeless because they do not live long enough to respond to treatment. In chronic cases, those that appear hopelessly diseased should be destroyed. The diet should be regulated and concentrated food withheld. A liquid or slop diet of ground oats, barley or shorts, is preferable. This had better be made alkaline by adding caustic soda or lye in the strength of 1 pound to 20 gallons. In this case, as in all cases of infections among animals, the sick ones should not be removed from the well ones, but on the contrary, the well ones should be taken away from the sick ones and placed in new, clean quarters. In the summer time it is best to place them in an alfalfa pasture where there is shade and an abundance of fresh water.

This disease is not highly infectious like hog cholera and can usually be controlled by the comparatively simple methods suggested. The virus appears to die quickly when not replenished by the presence of diseased animals. Never vaccinate for cholera when there is any indication of necrotic enteritis in the herd.

Swine Plague

Swine plague and hemorrhagic septicemia of swine are synonymous terms. Swine plague occurs both as an independent disease, and in association with other disease, especially hog cholera. Unlike cholera it does not spread rapidly from hog to hog or from farm to farm. It is caused by a specific germ, Pasteurella suisepticus, (Bacillus suisepticus) which is a variant in a group of organisms that cause chicken cholera, snuffles in rabbits, tularemia in man, bubonic plague in man, hemorrhagic septicemia in cattle, horses and other animals. As an independent disease in hogs it is not of the highest importance, but as a secondary infection in hog cholera, it contributes a disease process of the lungs which renders hog cholera the most fatal of all diseases of swine. The spread of pure swine plague is slow and in this respect is not to be compared with cholera. Swine plague bacilli are commonly found in the intestinal tract of healthy hogs. It is now believed that these normally harmless organisms may become pathogenic under certain conditions of lowered resistance. Possibly the presence of hog-cholera infection lowers the resistance in a particular and direct way. Again we are confronted with the proposition that an ample food ration, well balanced, combined with good care, is the best kind of insurance against disease.

In the San Luis Valley it has been noted that many cases of swine plague follow exposure during cold, rainy weather in the fall.

Medicinal treatment, according to our present knowledge, is without effect, save that highly potent serum will favorably influence the disease. Prevention is of vastly more importance than treatment. Animals not showing indications of the disease should be immediately removed to clean quarters. The stable, pens and feeding trough should be disinfected. These measures seem justifiable even tho the danger of infection is not great.

Biologics when appropriately used may be useful as a control measure. Among these, aside from the specific serum, may be mentioned the mixed infection bacterin, and hemorrhagic septicemia aggressin. The use of biologics should always be left to the judgment of the veterinarian.

A distinct form of chronic pneumonia affecting very young pigs has sometimes been spoken of as a form of chronic swine plague. This disease has also been called enzootic pneumonia of pigs, pig disease, pig cough and cement disease. There is very little support for the view that the acute swine plague has changed into a chronic catarrhal pneumonia. The specific cause of pig pneumonia has yet to be determined. Frequently in a litter one pig after another, only a few days old, will begin to cough with a thumping respiration, and finally die. The incidence of this disease appears to be the association of untoward conditions such as cold and damp pens, unsuitable feeding of the mother, lack of sunshine and possibly inbreeding.

Hog "Flu"

Hog flu, or perhaps more appropriately, infectious bronchitis of swine, considered from a purely economic standpoint, does not belong in the same category with hog cholera and infectious necrotic enteritis. It derived its name "hog flu" by reason of the fact that it was first recognized in the fall of 1918 when human influenza was sweeping the country and the symptoms were so much alike as to attract attention.

The onset is sudden and the symptoms are severe. In 1 or 2 days the entire herd may be affected. The most characteristic symptoms are loss of appetite and cough. They have high fever and difficult respiration. They are usually sick about 1 week and then make rapid and uneventful recovery. They lose considerable weight and this is really the most serious aspect of the disease.

In some instances the disease is complicated with pneumonia and a fatal termination may be expected. The total loss rarely exceeds 1 to 3 percent.

There appears to be no immunity acquired from having the disease, which precludes the possibility of protecting herds by vaccination. A specific treatment has not been found, and no treatment seems to be indicated, further than providing dry, comfortable quarters and reducing the ration.