



University of Idaho
College of Agriculture
Cooperative Extension Service
Agricultural Experiment Station

David P. Olson, Extension Veterinarian
Gene W. Gibson, Extension Animal Scientist

Enteric Diseases of Swine

LIBRARY

NOV 3 1978

UNIVERSITY OF IDAHO

TRANSMISSIBLE GASTROENTERITIS

Most diseases of the digestive system (enteric diseases) of young pigs are costly. Transmissible gastroenteritis (TGE) is especially important because it is highly contagious and causes substantial death losses in young pigs. The disease was first described in 1946 in the United States and subsequently has been recognized in major swine producing countries of the world.

Cause

TGE is caused by a corona virus. In infected swine, greatest numbers of the virus are found in the upper small intestine. The virus is also found in other parts of the intestinal tract and other body organs. Outside the animal body the virus remains reasonably stable when frozen but deteriorates rapidly at higher temperatures and in direct sunlight.

TGE virus has also been isolated from dogs, foxes and starlings. These species may act as carriers of the virus, spreading the infection to susceptible pigs. Other vectors of the virus include contaminated livestock and feed trucks and the clothing and footwear of persons visiting a farm.

Clinical Signs and Pathologic Changes

Most outbreaks of TGE occur between November and April during the late fall and spring farrowing seasons. The disease may occur more often, particularly in herds that practice multiple and continuous farrowings. The disease affects pigs of all ages but is most severe in piglets less than 10 days of age. The disease in young piglets appears in 18 hours to 3 days after exposure and is characterized by a sudden onset of vomiting, severe watery diarrhea, loss of appetite, weakness and depression, rapid dehydration, coma and death. The diarrhea fluid often contains

small curds of undigested milk and has a characteristic offensive odor. The disease spreads rapidly and within 2 to 3 days most susceptible piglets are infected.

Affected piglets less than 10 days of age will die in 2 to 7 days after onset of clinical signs. The severity, duration and death losses decrease with an increase in age. Most suckling pigs over 3 weeks of age will survive but often will remain stunted and unthrifty for a time. The disease in growing-fattening hogs and in sows often goes unnoticed except for a transient inappetence and diarrhea. Occasionally, however, affected sows will vomit and also have a loss of appetite, severe diarrhea and decreased milk flow.

Exposure occurs by oral ingestion and by inhalation of airborne viruses. Once swallowed, the virus infects and causes massive destruction and sloughing of the epithelial cells lining the small intestine. Normal intestinal structures and functions are also severely altered, leaving them unable to absorb nutrients and causing loss and accumulation of large quantities of body fluids into the intestine.

The visible pathologic changes in severely affected animals include dehydration, presence of curdled milk in the stomach and distention of the intestinal tract with yellow, watery and foamy, fluid-containing small milk curds. The wall of the intestine often appears thin and almost transparent. Pathologic changes in older animals are less severe and there is evidence of repair of damaged tissue during the recovery phase of the disease. Younger recovered animals often remain stunted and unthrifty while older animals return to normal health. Recovered animals may continue to shed the virus in the feces for up to 8 weeks. Thus, these animals may serve as a possible reservoir of infection by exposing other susceptible pigs.

Diagnosis

Diagnosis of TGE is most often made on the basis of herd history, clinical signs, rapid spread of the disease and the characteristic visible pathologic changes. The diagnosis can be confirmed by collecting serum samples for laboratory analysis and by submitting terminally ill pigs to a diagnostic laboratory for the fluorescent antibody test or virus isolation. Transmissible gastroenteritis must be differentiated from colibacillosis and clostridial enteritis. Herd owners should always contact their local veterinarian for assistance in diagnosing TGE and related enteric diseases.

Treatment and Prevention

No drugs are now available for use in animals to kill viruses directly and the TGE virus is no exception. Treatment of infected piglets less than 10 days of age under normal farm conditions has been disappointing and of little value. Infected pigs over 10 days of age should be weaned, particularly if the sows are also ill and suffering from decreased milk flow. Early weaned infected pigs should be placed in a clean, warm (90 to 90°F) and dry area and reared on one of the following artificial diets: (1) gruel consisting of water and a prestarter containing dried whole milk, (2) a good quality sow milk replacer, or (3) lamb milk replacer containing 20% fat.

Replacement fluid therapy is also helpful in combating the effects of dehydration, malnutrition and acidosis. This method of treatment will reduce the death losses somewhat. Using a fluid mixture containing sodium bicarbonate (1.2%) and dextrose (5 to 8%) mixed in sterile water, inject 60 to 80 milliliters aseptically beneath the skin at several sites, 2 to 3 times a day for at least 3 days. Best results are obtained when this treatment is started 24 hours after onset of clinical signs. Antibiotics and injectable B vitamins can be added to the fluid mixture. Fresh milk replacer and drinking water should also be available at all times. Consult your herd veterinarian regarding the best treatment procedures.

Several studies have been conducted to determine possible benefits of vaccinating pregnant sows against TGE to obtain protection of the newborn piglets through colostral antibodies. The highest and most persistent level of protective antibody in colostrum

and milk has been obtained by oral vaccination (artificial infection) of the pregnant sows with the virulent TGE virus. This procedure should be used with caution, however, since the disease could unintentionally spread to other groups of pigs. The inoculum could contain other infectious viruses and bacteria and the practice may promote development of a persistent TGE infection, particularly in continuous farrowing operations.

Piglets less than 3 weeks of age require a constant source of protective antibody in the milk since they become susceptible within 1 week after weaning. The duration of protective immunity in artificially exposed sows is variable but may persist for 9 to 12 months. Other routes of vaccination with the various vaccine types resulted in either partial or nonprotective immunity. One commercial vaccine currently available requires 2 intramuscular injections of pregnant sows and is only partially effective in inducing protective immunity. Recent studies have shown an improved response by an intramuscular followed by an intranasal vaccination with an attenuated live virus vaccine.

The benefits of direct oral exposure have led to the common farm practice of deliberately exposing pregnant sows to the virulent virus in the face of an outbreak. Best results are obtained by feeding the intestinal tracts and contents from piglets that have died of TGE to the sows at least 3 weeks before farrowing. Noninfected sows due to farrow in less than 3 weeks should not be exposed. They should be isolated from the rest of the herd. An attempt should also be made to avoid exposure through the subsequent farrowing and until the pigs are 3 weeks of age.

Other preventive management practices should include the following:

1. Isolate the swine herd from other potential animal carrier species.
2. Practice strict sanitation and do not allow visitors into the farrowing area.
3. Avoid introduction of new pigs that might be carriers of the TGE virus into a herd during farrowing.
4. Break the cycle of infection by changing from a continuous farrowing system to farrowing every 3 months or more.