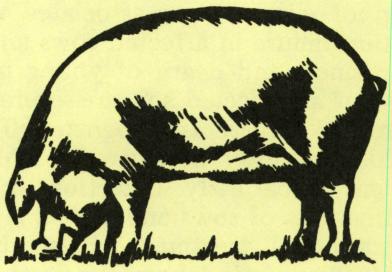
Current Information Series No. 388
April 1977

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

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

MMA (Mastitis-Metritis-Agalactia) Syndrome in Sows



Mastitis-metritis-agalactia (MMA) is a common and perplexing disease complex of sows that is characterized by partial (hypogalactia) or complete (agalactia) failure of lactation. Synonyms include lactation failure, no-milk, mastitis, metritis and postparturient fever. Approximately 15% of all sows are affected with MMA. Many young piglets die from starvation, crushing and diarrheal diseases which are conditions directly or indirectly associated with MMA. Thus, the major economic losses from the disease are seen in the litters from affected sows.

Cause

Over 30 different factors have been suggested as causes of MMA. The complex nature of the disease makes it apparent that several factors, including environmental stresses, infectious microorganisms and hormonal imbalances working together or independently of one another, may be responsible for causing the disease.

Experimental work has shown that toxins produced by certain molds and fungal organisms will reduce milk production when fed to sows. More importantly, several strains of *Escherichia coli* and *Klebsiella spp.* bacterial organisms are often associated with the more severe cases of mastitis and lactation failure; streptococcal, staphylococcal and other organisms are seen in less severe cases.

Unfavorable environmental conditions such as damp and cold quarters that chill the sows will often affect the mammary glands and thus enhance the chances for mastitis. Adverse environmental conditions will also cause alterations in levels of certain hormones associated with lactation performance. Alterations in levels of thyroid hormone have also been observed in sows affected with MMA. However, we do not know whether these various hormonal alterations are directly involved in MMA.

Overfeeding, lack of proper exercise, hereditary predisposition, vitamin E and selenium deficiency, breed and season of the year have all been suggested as factors contributing to the disease. MMA occurs under ideal as well as poor management conditions although most cases are seen in confinement farrowing operations and especially in new or remodeled facilities used for the first time.

Despite the large number of suggested causes, confusion still exists since researchers have not been able to reproduce the disease under experimental conditions with any degree of consistency.

Clinical Signs and Pathologic Lesions

The clinical signs in affected sows are marked more by variability than by consistency. The signs usually appear 1 to 3 days after farrowing. Some affected sows show signs of general infection. Others show evidence only of mammary gland involvement and metritis. In all cases, however, milk production is reduced or completely absent whether mastitis is present or not. The mastitis may affect several or all of the mammary glands. Close examination of mastitic quarters reveals that they are swollen and reddened; are firm, painful and unusually warm to the touch; and yield little or no milk.

Affected sows may show behavioral changes such as depression, irritability, restlessness or aggression. The behavioral changes are believed to be caused by the piglet's attempts to nurse the sore and tender mastitic quarters. Sows may refuse to drink or eat and are often reluctant to move about or nurse their pigs. The sows may have a white to yellow vaginal discharge, possibly indicating an infection of the uterus (metritis). However, the metritis, if present, is usually mild and has no apparent association with lactation failure. Fever may or may not be present and constipation is usually not a problem.

The young piglets of MMA sows appear restless in search of food. They chill easily, become progressively weaker and die from the effects of starvation or diarrheal disease. The milk from agalactic and mastitic glands is more alkaline than normal and is apparently distasteful to the young piglets.

22

The pathologic lesions are most consistently associated with mastitis and include evidence of localized or widespread inflammation in the affected glands. There are no apparent lesions in agalactic glands not affected with mastitis. Lesions in other organs are either uncommon or absent.

Diagnosis

Diagnosis of MMA is based principally on observation of clinical signs associated with mastitis and lactation failure in affected sows and the consequent unthriftiness and death of young piglets. Often, the piglets of an affected sow are severely ill or have died before the disease is recognized. Therefore, **owners should constantly be aware of MMA as a potential problem since early detection by repeated daily examinations of sows and piglets is vitally important for successful treatment.** Presently, there are no reliable diagnostic laboratory tests available to confirm a diagnosis of MMA.

Treatment

Treatments for sows affected with MMA are nonspecific and unpredictable. None is regarded as 100% effective. Treatments which are successful one time may not produce favorable results the next time. Nonetheless, owners should try to reestablish a normal flow of milk in affected sows by injecting 10 I.U. of milk letdown hormone (oxytocin) at regular intervals. Reports are conflicting regarding the value of injecting other hormonal substances.

Treatment of the mastitis in affected sows with injectable broad spectrum antibiotics may also be beneficial. However, antibiotics have not always been useful. Many of the strains of microorganisms isolated from field cases of MMA are resistant to the commonly used antibiotics. Similarly, the feeding of antibiotic substances before and after farrowing for prevention of MMA is of doubtful value.

Piglets need to consume adequate quantities of colostrum as soon after birth as possible. Owners should make every effort to encourage the piglets to continue nursing, particularly if the affected sows respond to treatment and return to normal lactation later on. Use oral antibacterial drugs to treat diarrheal disease and keep the animals where they have access to a warm (90 to 95° F), dry, draft-free area.

Piglets born to sows that do not respond to treatment should be transferred to sows unaffected with MMA and with litters of a similar age. If this is not possible, give the piglets a hand-fed or self-fed supplement. Use a commercial milk substitute fortified with lactose or cow's whole milk supplemented with one tablespoonful of corn syrup per pint of milk. Feed the piglets all they will eat in 10 minutes time. Feed them 6 times a day for the first 2 days, 4 times a day for the third and fourth day, and 3 times a day for the fifth through the seventh day.

Because of the difficulties sometimes associated with treatment, consult your veterinarian for the best recommendations.

Prevention

Methods for preventing MMA have not been identified. Dispersing a herd and restocking with new breeding stock will not necessarily assure elimination of the disease. The following measures seem to reduce the incidence of the disease:

1. Avoid an overweight condition in the breeding stock. Overweight animals are more prone to farrowing and lactation problems.
2. Feed a bulky laxative ration before farrowing and provide daily exercise for the sows.
3. Provide clean, dry and draft-free quarters for the sows in the farrowing house and use abundant quantities of bedding.
4. Avoid excessive noise and excitement when working with sows.
5. Inject sows during gestation with mixed bacterins to stimulate immunity against common bacterial organisms.

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James L. Graves, Director of Cooperative Extension Service, University of Idaho, Moscow, Idaho 83843. We offer our programs and facilities to all people without regard to race, creed, color, sex, or national origin.

3M 4-77