Sow lameness

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Lameness is the reason a significant percentage of sows are removed from swine herds, including culling, death loss, and euthanasia. Studies indicate that 6 to 35% of sows are culled because of lameness.[1] A local 5000-sow operation's PigChamp records show that during the previous 2 years, 8.9% of removals were associated with musculoskeletal problems. Premature sow removals create economic expense for swine operations, including lost value associated with death loss, reduced value at slaughter, diagnostic and treatment costs, extra labor costs, and lost genetic premium.

Causes of lameness

Factors contributing to lameness may include bacterial infections, heredity, environment, and nutrition.

Osteochondrosis and degenerative joint disease (DJD) are common causes of lameness,[2] occurring in the ulna, femur, and (or) humerus of nearly 100% of commercial animals.[3,4] These diseases are associated with slippery floors, lack of exercise, and rapid growth rate, and cause lameness in animals less than 2 years of age. Ambulatory difficulties in affected animals range from a shortened stride to a non-weight-bearing lameness, or from stiffness in the limbs to an inability or unwillingness to stand. Lameness may be episodic, and shifting lameness is common because multiple joints are affected.

Onset of signs may be insidious (swaying gait) or acutely severe if an epiphysis detaches (epiphysioloysis). Sows with epiphysioloysis will be unable to stand. Boars may be unable to mount and complete copulation due to osteochondrosis or DJD.[1]

Several organisms have been associated with infectious causes of lameness, such as septic polyarthritis, laminitis, and septicemia. *Streptococcus suis*, environmental *Streptococcus* spp that infect skin lesions, *Haemophilus parasuis, Mycoplasma hyorhinis,* and *Erysipelothrix rhusiopathiae* have been associated with acute and (or) chronic arthritis.[1,5]

Environmental factors may play a role in the cause of lameness. One study showed loose housing of dry sows in pens with partly slatted concrete floors was associated with severe claw problems, and housing on deep straw bedding was associated with minimal claw problems.[6] Another study suggested that heel lesions or overgrown heels, and lesions related to the heel-toe junction, might be more associated with animal activity and amount of bedding.[7] A continually wet floor may cause softening of the hoof and predisposes to hoof and sole trauma.

Nutritional factors may contribute to lameness. Biotin plays a role in structural integrity and hardness of the hoof.[1] However, biotin is not limited in corn diets. Calcium and phosphorus nutrient imbalance or deficiency during lactation may result in reduced bone density,[8] predisposing the animal to pathologic fractures.

Clinical examination

As the first step in clinical examination, carefully visualize the animal's movements by moving the animal into an alleyway or a pen. For a close examination of the foot and palpation of the leg, examine sows while they are in the crates. Begin the examination with the feet and move up. Observe the foot and heel for excessive growth, contusions, cracks, and erosions. Observe the joint regions for swelling or heat, which may indicate exudates, blood, or fluid in or around the joint capsule. Examine the pelvis for symmetry and subject the lumbar region to downward pressure. Manipulation may help localize pain response.[1]

Specific diagnoses often require necropsy, when joints can be visually examined for exudate or abnormalities in the articular surfaces. Submit joint swabs for culture on ice packs. When attempting to isolate *Mycoplasma*, use a dacron-polyester swab instead of a cotton swab. Collect joint exudate with a sterile syringe and place in a redtop blood tube for culture. Submit synovial membrane samples in formalin for histopathology.

Submit joints and (or) long bones for examination when bone problems are suspected, and particularly when there are gross lesions on the articular surfaces. Articular surface abnormalities are often associated with osteochondrosis or DJD, although chronic pyogenic arthritis eventually damages articular cartilage. If the joint fluid is not turbid or fetid, and there are articular cartilage abnormalities (eg, fissures, erosions, ulcers, collapsed areas), the problem is most likely to be osteochondrosis or DJD. Sever the distal or proximal one-third of the bone from the shaft, which will provide both the articular surface and the growth plate for laboratory examination. It is not necessary to submit the entire bone. Place the bone ends in a plastic bag and submit on ice. The lab can then section the bone further on a band saw and decalcify it for histopathology.

Treatment

Once the clinical diagnosis has been made, you will ask the following questions: Does the animal warrant treatment? Should the animal be culled? Should the animal be euthanized? These questions are important, because treatment is often unrewarding. Osteochondrosis and DJD are typically unresponsive to treatment. Valuable breed-

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ing stock animals must be rested in a pen with good footing for a minimum of 6 weeks to enable healing. Many infectious arthritides are chronic when detected, and respond poorly or very slowly.

Antibiotics such procaine penicillin and lincomycin are commonly used to treat infectious arthritis and laminitis. Animals exhibiting heel or toe lesions are also treated with topical applications of copper napthenate solution. If possible, hooves should be trimmed of excess growth, and animals moved to pens with additional space to allow for better nursing care and a greater chance of convalescence. Specific pen space in the barn should be allocated for this purpose.

Treatments must be recorded to document the proper antibiotic withdrawal time. Animals that do not respond to treatment should be held through withdrawal and then culled. If the animal becomes non-ambulatory it should be humanely euthanized.

Prevention and management

Even though treatment of lameness is typically unrewarding, there is merit in working towards prevention and management through gilt development and selection, and sow culling practices.

Gilt development is an important part of prevention. First, there must be an adequate gilt supply to allow for culling during growth and for further losses during the selection process. We recommend allowing up to 10 square feet per animal. Diet is important. We use finisher diets for gilts weighing up to 150 to 160 pounds, then specific development diets are introduced that adjust energy density, preventing overly fat or lean pigs. Diets for selected gilts have higher levels of fiber, vitamins A and E, biotin, choline, folic acid, calcium, and phosphorous. Replacement gilts should undergo a vigorous visual appraisal at final selection time. Animals showing evidence of structural deficiencies or lameness should be culled.

Some experts advocate the use of copper sulfate footbaths (1 to 2 pounds of copper sulfate dissolved in 5 gallons of water) for sows entering the gestation facility or moving to the farrowing area, to toughen the hoof and help prevent heel and (or) toe lesions (P. Armbrecht, personal communication, February 2001). Sow culling practices are also an important part of the management process. Observation and experience will help determine which animals warrant treatment and which should simply be culled. A common mistake is treatment of animals that have little chance of recovery, resulting in an extended time for antibiotic withdrawal and (or) eventual euthanasia.

Conclusion

Large herds, with intensive sow housing, managed by inexperienced people, have created significant challenges for producers and veterinarians. Employees do not have the time or the innate pigmanship to recognize and treat problems such as lameness in a prompt and aggressive fashion. Standard policies and procedures make it simpler for employees to react to problems. Greater emphasis must be placed on gilt development and selection. Often gilts that should be culled are retained simply because of the increased cost of genetic premium associated with them. These animals may then become problem sows later in life.

Employees need training to help them make logical decisions regarding choices between treatment and culling. Culled animals should be removed promptly. An adequate gilt supply must be available so that employees are not tempted to keep or hold questionable animals in an attempt to meet targets.

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