

***Staphylococcus hyicus* abortion in a sow**

G. E. Onet, DVM, PhD, and J. L. Pommer, MS

Abortion is an important economic problem to the swine industry and is frequently a diagnostic challenge to the veterinarian and pathologist. Many infective agents have been isolated from individual cases and herd outbreaks of abortions.¹⁻⁸

Staphylococcus hyicus is associated with the dermatitis "greasy pig syndrome," in pigs.⁹ In this report, we document the association of *S hyicus* with an abortion in a sow.

A mature sixth-parity sow aborted 5 fetuses approximately 1 week before she was due to farrow. This sow was from a private farrow-to-finish swine operation that consisted of about 200 crossbred (Landrace × Duroc × Large White) sows and other classes of pigs. The sow was among a group of 10 that as gilts, had offspring with severe greasy pig disease during the nursing period. One of the aborted fetuses was in an advanced degree of mummification, and the others were unevenly developed. Apparently, they had not been dead long before being aborted. The sow was lethargic and inappetent for 2 days before and several days after the abortion.

Necropsy of the aborted fetuses was done. Two of them had serogelatinous edema in the subcutaneous tissue of the ventral abdominal region, especially around the umbilicus. All pigs had an exaggerated amount of serohemorrhagic fluid in the abdominal, pleural, and pericardial cavities, and the kidneys were dark purple, swollen, and hemorrhagic, with diminished consistency. Skin lesions were not noticed in the aborted fetuses. Because of the advanced degree of autolysis, a histologic examination of fetal tissues or placenta was not done.

Immediate dark-field examination of fluids from the abdominal, pericardial, and pleural cavities, as well as of those from stomach and renal sinus, did not reveal any abnormal findings. Special staining (Giemsa method) of smears from fetal tissues was negative for *Chlamydia* elementary bodies.

Swab specimens were taken from liver, lung, kidney, and brain tissues, and from abdominal, pleural, pericardial, and gastric fluids of 4 aborted

fetuses. These swab specimens were cultured under aerobic conditions on 5% sheep agar plates and revealed pure cultures of white, smooth, glistening, nonhemolytic colonies. Gram-staining revealed gram-positive clusters of midsize cocci.

Biochemical examination^a revealed fermentation of glucose, fructose, mannose, lactose, trehalose, and saccharose, and negative reaction for maltose, mannitol, xylitol, melibiose, raffinose, xylose, α -metil-glucoside, and N-acetyl-glucosamine. Nitrate reduction to nitrite, alkaline phosphatase, and Voges-Proskauer reactions were positive. The isolates were coagulase-negative and catalase-positive. On the basis of these findings, the infective agent was identified as *S hyicus*.

Sensitivity testing was performed on Müller-Hinton agar plates. The organism was sensitive to cephalothin, trimethoprim, tetracycline, kanamycin, cephazolin, triple sulfa, nitrofurantoin, chloramphenicol, novobiocin, methicillin, sulfisoxazole, sulfadiazine, and chlortetracycline. The organism was resistant to penicillin, streptomycin, polymyxin B, oxacillin, cloxacillin, lincomycin, bacitracin, vancomycin hydrochloride, and ampicillin. Results of *Chlamydia* isolation were negative.

Virologic examination consisting of fluorescent antibody testing (pseudorabies and bovine viral diarrhea virus) and isolation attempts on confluent monolayer of primary porcine kidney cell culture systems were also negative. Results of serologic examination of the pericardial and pleural fluids were negative for common leptospirae (including *Leptospira bratislava*) and for encephalomyocarditis virus (seroneutralization test).

The initiating cause of this sow's abortion is hard to determine. However, the isolation of pure cultures of *S hyicus* from multiple tissues and fluids of the examined fetuses, in the absence of other specific abortifacient factors identified, suggests that the abortion in this case may have been attributable to this bacterium. A recent reexposure of the sow to *S hyicus* may have initiated system exposure of the uterus, placentae, and fetuses, or the organ-

From the Veterinary Diagnostic Laboratory, Grand Laboratories Inc, Larchwood, IA 51241.

^aAPI Staph-Trac procedure, Analytical Products Inc, Plainview, NY.

ism may have gained access to the uterus via an ascending route. On the basis of history of exposure as a gilt, the possibility of recrudescence of latent *S hyicus* infection in this sow could also be considered.

Staphylococcus hyicus was isolated from numerous tissues from multiple fetuses involved in this case of swine abortion. This points out the need for thorough bacteriologic examination in cases of abortion, because many abortions may be caused by bacteria common to the pigs' environment.

1. Comer L, Lorenzo M, Ramos JR, et al. Isolation of EMC virus in a sow and her fetus. *Rev Cubana Cienc Vet* 1982;13: 21-24.

2. Ellis WA, Thiermann AB. Isolation of *Leptospira interrogans* serovar *bratislava* from sows in Iowa. *Am J Vet Res* 1986;47:1458-1460.

3. Joo HS, Chritianson B, Kim HS. The "Mystery" disease, what we know, in *Proceedings*. Minnesota swine herd health programming conf, 1989;319-325.

4. Kim HS, Joo HS, Bergeland ME. Serologic, virologic and histopathologic observations of encephalomyocarditis virus infection in mummified stillborn pigs. *J Vet Diagn Invest* 1989;1:101-104.

5. Links IJ, Whittington RJ, Kennedy DJ, et al. An association between encephalomyocarditis virus infection and reproductive failure in pigs. *Aust Vet J* 1986;63:150-152.

6. Nielsen JN, Armstrong CH, Turek JI, et al. Etiologic studies on late-term abortions. *J Vet Diagn Invest* 1989;1:160-164.

7. Onet E, Onet V. Diagnostic criteria in abortigen infections in animals, in *Proceedings*. Symp Techn Reprod Pathol Farm Anim 1985;389-397.

8. Thacker BJ, Leman AP, Hurtgen JP, et al. Survey of porcine parvovirus infection in swine fetuses and their dams at a Minnesota abattoir. *Am J Vet Res* 1981;42:865-867.

9. Kuecker R. Clinical management of exudative dermatitis in nursery pigs in *Proceedings*. Minnesota swine herd health programming conf, 1989;133-137.

High sulfide concentrations in rumen fluid associated with nutritionally induced polioencephalomalacia in calves

Nine 115- to 180-kg, hay adapted, Holstein steers were fed an experimental diet with added sodium sulfate to induce polioencephalomalacia (PEM). Five calves developed the disease. Thiamine concentrations in blood, CSF, brain, and liver were not indicative of thiamine deficiency. The odor of hydrogen sulfide in eructated rumen gas was associated with the onset of PEM. Sulfide concentrations in rumen fluid were measured 1 or 2 times a week by 2 techniques. Sulfide concentrations progressively increased in all 9 calves after feeding of the PEM-inducing diet commenced. The highest concentrations coincided with onset of clinical signs of PEM and were significantly higher in calves that developed PEM than in those that did not. This suggests that PEM can result from sulfide toxicosis following excess production of sulfide in the rumen. *D. H. Gould, M. M. McAllister, J. C. Savage, et al in Am J Vet Res* 52 (July 1991).