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Case #

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Signalment: Aborted porcine fetus; approximately 90 days gestation

History: A crossbred sow, of unknown age, aborted four porcine fetuses in the absence of any clinical signs.

Gross findings: In the placenta, small clusters of 1-2 mm (diameter), pale tan, roughly spherical, firm nodules were randomly distributed across the chorionic and allantoic surfaces.

Microscopic Findings:
Placenta: The chorioallantoic stroma is markedly infiltrated by swaths of neutrophils, mostly degenerate, lymphocytes, plasma cells, macrophages, and basophilic cellular debris. There is transmural infiltration of large and small caliber vessels by neutrophils; fibrin is present in periadventitial tissues. Multifocally, the trophoblastic epithelium is necrotic, characterized by shrunken hypereosinophilic epithelial cells with pyknosis or karyorrhexis. Dense basophilic concretions are widely disseminated throughout the stroma. Eosinophilic fibrillar material, admixed with moderate numbers of 1-2 µm (length), slender Gram-negative bacilli and 2 µm (length), plump Gram-positive bacilli, is adhered to the villus surfaces.

Lung: There is diffuse atelectasis. Multifocally, bronchioles are filled with pale yellow, amorphous material (meconium) mixed with neutrophils, and moderate numbers of Gram-positive and Gram-negative bacilli. Few alveolar spaces contain small clusters of neutrophils and Gram-negative bacilli.

Diagnosis:
Placenta: Fibrinosuppurative placentitis, diffuse with vasculitis, bacterial colonization, and mineralization

Lung: Suppurative bronchopneumonia with bacterial colonization

Discussion:
A number of infectious abortifacients have been implicated in reproductive failure in swine. Pathogenically, two major categories of infectious abortion include: systemic disease in the sow resulting in viremia, septicemia, or toxemia or direct infection of the fetus or placenta. Abortifacients causing systemic infection in the sow include porcine reproductive and respiratory syndrome, Salmonella choleraesuis, Erysipelothrix rhusiopathiae, swine influenza virus, and transmissible gastroenteritis. A number of infectious agents, mainly bacterial, directly infect the fetus, usually via an ascending infection. Causative agents include Streptococcus suis, Brucella suis, Leptospira interrogans, Salmonella sp., Actinobacillus suis and porcine parvovirus.

In this case, the suppurative nature of the placental lesion is most consistent with a bacterial cause. Salmonella group B, was isolated from placenta, and it is the most likely cause of abortion in these porcine fetuses.

In swine gestation, uterine implantation of the fetus occurs at gestation day 14, fetal skeletal ossification occurs at day 35, and development of immune competency begins at day 70 with parturition at 114 days of gestation. The swine placenta is epitheliochorial, with a total of six layers separating the sow and fetus, precluding transfer of maternal immunity. Abortion related to systemic disease in the dam is associated with toxemia resulting in disruption of endocrine control of gestation and endometrial gestation. Placentitis causes a release of prostaglandins, decreased production of progesterone, resulting in luteolysis, and ultimately fetal loss.

The sow in this case did not exhibit any deteriorating clinical signs to suggest a systemic cause of fetal death; it is suspected that placentitis in this case occurred as a result of an ascending infection.

References:


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