

Summary: *Streptococcus equi* subspecies *zooepidemicus* - a case report of sudden death in a German sow farm

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Key Findings:

- The first *Streptococcus equi* subspecies *zooepidemicus* outbreak in swine in Germany was described on a North-Western Germany farm.
- The sow herd experienced a high morbidity and mortality accompanied by fever, lethargy, oedema, mucosal discharge and dyspnea.
- The isolate of the case described in this case study is unrelated to ST194, the outbreak strains from Ohio and Tennessee in the U.S.

Background

Streptococcus equi subspecies *zooepidemicus* (*S. zooepidemicus*) is a Gram-positive, coccoid, beta-haemolytic, Lancefield group C bacterium. This commensal and opportunistic pathogen in warm-blooded hosts, including humans is a major pathogen in horses and is associated with different diseases such as abortion, arthritis in foals, pneumonia, septicemia, and meningitis. So far, there is no commercial vaccine available.

Case Presentation

The 320-sow farrow-to-finishing farm is located in the North-Western part of Germany close to the Dutch border. It performed all-in-all-out in the farrowing, weaning and fattening stages. Sows were vaccinated routinely against influenza H3N2, H1N1 and H1N2 every four months. Vaccination against the Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) was performed in every reproduction cycle of a sow group on day 6 after farrowing and on day 60 of gestation (6/60 scheme) using a PRRSV-1 modified-live vaccine. Sows were vaccinated against porcine parvovirus and *Erysipelothrix rhusiopathiae* in the second week of lactation. Piglets were regularly vaccinated against Porcine Circovirus type 2 (PCV2), *Mycoplasma hyopneumoniae* and a PRRSV-1 modified-live vaccine within the first three weeks of life. Gilts were purchased from a gilt rearing farm 50 km away from the case farm. Gilts were introduced to the herd after a six-week quarantine period in a separate building.

The farmer reported fever, lethargy and lack of appetite in his sow herd. Within one day, two sudden deaths in gestating sows and one abortion occurred in different compartments of the farm. No signs of disease occurred in suckling, nursery piglets and fattening pigs, although they were located at the same site or 300 m away from the sows. All sows were treated orally with metazidole for five days and all sows except those in the large gestating unit recovered. In the large gestating unit four sows died in day 102 to 114 of gestation four days after the first clinical signs had been recognized on the farm. Individual sows in this location showed dyspnoea, mucous nasal discharge and oedema of the ears, conjunctiva and nasal bridge. Sows were treated orally with doxycycline for five days. Eight days after the first clinical signs had occurred, one sow died (sow 454) and several sows still showed signs of severe disease. Sow 454 and a living sow 455 were brought to the laboratory for diagnostic measures.



Figure 1. Massive fibrinous exudate in the peritoneal cavity

Pathological and Hematological, and Microbiological Findings

Post-mortem examination of the dead sow (454) resulted in a severe fibrinous and purulent polyserositis (pleurisy, pericarditis and peritonitis) with a diffuse, fibrinous to serosanguinous exudate in the body cavities and thickening of the serosa (Figure 1). An analysis of a blood sample from sow 455 pointed to a bacterial infection. Microbiological examinations identified *S. zooepidemicus* with an accuracy of 99.9%.

Case Outcome

The final diagnosis based on histopathological and microbiological findings was septicaemia caused by *S. zooepidemicus*. Two weeks after the onset of disease in the farm the veterinarian treated all sows intramuscularly with 2 mg cefquinome (Cobactan®, MSD Animal Health GmbH, Haar, Germany) per kg body weight on three consecutive days. No further sows developed fever and sows were no longer apathic. Mild oedemas at the head were still visible in individual sows.

In summary, ten sows in late gestation phase died within 4 weeks. Finally, in the short term the change in the antimicrobial treatment with respect to substance and route of administration led to termination of the outbreak. Neither in this farm nor in other farms in the responsibility of the veterinarian in charge of the stock *S. zooepidemicus* related disease has recurred so far. In the long term in our opinion an important measure on the case farm was a modification of the climate system in the large gestation unit, where the sows had been affected. Additional air supply ducts and air exhaust shafts with larger diameters were installed to increase the air exchange volume while maintaining the same air velocity.

Discussion

S. zooepidemicus is an important swine pathogen in China and South-East Asia. It has also caused outbreaks in pigs in the United States. Interestingly, the outbreak strains from Ohio and Tennessee belong to the same sequence type as two outbreak strains (CY and ATCC 35,246) from China, namely ST194. The isolate of the case described here is unrelated to ST194.

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