

MANAGEMENT OF PSEUDORABIES VIRUS INFECTION IN SWINE HERDS

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Summary

Aujeszky's disease or Pseudorabies is a viral disease usually involved in swine pathology (the natural host). Sporadic cases occur in dogs, cats, cattle, sheep, goats, horses, foxes and rodents, without being a zoonosis. Our investigations was carried upon a swine population of about 4000 animals, divided in five groups: Suckling pigs, Gilts, Sows, Growing-finishing pigs (115 days) and Nursing/weaned pigs, 20 dead pigs (suckling pigs, young animals) were examined post mortem using the previously described necropsy protocol. To assess the exposure to the PRV we used HerdChek PRV-Ab Test Kit (IDEXX Lab, Inc., USA). The results of the tests carried on serum samples from suckling pigs (1-5) and gilts (6-9), using the Idexx ELISA Test Kit, have demonstrated the presence of the antibodies (Ab) against viruses in all samples. 83% of the sows' serum samples have been proven to have antibodies against PRV. In the nursing pigs unit 60% of the serum samples were positive, while in growing-finishing pigs unit only 20%.

Key words: pseudorabies virus infection, swine

Aujeszky's disease or Pseudorabies is a viral disease produced by *Porcine herpesvirus-1*, member of *Varicellovirus* genus, subfamily Alphaherpesvirinae and family Herpesviridae (3). It is usually involved in swine pathology (the natural host). Sporadic cases occur in dogs, cats, cattle, sheep, goats, horses, foxes and rodents, without being a zoonosis.

The clinical features are strongly related to the age of pigs, to the route of infection, to the virulence of the strain and to the immunological status of the animal, with the latter hiding both disease and virus. The most susceptible are young piglets. Mortality rates reach 100% in pigs under 2 weeks of age and decrease as the age of infected pig's increases. These animals experience severe neurological signs: muscular trembling, incoordination, ataxia, posterior paresis, nystagmus, opisthotonus, severe epileptiform seizures and fever. In weaned pigs clinical signs are similar to those in neonatal pigs, but less severe. In grower-finisher pigs, respiratory signs, flu-like, are most common: sneezing, coughing, nasal and ocular discharge, dyspnoea. Sows infected in middle pregnancy experience abortion with mummified fetuses, while the ones infected in late pregnancy often give birth to weak or stillborn pigs (1).

In Pseudorabies, gross lesions are often undetectable. However, keratoconjunctivitis, serous to fibrinonecrotic rhinitis, necrotic tonsillitis, tracheitis or hemorrhagic pulmonary lymph nodes may be observed. Pulmonary lesions include: edema, hemorrhage and/or pneumonia. Focal necrosis can be seen on lungs, liver and spleen. The microscopic lesions usually occur in the CNS and include: nonsuppurative meningoencephalitis with perivascular cuffing, ganglioneuritis and intranuclear inclusion bodies (1).

PRV vaccination can be performed with live or killed vaccines. Also, some modified attenuated live-vaccines (deletion of PRV *UL23* gene or deletion of *gE* gene) and DNA vaccines are on the market.

Materials and methods

The swine population submitted in this study was previously confirmed by serological exam as contaminated with Porcine Reproductive and Respiratory Syndrome Virus (PRRSV). The herd has about 4000 animals, as follow: Suckling pigs, Gilts, Sows, Growing-finishing pigs (115 days) and Nursing/weaner pigs. A number of 20 dead pigs (suckling pigs, young animals) were examined post mortem using the described necropsy protocol (2). Investigated serum specimens were sampled from: suckling pigs - 5 serum samples (samples 1-5), gilts - 4 serum samples (samples 6-9), sows - 6 serum samples (samples 10-15), growing-finishing pigs - 5 samples (samples 16-20) and from nursing/weaned pigs - 10 samples (samples 21-30).

For the assessment of exposure to the PRV as a result of natural infection we used HerdChek Pseudorabies Virus gB Antibody Test Kit (IDEXX Laboratories, Inc., USA).

Results and discussions

The herd's immune status evaluation for Pseudorabies was requested by the clinico-pathological features exhibit by almost all pigs, which could suggest both PRRSV and PRV infections.

Serology carried on different serum samples sources revealed the presence of PRV antibodies, no prior PRV vaccination being applied (fig. 1).

The results of the tests on suckling pigs serum samples (1-5) and gilts (6-9) serum samples, using the Idexx ELISA Test Kit, proved the antibodies presence (Ab) against PRRS viruses in all samples. 83% of the sows' serum samples have been proven to have antibodies against PRV. In the nursing pig's serum samples, 60% of them were positive, while in growing-finishing pigs unit only 20%.

Pseudorabies is compulsorily notifiable in Romania, as well as in all European Union (EU). Also, Romanian outbreaks of Pseudorabies are notified at World Organization for Animal Health (OIE) by Romanian Veterinary Authorities. EU legislation does not specify laying down detailed measures to control

Pseudorabies outbreaks. However, farms, farmers and suppliers are submitted to the requirements of some Council Directives and Commission Decisions, such as:

- Commission Decision 2001/618/EC concerning additional guarantees to Aujeszky's disease for pigs destined for certain parts of the territory of the Community.
- Commission Decision 2004/212/EC on Community health conditions on imports of animals and fresh meat including minced meat from third countries and amending Decisions 79/542/EEC, 2000/572/EC and 2000/585/EC which include provision for guarantees of freedom from Aujeszky's disease.
- Commission Decision 2004/320/EC amended Decisions 93/52/EEC, 2001/618/EC and 2003/467/EC as regards the status of acceding countries with regard to brucellosis (*B. melitensis*), Aujeszky's disease, enzootic bovine leucosis, bovine brucellosis and tuberculosis and of France with regard to Aujeszky's disease.

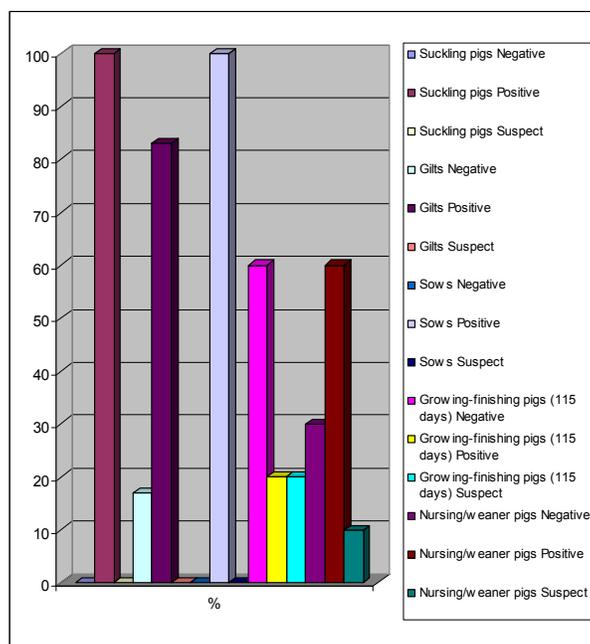


Fig.1. ELISA PRV-Ab Test Kit results

Our goal in this PRV-contaminated herd was the recovery of PRV free status at the establishment level. According to the EU and OIE recommendations (4, 5), the strategies proposed to the farm include:

1. In the infected establishment: 30 days after removal of all infected animals, all breeding animals will be tested using the ELISA PRV test. The result needs to be PRV negative PRV on two successively tests, ruled 2 months later;

2. In all establishments located in the 5-kilometre radius zone: a significant number pigs from each establishment needs to be subjected to ELISA PRV test and all results have to be negative. Also, the serological exam will be performed from 2 months to 2 months.

Conclusions

Current epidemiological status as well as the vaccination history in the studied exploitation leads to the following recommendations:

- Vaccination of the sows prior to freshening and before 90 days of gestation against Pseudorabies and PRRS;
- Vaccination of piglets at weaning against both PRRS (previously diagnosticated) and Pseudorabies diseases;
- Pseudorabies and PRRS emergency vaccination of the growing pigs, after weaning, will keep going at least during two reproductive cycles or until the infected gilts and sows are replaced. After that, vaccination will be restricted to reproduction herd, only if the all in/all out protocol is followed.

Up to the prevalence of respiratory signs, pathology, and the corresponding etiology, piglets will be vaccinated too against the specific agents.

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