

THE RESURGENCE OF PRRS?



The somewhat misnamed 'blue eared pig disease' seems to be an increasing menace in the UK pig industry. How has it happened, and what can we do? **Paul Pemberton**, of specialist pig veterinary practice Garth Partnership, offers some suggestions

Before exploring the nature and effects of this condition, it is worth understanding some of the terminology in common use. Widely known as PRRS or 'blue ear', the proper name of this condition is porcine reproductive and respiratory syndrome, and the cause is a virus which is known for short as PRRSv. 'Blue ear' is not a particularly useful term because the reddish-blue discolouration of the ears that is often associated with PRRS is not always present, and may also be caused by other conditions.



HISTORY

First reports of the syndrome we now know as PRRS occurred in the USA in the late 1980s. Herds suffered severe reproductive losses, extensive pneumonia in growing pigs and increased mortality. Asia reported outbreaks at around the same time.

In Europe, similar signs first appeared in Germany in 1990 and in the rest of Europe, including the UK, over the next five years. A previously unrecognised viral cause was identified by a Dutch laboratory in 1991. Once tests for this virus became available, however, evidence of its existence in pigs could be found as far back as 1975 in Canada.

After a couple of years the situation settled down in the UK as the national herd gained a level of immunity to the virus.

Around the turn of the century vaccination became available to aid control, although sporadic outbreaks of PRRS on individual units have continued to occur.

THE DISEASE

As the name suggests, PRRS in its pure form causes mainly reproductive failure in various forms in sows and respiratory disease in growing pigs. However, there is no such thing as a typical PRRS outbreak because interactions between many variable factors can cause a variety of symptoms.

One of the most significant features of PRRSv is immunosuppression. This means that the pig's immune system is impaired, making it more vulnerable to attack from other disease. It also limits the ability to respond to vaccination, so even a disease that was previously well controlled by a vaccine may become a problem.

Meningitis, salmonellosis, Glasser's disease and greasy pig are just some of the conditions that may become prevalent following a PRRS outbreak.

DIAGNOSIS

Virus isolation is the ultimate proof of the presence of the virus, but it is technically difficult and dependent on the timing of sampling. Various other microbiological techniques are available to identify the presence of PRRSv or antibodies to it, each with partic-

ular sensitivities, characteristics and drawbacks, such as the time period after infection that they are reliable.

Currently we are using mainly PCR and serology. The PCR test detects genetic material of PRRSv in tissues and is very sensitive but it relies on the virus being present in the tissue sampled. Serology detects antibodies against PRRSv in the blood but these can persist for several months so a single positive result does not necessarily indicate a recent infection. With prompt veterinary involvement and appropriate testing, however, diagnosis of PRRSv involvement in a disease outbreak can usually be made.

CURRENT SITUATION

Around 20 years on from the initial UK outbreak, PRRS continues to plague pig producers in this country and may be getting worse. Although not on the scale of the situations in China, where a virulent strain known as highly pathogenic PRRS has arisen, or the USA, where PRRS continues to dominate the porcine agenda, there is a feeling among some vets at Garth that PRRSv-related problems are increasing in the UK. In support of

this the AHVLA (the laboratory arm of DEFRA) reports an increase in the number of diagnoses of PRRSv, mainly associated with respiratory disease and wasting, and an increase in the variety of strains being detected.

It is likely to be the evolution of new strains of PRRSv, possibly coupled with challenge from other evolving viruses such as swine influenza (flu), that are presenting new challenges to the immune system of our pigs and leading to the perceived rise in disease.

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PRINCIPLES OF CONTROL

Being a virus, PRRSv is not susceptible to available antimicrobial therapy. Some of the problems associated with PRRS, such as gastric ulceration and secondary infections, can be moderated by the use of anti-inflammatory agents or antibiotics, but the underlying virus itself will remain. Thus the most effective control measures rely on preventing or reducing exposure to the virus, or priming the pig's immune system. Methods to reduce exposure must be based on the science of the

transmission of PRRSv. The possible routes of infection are:

- **Contact with an infected pig.** Almost all pig secretions (eg saliva, faeces, semen) can carry PRRSv which can, therefore, spread through direct or environmental contact.
- **Airborne spread.** This is somewhat controversial. There is a presumption in the UK that this is an important route of transmission between farms and the latest work from the USA has demonstrated infectious virus in the air 9.1km from the source farm, but actual herd infection has proved difficult to demonstrate scientifically.
- **Carrier animals with no symptoms.** This is the main source of persistence or spread within herds, and allows for continual recycling of the virus.
- **Transfer on fomites** (eg equipment, vehicles, tools, clothing). This is a very important route of transmission, especially in cool, damp conditions.
- **Proximity to neighbouring farms.** Not a route of transmission as such, but being close to other pigs is a recognised risk factor. It is unclear which route is mainly responsible for this risk.

CONTROL MEASURES

Based on the above principles, the following areas can be addressed to either attempt to retain PRRSv-freedom in a herd or to reduce its impact:

Incoming stock

Gilts or boars coming onto PRRSv-positive farms should be held in an isolation facility to be acclimatised either by being close to the main unit (although this must be carefully managed to avoid bringing a new disease onto the unit) or by having pigs from the farm mixed with them. These could be cull sows or, preferably, weaners of about 10 weeks old as these are more likely to be excreting virus. The incoming stock can also be vaccinated. A PRRSv-negative unit



Small, low viability newborn piglets and stillbirths are typical of the reproductive effects of PRRS

should have a distant isolation facility where gilts can be quarantined and monitored to check they are free of PRRSv before being admitted to the unit. Since PRRSv can be transmitted in semen, a reputable source with guaranteed health status should be used for AI.

Airborne spread

Air filtration and locating your unit in a pig-remote area are the two methods that could be used to guard against airborne virus entering a unit, although neither will be practical or economically viable for the majority of UK pig producers. For PRRSv-free herds in pig dense areas, vaccination against PRRSv may be a precaution worth taking on the grounds that the herd is likely to break down sooner or later.

Cooperation

In pig dense areas there may seem little point in trying to run a high health, more efficient herd knowing that it is almost certainly only a matter of time before disaster strikes in the form of a PRRSv breakdown. But if all pig producers in the area worked together, maybe the whole area could be maintained as PRRSv-free. This is the objective of the Pig Health Improvement Plan (PHIP) being operated by BPEX. It has been shown that such schemes can work but they do need everyone in the area to sign up and commit to the project.

Vaccination

Our understanding of PRRS

immunology is not complete. Coupled with the variety of strains currently in the UK (there may even be multiple strains on a single farm) and other factors (for example the presence of concurrent immunosuppressive disease such as flu) this means that vaccination against PRRSv does not guarantee 100% protection.

“Almost all pig secretions (eg saliva, faeces, semen) can carry PRRSv”

Live PRRSv vaccines have proved to be more efficacious than killed varieties but are technically more difficult to produce, so continually producing new vaccines to cover the latest field strains is not possible. Many so-called ‘vaccine failures’ turn out to be due to incorrect storage or administration of the vaccine.



Pigs with the classic ‘blue ears’ which are sometimes, but not always, associated with PRRS

Pig flow

As with most porcine infectious disease, transmission can be reduced using all-in all-out husbandry systems, which allows thorough cleaning of buildings between batches and prevents contact between age groups of pigs.

Farm hygiene

PRRSv is unstable in warm, dry environments and is very susceptible to disinfectants. Thus the transfer of PRRSv on fomites and vehicles, and carry-over in pig buildings, can be eliminated with thorough cleaning and disinfection.

Staff hygiene

Lengthy periods of pig freedom before visitors (eg vets) can enter a unit has become an established protocol for many high health farms. A study published last year in the USA demonstrated that freedom from PRRS (and EP) could be maintained by rigorous biosecurity measures but without extended periods of pig freedom. Farm staff moved daily from a unit where pigs were carrying active PRRS and EP infections to a high health unit. The staff routine was to shower off the low health unit, then shower onto the high health unit and change into clean farm-specific overalls and boots. Despite the heavy potential challenge, PRRS- and EP-freedom was maintained on the high health unit over the four years of the study with just a 14-hour ‘pig-free’ period.

SUMMARY

The incidence and severity of PRRSv seems to be on the rise in the UK after a long period of relative stability, probably due to the emergence of new strains. Current vaccine technology cannot guarantee protection in the face of such a varied challenge. More emphasis must be placed on biosecurity, husbandry and co-operation if the disease is to be controlled.

Garth Partnership offers a biosecurity audit covering all aspects of internal and external biosecurity on your unit. For more information, please contact the practice.



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