



VLA March Monthly Surveillance Report for PIGS

Defra Food and Farm Group funds the VLA's pig surveillance work as part of the Veterinary Surveillance Strategy

Highlights

- Erysipelas causes problems manifesting as sudden death and lameness in pigs of different ages.
 - Evidence of circulating swine influenza H1N2
 - *Actinobacillus pleuropneumoniae* associated with severe respiratory pathology
- Clostridial disease responsible for the sudden death of a boar.

Enteric Diseases

Appropriate samples essential for diagnosis of swine dysentery.

A 230 sow breeder-finisher with separate sites for growing and finishing pigs was seeing disease in pigs aged 12 to 20 weeks. Younger pigs were affected with poor growth rates and increased mortality with older pigs showing anaemia and dysentery. Five pigs were selected by the farmer for necropsy with weights ranging from 7 to 34 kgs. The predominant findings were of

pleuropneumonia and polyserositis with *Actinobacillus pleuropneumoniae* being isolated and two of the pigs that were PRRSV positive by PCR. Only one of the pigs had a necrotising colitis and this pig also had a severe gastritis with salmonella isolated from both sites. Following discussion with the clinician and the possibility that submitted pigs were not fully representative of the problem, further samples were submitted later the same day and swine dysentery was confirmed in the group of older pigs which had dysentery and colitis.

Sudden deaths associated with *Lawsonia intracellularis*.

The carcasses of three 15-16 week pigs were submitted for postmortem. On the unit there has been a history of weaners dying suddenly without preceding clinical signs, otherwise their cohorts were doing well and reaching the expected target weight, housed on a wet feed system. There had been a history of younger pigs having suffered rectal prolapses. The gross pathology found in the first carcass was consistent with porcine proliferative enteritis complex (*Lawsonia intracellularis*), the gross pathology found in the other two carcasses was consistent with a septicaemia and associated toxæmia, and a Group B *Salmonella* was recovered.

Postweaning diarrhoea.

Samples were submitted from cases of postweaning diarrhoea occurring seven to 10 days after weaning at four-weeks-old. Profuse pure growths of haemolytic K88 antigen positive *E. coli* were isolated from all samples, consistent with enteric colibacillosis.

Salmonellosis

Several outbreaks of salmonellosis in rearing pigs have been diagnosed in the last two months and two are described here.

In one, scour was described in approximately 200 nine-week-old pigs with 15 deaths over the three days since the problem began. Pigs were in groups of 100 in outdoor tents on a 1000 sow outdoor grower-producer unit. Findings were similar in all three pigs submitted which were in quite poor body condition with a watery light green scour and post-mortem findings consistent with mild to moderate typhlocolitis with some multifocal diphtheresis. *Salmonella* Typhimurium phage type 193 was isolated from the intestines.

In another, wasting, dehydration and deaths with some scour in seven-week-old pigs were reported on an indoor nursery-finisher unit. Approximately 20% of 820 pigs from one source were affected with 41 deaths over 10 days and a poor response to several antimicrobial treatments was described. Water pipes were noted to be frozen when the practitioner visited the previous week. Three pigs were submitted; the small intestines of two were segmentally dilated with fluid and there was diphtheresis of the terminal ileum in one pig. The large intestines showed multifocal to confluent diphtheresis in the caecum and proximal colon with accumulation of fibrinous material in the lumen, thickened large intestinal wall and watery light brown scour. *S. Typhimurium*

U288 was isolated from the livers and intestines. The pigs were in poor body condition which, together with the history suggested that disease was ongoing for some time and earlier disease due to, for example, colibacillosis and/or managemental/environmental factors e.g. chilling may have played a part in this disease problem. The freezing of water pipes was also likely to be relevant particularly as inadequate intake of water or feed may affect antimicrobial efficacy when dosing is by either route. The use of a variety of antibiotics may also adversely affect the bacterial flora of the gut.

Colitis due to *Brachyspira pilosicoli* associated with clinical signs of diarrhoea and wasting on an organic herd.

In the third case mild colitis with scour and wasting due to *Brachyspira pilosicoli* infection was diagnosed in organic pigs submitted to investigate coughing, wasting and increased mortality in eight-week-old pigs. 20% of a batch of 220 was affected and mortality had doubled since Christmas. The unit was an outdoor rearing herd receiving pigs weekly from one source into a continuous paddock system. The main findings in three pigs submitted were poor body condition and diarrhoea, with large intestines distended with liquid contents and gross lesions suggestive of a catarrhal enteritis in the distal small intestine of two pigs. *Brachyspira pilosicoli* was isolated but no other enteropathogens were identified and there was no evidence of PCV2 or PRRSV involvement.

Respiratory Diseases

Severe respiratory disease due to *Actinobacillus pleuropneumoniae*

Sudden onset lethargy, laboured breathing and mortality occurred in localised groups of pens in two houses of finisher pigs on a continuous unit. There was coughing elsewhere although remaining pigs were said to be bright. Around 35% of pigs in one shed and a few in another shed were affected and six late finishers had died. Two pigs in good body condition were submitted with extensive purple blotching on the skin and gross findings consistent with severe pleuropneumonia due to *Actinobacillus pleuropneumoniae*. There were marked accumulations of fibrin on the visceral pleural surfaces and also on the pleural aspect of the pericardium. There was a moderate excess (pleural cavity half filled) of slightly turbid fluid and focally extensive well-demarcated red-purple slightly dry areas on cut surfaces of the lung tissue particularly on the dorsal aspect of the caudal lung lobes. *Actinobacillus pleuropneumoniae* was isolated, however, in the two pigs submitted, there was no evidence of underlying PCV2 involvement, PRRSV PCR on the spleen was negative and swine influenza virus was not isolated. The problem has persisted on the unit causing significant losses and has extended to include respiratory disease and wasting in younger pigs. Submission of a batch of three freshly dead or euthanased typical cases, early in the course of disease, was recommended to investigate further whether there is underlying viral disease.

In another case, the carcasses of two dead 12-14-week-old cross-bred pigs were submitted for post-mortem examination with a history of being found dead, with pigs in the group having poor body condition and loose faeces. A total of 20 out of 160 animals had died in one group. Historically there had been problems with *Actinobacillus pleuropneumoniae* (APP). On post-mortem examination there was evidence of severe pneumonia. This was thought to be the primary cause of the wasting and death. Bacterial cultures yielded APP and *Pasteurella multocida*. No *Mycoplasma* or *Histophilus* organisms were isolated on enrichment cultures and PCR for PRRSv was negative.

Active swine influenza demonstrated by paired serology and immunohistochemistry.

Widespread coughing in finishers with 20% morbidity and 10% mortality was investigated by submission of paired sera. In five of 12 pigs sampled there was seroconversion to swine influenza strain H1N2, confirming active swine influenza infection on the unit. It is useful if nasal swabs or carcasses from acute cases are submitted from outbreaks like this to allow monitoring of the swine influenza strains circulating in the field.

Fixed lungs samples were received from two euthanased pigs with a history of respiratory problems in five-week-old pigs with interlobular oedema noted at post-mortem. Immunohistochemistry, which showed specific labeling in the lung tissue, confirmed acute swine influenza. Ideally we prefer to do virus isolation on fresh tissue but in this case no suitable material was submitted.

PCVAD manifesting as respiratory disease

A group of 18 30kg pigs aged between eight and 12 weeks were purchased for rearing on a unit that had had no pigs on site since May 2008. The pigs had been on the premises for 10 days when one became lethargic, wasted and died. Some diarrhoea was noted in the group and there was a further pig with general malaise. The health status and vaccinal status of the source herd was not known. The submitted pig was approximately 14-weeks-old. At necropsy there was a severe pleuropneumonia with *Pasteurella multocida* and *Mycoplasma hyorhinis* detected in the lung. Immunohistochemistry showed active PCV-2 infection in lymph node and lung which may account for the overwhelming infection with *Pasteurella multocida*. Although the submitted pig was not scouring, *Brachyspira pilosicoli* was isolated from the large intestine and may account for the diarrhoea seen in the rest of the group. Swine influenza virus and PRRSv were not detected.

Systemic Diseases

Erysipelas causing lameness in growing pigs and septicaemia in a breeding boar.

Lameness affecting weaners was investigated in a 100 sow farrow to finish unit. This was a newly established herd and the problem had started approximately one-month previously. The animals were reported to walk stiffly. The hind limbs were mainly affected and there had also been a decrease in growth rate. Two animals were culled for examination. Excess cloudy fluid was present in the main joints of both the fore and hind limbs and synovial membranes were inflamed. *Erysipelothrix rhusiopathiae* was isolated from affected joints of both pigs.

Also this month, the carcasses of seven pigs, aged 15-19-weeks-old from a finishing unit were submitted for necropsy examination. There had been a gradual increase in lameness, especially hind limb, and increases in carcase condemnation due to polyarthritis. In the older animals there was some respiratory distress and weight loss. At necropsy, three older animals had a vegetative valvular endocarditis along with fibrinous pericarditis and passive congestion in the liver, consistent with heart failure. In the younger animals there was a fibrinous polyarthrosynovitis. *Erysipelothrix rhusiopathiae* was cultured from both the heart valves of the older animals and a joint in the younger animals.

In a different case, a replacement boar that had been purchased two weeks previously and put into an outdoor quarantine unit was found dead. *E. rhusiopathiae* was identified as the cause of death as it was isolated from systemic sites. It was reported that this animal had already been vaccinated against Erysipelas three times. The Private Veterinary Surgeon was worried about strain divergence from the vaccinal strains. An isolate has been submitted to the National Veterinary Institute in Denmark for confirmation of serotype.

Septicaemia due to *Streptococcus suis* serotype 1

The death of a two-week-old piglet submitted for post mortem examination was due to *Streptococcus suis* 1 infection. The owner had three Large White sows and two had recently farrowed. Clinical signs were lethargy, dyspnoea and death within 12 hours and three piglets from one litter of 11 had died. There were haemorrhages throughout the lungs of both pigs and fibrin tags over the abdominal viscera. *Streptococcus suis* 1 was isolated in septicaemic distribution from one of two piglets received. The other carcass was autolysed which is likely to have resulted in the failure to isolate *S. suis*. The sows recently moved from a building with an earth floor to a concrete floored building. They were not receiving any iron supplementation and it was thought that iron deficiency could have been a predisposing factor. *S. suis* 1 causes septicaemia in piglets, usually of less than 3 weeks of age.

Necrotic myositis cause by *Clostridium novyi*

A prized two-year-old outdoor boar was found dead one morning. The owners reported slight inappetence the previous night. The most striking finding was the advanced state of decomposition of the carcass, with gas bubbles in the liver and spleen. Other post mortem findings included generalised redness of the carcass (congestion) and randomly distributed haemorrhages in the muscles, predominantly around the head, neck and forelimbs. Given the rapid autolysis, involvement of clostridial infections was considered and further investigated. Fluorescent antibody testing of the muscle for *C. novyi*, *C. septicum* and *C. chauvoei* was performed. A strong positive result for *C. novyi* in the light of absent *C. septicum* and *C. chauvoei* was considered significant. Disease caused by *C. novyi* has been associated with sudden death (usually sporadic) in large fattening pigs and sows, although the exact pathogenesis is uncertain. One of the most frequent post mortem findings is the 'Aero' chocolate or foam rubber appearance of the liver. Vaccination with a multivalent clostridial vaccine is effective at preventing losses.

Septic arthritis associated with *Haemophilus parasuis* and *Streptococcus suis* serotype 16.

Three two to three-week-old piglets were submitted to investigate a problem of joint-ill developing at that age in pre-weaning piglets. Initially, single joints were affected with very little lameness. This would however, rapidly worsen with spreading to other joints and with severe lameness if left untreated. The post-mortem investigation confirmed the presence of purulent joint-ill in two of the piglets and evidence of septicaemia, pneumonia and polyserositis in the third. Cultures revealed pure growths of *Streptococcus suis* type 16 in two of the piglets and *Haemophilus parasuis* (aetiological agent of Glässer's disease) in the third piglet. *Streptococcus suis* type 16 is a more unusual cause of systemic disease in pigs. Human cases with this bacteria have been reported in South East Asia and the private veterinarian was made aware of the zoonotic potential of this organism.

Wasting and sudden deaths caused by co-infection with PRRSv and untypeable *Streptococcus suis*

The carcasses of four 14-week-old finishing pigs were submitted with a history of sudden death following a period of wasting. There was a concern that PMWS might be involved in this problem, as this has been previously diagnosed on the unit and despite the use of a PCV2 vaccine, there were concerns that pigs might have been missed. There was also a history of an ongoing *Salmonella* problem. Post-mortem examination revealed marked red discolouration of the ears which were also oedematous. There was a polyserositis and all pigs had marked vegetative endocarditis from which an untypeable *Streptococcus suis* was isolated. In addition, PRRS PCR carried out on samples from two of the pigs was positive in one animal. An overall diagnosis of *Streptococcus suis* septicaemia complicated by *Salmonella* in one pig was made with some evidence of the background involvement of PRRS virus.

Systemic disease associated with *H. parasuis*, PRRSv and *Salmonella* Typhimurium PT193

Glasser's disease was confirmed as the cause of lameness, coughing, and loss of condition in approximately 15% of 660 seven-week-old weaners, 16 pigs died over three to four days. Pigs were on a continuous indoor nursery-finisher unit taking pigs in from one source with pigs of different ages sharing a common air space. *Haemophilus parasuis* was isolated from pigs with fibrinous pleurisy, pericarditis and polyarthritis, typical of Glasser's. Active PRRSv infection was also detected by PCR in these pigs and was likely to be of significance in the clinical disease on farm. Two pigs were scouring with colitis and *S. Typhimurium* phage type 193 was isolated from their intestines.