



VLA Monthly Surveillance Report for PIGS: October 2008

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

Highlights

- Cases of Swine Dysentery continue to occur
- Intestinal lymphosarcoma and multicentric lymphoma diagnosed in growing pigs
- Problems due to *Streptococcus suis* serotype 2 as an apparent primary pathogen.
- Neonatal scour due to *Clostridium perfringens* in indoor units.
- Ongoing Cases of clinical Porcine Proliferative Enteropathy, caused by *Lawsonia intracellularis*

Enteric Diseases

Swine Dysentery in two unrelated all-in all-out outdoor finisher units.

Swine dysentery was diagnosed twice this month by one regional laboratory, on both occasions on all-in, all-out finisher units geographically distant from one another. In one, swine dysentery was confirmed on a unit with no previous history of infection. Five of 25 22-week-old pigs were seen to have blood flecked diarrhoea and two died, a reddened colonic mucosa and bloody intestinal contents were found in on-farm post-mortem examinations. The source of infection was suspected to be a neighbouring SD positive unit which was cleaning out, with birds being a possible means of transmission.

In the second, *Brachyspira hyodysenteriae* was detected by PCR in faeces from 21-week-old pigs with diarrhoea, a group B salmonella was also isolated. Although swine dysentery was previously diagnosed on this unit in 2006, the unit was considered clear of SD and infection was strongly suspected to have entered with the pigs which were supplied from a rearing unit where the stockman also looked after pigs on finishing units which were SD positive.

Swine Dysentery in growers

Dysentery and some degree of ill thrift were reported in a group of 40, 10-12 week old growing pigs. One was examined at post mortem and the main finding was a necrotic colitis. *Brachyspira hyodysenteriae* was not surprisingly isolated from the large intestinal contents.

Swine dysentery causing intermittent scour

On another unit a problem of intermittent looseness with mucoid faeces was investigated in finishing pigs. In this case *Brachyspira hyodysenteriae* was also isolated from two of three gastrointestinal tracts submitted. Grossly there was a very mild colitis and histology revealed goblet cell hyperplasia and the presence of *Balantidium coli*. The clinical history and gross appearance of the colon was more suggestive of colitis associated with weakly beta haemolytic spirochaetes such as *B. pilosicoli* or *intermedia*, thus further investigations are in hand.

Enteritis and deaths due to *Salmonella* Typhimurium

An outbreak of scour in six-week old weaners on a contract rearing unit was investigated. Four dead animals were examined and the consistent finding was a necrotic enterocolitis. *Salmonella* Typhimurium phage type U288 was isolated from these pigs. A *Salmonella* sampling visit to this farm has been carried out.

Multifactorial enteric disease diagnosed on histopathology

Three recently euthanased 3 month old pigs were submitted with a history of malaise and loose faeces. Grossly there was evidence of moderate to severe ileitis in two animals, whilst all three showed evidence of mild typhlitis/colitis. Culture and FAT examinations failed to reveal any evidence of bacterial pathogens (*E. coli*/*Salmonella*/*Brachyspira* spp) and no acid fast organisms (*Lawsonia* spp) were seen in stained smears of intestinal mucosa. Histopathological examinations revealed non-specific chronic inflammatory

and hyperplastic changes in the small and large intestines of all three pigs possibly associated with resolving infections with *Salmonella*, *Brachyspira* and/or *Lawsonia* species. However one animal also showed the presence of attaching and effacing bacteria within the ileum – lesions likely to result in severe diarrhoea. The submission of further early affected cases was suggested as a means of identifying specific pathogens.

Continuing problems due to neonatal scour associated with *Clostridium perfringens*

10% of newborn piglets from a 1650-sow unit were scouring at age two to three days with 1% mortality. A previous submission to VLA Thirsk had identified a primary clostridial problem with secondary colibacillosis. There had, however, been no response to injections of long acting amoxycillin at birth. Two live pigs were submitted for confirmation of the original diagnosis. They exhibited mild yellow scour and post-mortem examination showed generalised small intestinal reddening and engorgement of mesenteric vasculature. There was additional oedema in the mesenteric folds of the spiral colon of one pig. Heavy clostridial growths were identified in anaerobic cultures of ileum and routine cultures of ileum yielded profuse very mixed growths of staphylococcal, streptococcal and coliform colonies. Histopathology showed pathology was mainly limited to the ileum where there was a moderate to severe predominantly neutrophilic inflammatory cell response within the lamina propria of the villi. There was crypt hyperplasia and mild villus attenuation and there was a severe burden of rod-shaped bacteria surrounding the villi and within the gut lumen. Some of these were invading down the sides of the villi and were closely associated with the enterocyte surface. Once again it was determined that clostridia were playing a major role in the problem and it was also likely that secondary *E. coli* infection was then able to become established. It was suggested that *Clostridium perfringens* type A was the culprit which was not included in commercial multivalent clostridial sow vaccines, and whilst a response to amoxycillin injections was disappointing, it was suggested that an oral preparation may prove more efficacious.

Neurological disease associated with neonatal *Clostridium perfringens* enteritis

Twenty one-day-old piglets collapsed and exhibited neurological signs over a two-day period and three live piglets were submitted for examination. All three pigs were comatose and cold and there was subcutaneous haemorrhage in the ears of two pigs and on the leg of the third. Post-mortem examination revealed all stomachs were distended with gas and contained only fluid. There was reddening of the serosa of the small intestine and blood tinged content was present within. The caecum of one pig contained gassy, bubbly, dark green content. The gross pathological picture was highly suspicious of clostridial enteritis and indeed anaerobic cultures yielded *Clostridium perfringens*-like organisms from intestinal tissues of all pigs. The diagnosis was confirmed using histopathology. Hypogammaglobulinaemia was likely as the stomachs were empty and two showed no evidence of colostral globules within the enterocytes.

Porcine Proliferative Enteropathy ('ileitis') triggered by a move from flat decks.

Mild scour in 12-week-old pigs following moving out of flat decks prompted the submission of three live affected pigs for examination. Post-mortem examination revealed the terminal ileum in two of the pigs to be thickened and the mucosa was roughened and hard. The caecum and colon were grossly thickened, tubular and rigid in one pig. Acid-fast intercellular organisms resembling *Lawsonia intracellularis* were seen in MZN stains of ileum from both of these pigs and a diagnosis of ileitis was made.

Scour and poor performance due to *Lawsonia intracellularis*

Necrotic ileitis due to *Lawsonia intracellularis* was also diagnosed as the cause of scour and weight loss in two pigs submitted from a unit where 125 of 500 11-week-old pigs were affected with 12 deaths over five days. Pigs were on a 350 sow indoor commercial grower producer. In both pigs the distal third of the small intestine was thickened and contained a necrotic core with diptheresis of the small intestinal mucosa. In one, there was also a multifocal necrotic typhlitis and a thickened mucosa in the colon. A severe watery brown scour was present in both pigs and intracellular curved acidfast organisms were detected in MZN-stained smears from the ileal mucosa. There was no evidence of PCV2 involvement or of other common porcine enteropathogens.

Multifactorial disease leading to gastric ulceration

Wasting, coughing and dyspnoea in approximately 20 of 840 15-week-old finishers on a single sourced all-in, all-out indoor finisher unit was investigated by submission of three pigs. Pigs entered the unit approximately four weeks earlier from an outdoor source from which several batches of finisher pigs on other units had similar problems. There was some response to treatment with antibiotics on other units. The pigs were *Mycoplasma hyopneumoniae* vaccinated. In all three pigs there was significant gastric ulceration which, in two, was causing anaemia. In one pig, the ulcer had healed and contracted causing stenosis at the cardia and megaesophagus. There were varying degrees of bronchointerstitial pneumonia in the three pigs and in the pig with the most severe lesions (ep equivalent score 55, *Pasteurella multocida* isolated), the right side of the heart was enlarged, probably secondary to the lung disease (cor pulmonale). Immunohistochemistry did not demonstrate PCV2 or PRRSV associated with the subacute to chronic bronchointerstitial pneumonias. However, PRRSV was detected by PCR in the serum from one pig indicating that active PRRS virus infection was present in the group. Pneumonia, or any other disease process, causing periods of inappetence predisposes to gastric ulcer formation in pigs which are normally fed *ad lib*. Where there are high levels of gastric ulceration occurring, it is worth checking the feed particle size (feeding meal rather than pellets and increasing particle size usually reduces the incidence of gastric ulceration); and checking that

there are no irregular feeding patterns, shortage of feeder space or other reasons for poor availability of food or access to food or water.

Respiratory Diseases

Multifactorial disease with consistent pneumonia in grower/ finishers

Mixed findings were present in six pigs aged 12-18 weeks submitted to investigate respiratory disease in finishers and high levels of pleurisy in slaughter pigs. All six pigs had significant bronchointerstitial pneumonias, most with localised chronic fibrous pleurisy and just one with evidence of a generalised fibrous pleurisy and pericarditis which could relate to earlier Glasser's disease. Five of the six pigs had ulceration of pars oesophagea, in three pigs this was severe with evidence of haemorrhage. *Pasteurella multocida*, *Arcanobacterium pyogenes*, *Streptococcus suis 7* and *Bordetella bronchiseptica* were isolated from the lungs of this group of pigs. PRRSV was identified by PCR in the serum of one pig and serology confirmed that there was challenge with PRRSV before 12 weeks old. Immunohistochemistry did not demonstrate either PCV2 or PRRSV associated with the bronchointerstitial pneumonias. However, histopathology suggested that the pulmonary lesions were due to a combination of mycoplasmal and secondary bacterial infection, possibly with an underlying viral cause but that disease may have been too chronic to detect virus by immunohistochemistry. This emphasises the importance of selecting pigs early in the course of disease to improve the likelihood of useful diagnosis. In addition to the respiratory disease, multicentric lymphoma was confirmed in one pig which had multifocal pale circular foci in the liver with some slightly raised from the liver surface; the spleen was enlarged and firm and there were reddened dark red circular 2 to 4 mm foci on the surface of the renal cortex. One scouring pig was confirmed as porcine intestinal adenomatosis.

High postweaning mortality in a continuous flow system associated with *Actinobacillus pleuropneumoniae*

Actinobacillus pleuropneumoniae infection was diagnosed as the cause of sudden deaths and respiratory disease in housed finishers in a continuous flow system with a weaning to slaughter mortality of 14%. The problem had been ongoing for several months. Pigs were vaccinated once for *Mycoplasma hyopneumoniae* at 10 days old and for PRRSV at weaning. In two submitted pigs there was dark purple swollen consolidation affecting most of the right lung, the left middle and intermediate lobes with severe fibrinous pleurisy over the right lung. Excess fibrinous pleural fluid with fibrin stranding and adhesions were present on the right side of the thoracic cavity. Histopathology of the lung was consistent with *Actinobacillus pleuropneumoniae* infection and this organism was isolated. There was no evidence of PCV2 or swine influenza involvement and, although PRRSV RNA was detected in the spleen of one of the pigs, there was no evidence of active PRRS virus infection in the lung of either pig by immunohistochemistry.

Reproductive Diseases

Maternal seropositivity to *Leptospira bratislava* in sows associated with foetal resorption

Blood samples from sows which were originally scanned pregnant but later reabsorbed their foetuses were shown to be uniformly seropositive to *Leptospira bratislava* using the MAT (titres up to 1/400). Although single serum samples are not diagnostic, the seropositivity was suggestive of recent infection and vaccination was discussed.

Disease of the Nervous System

***Streptococcus suis* type 2 meningitis**

A live Gloucester Old spot piglet exhibiting nervous signs including shaking and twitching of the head and body was submitted. Increased cerebrospinal fluid was noted and a sparse pure growth of *Streptococcus suis* type 2 was isolated from the fluid and the brain.

Meningitis and polyserositis associated with *Streptococcus suis* type 2

Nervous disease was investigated in 6 to 8-week-old piglets four of which were submitted for post mortem examination. There was a fibrinopurulent meningitis in one carcass and a generalised polyserositis in other carcasses, septicaemia involving *Streptococcus suis* type 2 was confirmed despite an on-farm vaccination programme against this organism. Possible reasons for apparent suboptimal vaccine efficacy are being investigated, including the possibility of concurrent predisposing diseases (e.g. PRRSV)

Arthritis and meningitis due to *Streptococcus suis* type 2

Two 3-week old piglets from a litter of 13 were submitted with a history of lateral recumbency, shaking, and paddling. Grossly there was evidence of fibrinopurulent polyarthritis and meningitis. Brains and joint fluids yielded pure growths of *Streptococcus suis* type 2.

Deaths and nervous signs associated with *Streptococcus suis* type 2

Streptococcus suis type 2 infection was found to be the cause of wellgrown grower pigs dying with nervous signs seen in a few. One batch of pigs were affected after being five weeks on a free-range outdoor wean to finish unit. Pneumonia and polyserositis were present and *S.suis* 2 was isolated in pure growth from lung, pericardium and joint. No PRRSV was detected.

Systemic Diseases

Bacteraemia resulting from tail bite abscesses

Arcanobacterium pyogenes septicaemia and pneumonia were diagnosed at post mortem as the cause of death of a three-month old pig. Tail biting was identified as the likely means of infection being introduced.

Erysipelas

Erysipelothrix rhusiopathiae was isolated from vegetative endocarditis lesions found in two 13-week-old, outdoor reared, Gloucester Old Spot pigs. In total three pigs of this age were affected from a group 12. Advice was given on treatment and prevention.

PMWS

Wasting due to PMWS was confirmed by histopathology on lymph nodes and ileum from one of two seven week old piglets submitted from a 100 sow breeding and rearing herd. The main sign reported was ill-thrift post weaning in piglets. The other piglet submitted had evidence of pneumonia and enteritis although no causative agents were identified.

Intestinal lymphosarcoma

One from a group of 80 Large White fattening pigs was in poor condition and was euthanased for post-mortem examination. The animal weighed 62 kg. Necropsy revealed a huge liver weighing 10.7 kg, and the liver parenchyma was uniformly mottled red and white. The spleen had been displaced distally by the swollen liver, and was also hugely swollen and weighed 1.1 kg. Many lymph nodes, particularly hepatic, internal iliacs and caudal mediastinals, were swollen, pale and mottled. The internal iliac lymph nodes measured approximately 15 cm x 6 cm x 5 cm. Histopathological examination was indicative of lymphoproliferative disease and lymphoma was the most likely diagnosis. It was noted that there is an autosomal recessive trait in Large White pigs for lymphoma.