

common findings. Thin watery blood, ascites, a pale, flabby heart and hydropericardium are also often noted. Microscopically, hyperplastic bone marrow and hemosiderosis and centrilobular necrosis of the liver can be seen. The severe anemia associated with epy is due to R.E. hemolysis and auto-immune phagocytosis.

There are three main clinical forms of epy: 1) a form in which there are infertility problems such as abortions and/or weak pigs which often bleed from the navel, 2) a form which manifests itself just after the pigs are weaned. In this form the pigs go progressively downhill postweaning and become chronic "poor-doers" which are anemic and often develop a diarrhea terminating in death, and 3) the form most often described is the acute, febrile, icteroanemic disease of shoats. This form is less common than previously due to antibiotic feed additives.⁴

Diagnosis was formerly based on history and demonstration of the parasite in blood smears. The organism is often difficult to find on blood smears due to the fact that the number of parasites is on the decline by the time clinical signs are evident and, even so, many infections are subclinical in nature. For these reasons the indirect hemagglutination (IHA) test was developed. It is an improvement over the complement fixation (CF) test since it detects IgM while the latter detects only

IgG. In the carrier state the IgG antibody may be effectively neutralized yielding negative results with the CF test. The IHA test has been shown to be a reliable test.⁵

The swine host can carry epy organisms for long periods without displaying clinical signs of the disease. The blood is extremely infectious to other swine even though it may be impossible to demonstrate the organism on blood smears.

Two commonly used treatments for epy are oxytetracycline at 3-5 mg./lb. and arsanilic acid at 360 gm./ton for five days (experimentally derived dose). Symptomatic treatment is also important and includes administration of sodium cacodylate, iron, and B-vitamins (indicated for anorexia). Of course, far better than cure is prevention which can be achieved by controlling lice and mange and also prevention of mechanical transmission of the organism.

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Pseudorabies In Cattle

by
Tom Hutchcroft*
and

George Beran D.V.M., Ph.D., L.H.D.†

Pseudorabies (PR), or Aujeszky's Disease is a disease caused by a Herpesvirus causing both apparent and inapparent infections in swine and causing disease in other species. In volume 37, 1975

* Mr. Hutchcroft is a fourth year student in the College of Veterinary Medicine, Iowa State University.

† Dr. Beran is a Professor of Veterinary Microbiology and Preventative Medicine at Iowa State University.

no. 1 of the *ISU Veterinarian*, the disease was described as it has been seen in swine of various ages. The clinical cases described in that article were similar in some manifestations and different in others to cases seen in a recent PR outbreak near Hubbard, Iowa from February, 1974 and continuing to date. This epidemic has spread to 23 different farms causing a large economic loss. There have also been

two farm outbreaks of PR reported in cattle, with one being the typical form described in the literature and the other being a less frequently described form of the disease. The following is a summary of these two outbreaks, and a review of present knowledge of PR in the bovine.

Farm A. The farm owner, who lived south of Hubbard, was farrowing gilts twice yearly in A frame hog houses on pasture. He had no history of abortion problems and a minimum of other disease problems in his swine herd. Management was considered very good. Near the middle of May 1974, PR broke in the gilts causing mild infections characterized by anorexia to acute illness with abortions. This was followed by rapidly fatal infections in 7-10 day old piglets, and CNS signs and pruritus in feeders. At the time of the outbreak, the farmer had a group of cattle consisting of 3 cows, 1 bull, 1 young male calf, and 2 yearlings, in a pasture about 20 yards away from the farrowing pen. Between the cattle and the gilts was a group of home raised feeder pigs weighing about 200 pounds, which at no time showed any clinical signs of pseudorabies infection. The cattle and the gilts did not at any time have direct contact with each other. Ten to fourteen days after the disease hit the swine herd, one of the cows was found dead in the pasture. The carcass was reported as bloated but no postmortem studies were done. On the next morning another cow was found bloated. The farmer's veterinarian relieved the condition by passing a stomach tube. By noon the cow was showing CNS problems and she died 2-3 hours later in a convulsive attack. Again no postmortem studies were done. The following day one of the yearling calves was found to be bloated and was relieved by stomach tube. He was transferred into a nearby pasture and in 5-6 hours was circling, rubbing and frothing at the mouth. When attempts were made to bring him into a corral he charged a tractor tearing off the grill and broke off a pipe mounted water hydrant. He then laid down, thrashing violently, until death followed within 20 minutes. On examination, the skin had been rubbed off the head and from around the ears, but no necropsy was performed. The rest of the cattle were sold

the next day and butchered two days later with no further cases breaking. The diagnosis of pseudorabies in this herd was based on the clinical manifestations plus the presence of laboratory confirmed PR in the swine on the same farm.

This first case report has described a clinically diagnosed outbreak of PR in cattle, one of the three animals showing the intense pruritus referred to as "Mad Itch". In the literature on PR in the bovine, besides this clinical sign, twitching of the facial and neck muscles has been reported to occur early in the disease progression. The flank, vulva and hindquarters have been the sites most often initially affected. These are also postulated to be the areas most likely to be nipped by infected pigs contacting the cattle. As the pruritus becomes worse the animals may bite and gnaw themselves, self-mutilation being furthered by rubbing against bunks, fences and other objects. In a few hours affected animals have gone down, salivating excessively and with body temperatures rising to 105° F. or higher. After going down, affected animals usually continue to live another 36-72 hours, with death preceded by dyspnea, convulsions and bellowing. In cattle the disease has been considered 100% fatal.

Farm B. A clinically different form of PR was seen in a group of young calves owned by a farmer who also farrowed 80-100 litters of swine each year, from which he fed the pigs to market. He owned a 20 head beef cow herd that had through-the-fence contact plus an in-the-fence waterer, with a group of sows and a group of market hogs. The sows had been bred to boars that were later shown to be PR positive. The disease manifested itself in sows by causing a high percentage of them to become ill and go off feed. A few acted dizzy, had a head tilt, had trouble maintaining their balance, had a brown watery vaginal discharge, and a large percentage of the sows appeared to reabsorb their litters. The 20 cows calved in March and April 1975. Illness was observed in calves at three to six weeks of age. A total of seven calves died, three of which were sent to the Iowa Veterinary Diagnostic Laboratory and confirmed positive for PR virus. The sick calves showed clinical signs

of colic, laying down and kicking, bellowing, twisting, braced stance, increased salivation, and collapse into a coma. Death followed the onset of clinical signs in 24 to 48 hours. At necropsy, two calves showed an acute hemorrhagic abomasitis which resembled the gastritis often seen in dogs which die of PR after eating pigs which died of the disease. None of the calves showed any signs of frank pruritus and itching. During the clinical phase in the calves, their dams had constantly nosed and licked them, but no clinical signs of PR were observed in these cows. After the deaths of the seven calves, the farmer moved the herd away from the swine lots and the eleven remaining springers all had normal calves which have remained healthy to the present time.

The second case report presented an interesting aspect of this pseudorabies outbreak. The clinical signs the calves exhibited would allow it to be confused with indigestion, colibacillosis, rabies, or *Clostridium perfringens* type C enterotoxemia. This form of PR was more similar to the clinical form seen in suckling pigs and may be age related. Since it appeared that the exposure was by inhalation rather than by ingestion, it may also be related to the route of exposure.

The PR outbreak at Hubbard, Iowa has raised a number of questions. In this

outbreak, one must wonder why the cows did not contract the disease. They could not have developed immunity from a previous illness or have had a subclinical form if PR is 100% fatal in cattle as reported in the literature. Further studies are needed on whether calves with clinical disease, such as these had, actually shed virus and whether adult cattle are susceptible to intranasal exposure to PR. It is important that bovine practitioners be alert to possible nasal transmission of PR virus from swine to cattle and to a form of the disease in cattle which may not be a characteristic "mad itch".

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The Effect of Artificial Lighting on the Estrous Cycle of the Mare

by
Barbara Kuhns*

Although we find a wide range of estrous cycling patterns, the mare is usually considered seasonally polyestrous—cycling only during certain seasons of the year. In the natural state, the seasonal breeding was advantageous to the survival of the

foals as they were born during the spring and summer with moderate temperatures and adequate food supply. Today's well-managed horse farms with complete nutrition programs and indoor facilities have alleviated the pressure for such selective patterns, but due to the relatively short evolutionary period of domestication, the seasonal pattern predominates.⁶

* Mrs. Kuhns is a fourth year student in the College of Veterinary Medicine, Iowa State University.