Proliferative Enteropathy in Foals: A Cause of Colic, Diarrhea, and Protein-Losing Enteropathy

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Enteric infection caused by Lawsonia intracellularis resulted in outbreaks of diarrhea, colic, and protein-losing enteropathy in weanling foals on three breeding farms. Affected foals were successfully treated with erythromycin alone or in combination with rifampin, and support therapy. Authors' addresses: Dept. of Clinical Sciences, Ontario Veterinary College, University of Guelph, Ontario N1G 2W1, Canada (Parsons) and Depts. of Clinical Sciences (Lavoie) and Pathology and Microbiology (Drolet), Faculty of Veterinary Medicine, University of Montreal, 3200 Sicotte, Ste-Hyacinthe, Quebec J2S 7C6, Canada. © 1998 AAEP.

1. Introduction
Proliferative enteropathy (PE) is a transmissible enteric disease affecting a number of mammalian species, notably pigs. It has a worldwide distribution and its causal agent has recently been identified and classified as Lawsonia intracellularis, which is an obligate intracellular bacterium.1 To our knowledge, to date there have been only three isolated cases of PE reported in foals, all of which had a fatal outcome.2–4 Although the pathological features of these foals closely resemble those of other species, little is known concerning the clinical features of affected foals, and no effective treatment for PE has been described.

2. Materials and Methods
Following the diagnosis of fatal cases of PE on three breeding farms, all weanling foals from these farms were closely monitored for the disease. Foals suspected of PE were either hospitalized at the Faculty of Veterinary Medicine, University of Montreal or at the Ontario Veterinary College, University of Guelph or treated at the farm. Medical records from these foals were reviewed, and the clinical features and selected hematological parameters obtained from foals treated at the farms were studied.

3. Results
A. Horses
Foals 4–7 months of age, confirmed (six) or suspected (21) to have PE, were studied. Detailed medical records were available from eight cases, while clinical information from another 15 foals was available through the farm personnel or veterinarians. All cases occurred in the Summer and Fall of 1997.
Farm A (18 cases/325 horses) and B (six cases/250 horses) were Arabian breeding farms, with close ties to each other. Farm C (three cases) was a Thoroughbred breeding farm without known contacts with Farm A and Farm B.

B. Clinical Signs
Common clinical signs included depression, rapid and severe weight loss, usually despite a normal...
appetite, subcutaneous edema, diarrhea, and colic. Extremely poor body condition with a rough haircoat and a pot-bellied appearance were common findings in affected foals. A concomitant respiratory tract infection and intestinal parasitism were also found in some foals.

C. Clinical Pathology

Hypoproteinemia was the most consistent laboratory finding. Other abnormalities noted included transient leucocytosis, anemia, increased creatinine kinase, and hyponatremia.

D. Diagnosis

A postmortem diagnosis of PE was based on the presence of characteristic intracellular bacteria within the apical cytoplasm of proliferating crypt epithelial cells of the intestinal mucosa, found by using silver stains. The presence of *L. intracellularis* was confirmed by a polymerase chain reaction (PCR) analysis and immunohistochemistry.

An antemortem diagnosis of the condition was made based on the clinical signs, presence of hypoproteinemia, and the exclusion of common enteric infections. In addition, fecal samples from three foals from Farm A were positive for the presence of *L. intracellularis* by a PCR analysis.

E. Therapy

Foals were treated with erythromycin estolate (25 mg/kg PO q 6-8 h) alone or combined with rifampin (7 mg/kg PO q 12 h). Antimicrobials were usually administered for a minimum of 21 days. Additional symptomatic treatments were administered when indicated. In two foals, chloramphenicol (50 mg/kg PO q 6 h) was substituted for erythromycin because of the recurrence of diarrhea during therapy. All but one of the foals treated with erythromycin, rifampin, or chloramphenicol survived the infection.

4. Discussion

This study indicates that proliferative enteropathy should be included in the differential diagnosis of outbreaks of diarrhea, colic, and protein-losing enteropathy in weanling foals. An antemortem diagnosis was based on the clinical signs, presence of hypoproteinemia, and the exclusion of common enteric diseases. A fecal PCR analysis was not a sensitive means to detect the disease. The prognosis for recovery was favorable with appropriate antimicrobial therapy.

References