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Steven Claas

Production Assistant

Steven Claas

Janice Storebo

Sarah Summerbell

Layout and CD-ROM

David Brown

Tina Smith

Logo Design

Ruth Cronje, and Jan Swanson;

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Neonatal pig diarrhea

Kurt Rossow, DVM, PhD

University of Minnesota, Minnesota Veterinary Diagnostic Lab

Diarrhea in neonatal pigs is a severe life challenge. The processes involved not only damage normal intestinal function but may inadvertently complicate normal processes. The neonatal intestine is characterized by rapid growth and is dependent on a continuous supply of nutrients. In addition, intestinal development is also dependent on an arterial oxygen supply. A disruption of growth by factors affecting oxygen supply such as premature birth, pneumonia or poor nursing will severely compromise the neonatal pig's ability to deal with infectious agents. The neonatal intestine has a large portion of its structure devoted to crypt epithelium essential for rapid growth. Crypt epithelial cells have secretory abilities to facilitate digestion but no absorptive ability. The small intestine's primary function is nutrient digestion and absorption. The colon is the primary source of fluid and electrolyte absorption. The relatively small size of the colon in relation to the size of the small intestine in the neonatal pigs makes them susceptible to rapid dehydration and electrolyte imbalance.

Small intestinal disease is a combination of events either sequential or overlapping resulting in intestinal damage. The intestinal damage can be categorized as hypersecretion, malabsorption, inflammation and increased permeability (intestinal mucosal damage). The primary insult or category of damage by some agents may also have secondary effects multiplying the intestinal damage. For example, damage to intestinal cells resulting in primary hypersecretion will elicit secondary damage due to products of damage/dead intestinal cells and stimuli from the inflammatory response. Co-infections with multiple agents in the intestine will greatly compound the challenge

to the pig. Coinfections with an initial agent can lead to a malnourished pig susceptible to a longer period of diarrhea when challenged with subsequent agents. Some small intestinal damage in neonates may not become obvious until pigs are weaned. Villous atrophy may not become apparent until pigs are weaned from a highly digestible milk diet to a cereal based diet.

Neonatal diarrhea is a severe challenge for the neonatal pig to overcome. The contributing factors involved are an interwoven cascade of detailed events strongly influenced by the pigs' environment and development as well as infectious agents. A basic understanding of the severe compromise to the pig is required to properly appreciate the need for prompt treatment to correct the clinical disease and to properly educate people treating pigs on the need for prompt treatment. Proper diagnosis will provide knowledge to mitigate or prevent future disease.

References

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Table 1:

	Hypersecretion	Malabsorption	Inflammation	Increased permeability
Rota virus	x	x	x	x
<i>E. coli</i>	x	x	x	
<i>C. perf. A B2</i>	x		x	
<i>C. perf. C</i>		x	x	x
TGE		x		x
Coccidia		x	x	x
<i>C. difficile</i>	x		x	x