Pathologic Effects of Clinical Uterine Inflammation on the Equine Endometrial Mucosa

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Chronic uterine infection or persistent inflammation in the mare is associated with hypersecretion of mucus and disruption of the architecture of the endometrial epithelium. Mucolytic agents, administration of steroids, or prolonged sexual rest may be needed to restore endometrial function. Authors’ addresses: Department of Animal and Veterinary Sciences, University of Maine, Orono, ME 04469 (Causey, Morse); Department of Veterinary Clinical Sciences, Louisiana State University, Baton Rouge, LA 70803 (Miletello, Lyle, Paccamonti, Eilts); Department of Physiological Sciences, University of Florida, Gainesville, FL 32610 (O’Donnell, Anderson); and Rood and Riddle Equine Hospital, Lexington, KY 40580 (LeBlanc); e-mail: Robert_Causey@umit.maine.edu. © 2008 AAEP.

1. Introduction
The reproductive tract is similar to the respiratory tract in that both have mucosal immune systems and may produce excessive quantities of mucus if persistently irritated. Excessive mucus may interfere with penetration of intrauterine antibiotics, sperm motility, and embryo migration, resulting in subfertility. Previous work indicates that mucus secretion increases during experimental uterine inflammation and in mares with delayed uterine clearance. In this study, histological features of endometrial mucus production were examined in reproductively sound mares and in mares with clinical uterine inflammation.

2. Materials and Methods
Endometrial biopsies collected during estrus and diestrus from 10 reproductively normal mares were randomized with biopsies from 24 clinical cases of endometritis and stained with periodic acid-Schiff. Thickness and optical density of extracellular mucus, epithelial cell height, and dimension and staining intensity of intracellular mucus were measured under light microscopy using computerized image analysis. Biopsies from 32 clinical cases were classified according to severity of inflammation (mild versus moderate to severe), distribution (focal versus diffuse), and duration (acute, subacute, chronic), and the same parameters were measured.

3. Results and Discussion
Clinical mares showed greater intracellular and extracellular mucus and staining intensity than normal mares but also showed decreased cell height compared with normal mares. Among
clinical mares, moderate to severely inflamed endometria had the greatest cell height compared with other categories of inflammation. Persistent, active inflammation may disrupt epithelial architecture and was associated with increased mucus production.

Funded in part by the Maine Agricultural Center.

References