Expression of IL-1β, IL-8, and IFN-γ in the Blood of Healthy and Sick Neonatal Foals: Preliminary Results

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Cytokine evaluation is a new interesting study field in neonatal intensive therapy. Septic foals significantly up-regulate interleukin-1 (IL-1β). Further investigations on cytokine profile are necessary to determine its viability as a diagnostic and prognostic tool. Authors’ address: Veterinary Clinical Department, Faculty of Veterinary Medicine, Via Tolara di Sopra 50, 40064 Ozzano Emilia, Bologna, Italy; e-mail: carolinacastagnetti@unibo.it. © 2008 AAEP.

1. Introduction
Cytokines are endogenous inflammatory mediators and they are an integral component of adaptive and innate immune responses. They may be divided into pro-inflammatory (including interferon [IFN]-γ, interleukin [IL]-1, and IL-8) and anti-inflammatory categories.

2. Materials and Methods
The clinicopathological data of foals <7 days old referred to the Veterinary Teaching Hospital of the University of Bologna in 2007 were recorded. IL-1β, IL-8, and IFN-γ gene expression in WBCs (white blood cells) was measured with absolute quantitative real time reverse transcriptase-polymerase chain reaction (RT-PCR). The results obtained were statistically analyzed.

3. Results
Ten healthy foals born at the Hospital and 25 sick foals were included in this study (mean age at admission = 41 h). For statistical analysis, sick foals were grouped as septic (7) peripartum asphyxia syndrome (PAS; 6), and other (10). Only one septic foal died. No time-dependent changes in cytokine expression were found either in healthy or in sick foals. Septic foals showed levels of IL-1β gene expression significantly higher than healthy (p < 0.05) and PAS foals (p < 0.01). IL-8 gene expression was up-regulated in septic foals versus healthy and PAS foals, but the result was not significant. IFN-γ expression was low in all foals. No correlations were found between cytokines and other clinicopathological parameters.

4. Discussion
In this study, as in human infants, foals seemed to up-regulate IL-1β gene expression in response to sepsis. This could be very useful in diagnosing neonatal sepsis in the early stages. Patterns of IL-8 and IFN-γ gene expression were not detected in this study. Further studies involving larger numbers of foals are necessary to elucidate clinical applications of these results.