Utilization of Serum Amyloid A in Managing the Clinical Progression of Equine Bacterial Pneumonia

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Introduction
Monitoring serum amyloid A (SAA) allows for reliable, real-time quantification of systemic inflammation throughout progression and treatment in equine bacterial pneumonia cases. Our objective was to correlate SAA levels with pneumonia severity and resolution, as well as specific factors (e.g., abscessation, pleural effusion), to determine if SAA is an appropriate biomarker for monitoring response to antimicrobial therapy and progression of recovery.

Material and Methods
Fifty-five horses diagnosed with bacterial pneumonia at a large equine hospital were evaluated relative to a healthy cohort (n=20).

Results
Initial SAA values in pneumonia patients averaged 2009±1116 ug/mL (range 0-4625 ug/mL), while initial SAA values in healthy horses averaged 1±4 ug/mL (range 0-20 ug/mL) (p<0.000001). Sensitivity, specificity, and accuracy for the initial SAA were 98.2, 100.0, and 98.7, respectively. Positive and negative predictive values were 100.0 and 95.2, respectively. Sensitivity of fibrinogen and total WBC on admission were 61.5 and 46.2, respectively. By treatment days 7-10, SAA had dropped below 500 ug/mL in several cases, though most cases with abscessation and pleural effusion took longer to normalize. SAA was unable to statistically differentiate between different pneumonia factors, though statistical power and use of serial dilutions were limited.

Relevance to Australian clinical equine practice
The non-specific quality of SAA may also help reveal developing secondary complications (e.g., enterocolitis, pleural effusion). Abscess aspiration and lavage were shown to be associated with a subsequent increase in SAA in many cases. While SAA is a successful, sensitive monitoring tool for diagnosing and managing equine bacterial pneumonia, it is imperative to consider SAA values alongside other diagnostic techniques.