collagen degradation. These results strongly support the use of both assays as discriminating biomarkers for the diagnosis and severity of OC injury in equine joints.

Methods: SF was taken from 2 groups of TB racehorses: (1) rested horses (n=40) and (2) OC injured horses: racehorses that had arthroscopic surgery for removal of OC fragments resulting from racing injury (n=44). From group 1 horses, SF was obtained from 20 metacarpophalangeal joints (MCP), 10 middle carpal joints (MCJ), and 10 radiocarpal joints (RCJ) (n=40). SF samples from group 2 horses were from 16 MCP, 6 metatarsophalangeal joints (MTP), 12 MCJ, and 10 RCJ (n=44). SF samples were assayed using a commercially available ELISA (HMGB1, Shino-Test Corp.). Differences between groups were determined by an unpaired t-test for the metacarpo/metatarsophalangeal (MP) and carpal joints. Positive and negative predictive value of SF HMGB1 for identifying OC injury was determined by Fisher’s exact test. P < 0.05 was considered significant.

Results: SF HMGB1 concentrations in OC injured MP and carpal joints were significantly higher than in normal joints (P < 0.0001; Figure 1). SF HMGB1 concentrations ≥11 ng/mL for MP joints and ≥10 ng/mL for carpal joints were arbitrarily chosen to determine predictive value for discriminating OC injured horses from normal horses. This yielded a positive predictive value of 89% and a negative predictive value of 68% for MP joints, and positive predictive value of 90% and negative predictive value of 81% for the carpus.

Conclusions: OC injury caused a significant increase in SF HMGB1 concentrations in MP and carpal joints compared to normal joints. The assay yielded good positive and negative predictive values. Based on these findings, SF HMGB1 analysis may be useful for evaluation of joint injury.

Figure 1 Scatter plot of SF HMGB1 concentrations for MP and carpal joints in normal and OC injured TB racehorses. The short horizontal solid lines represent the mean value for each group. ***P < 0.001.

117 OSTEochondral injury increases High Mobility Group BOX Chromosomal Protein 1 (HMGB1) in Synovial fluid of Thoroughbred Racehorses

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Purpose: High mobility group box chromosomal protein 1 (HMGB1) is a nuclear protein that functions both as a regulator of gene transcription and as a proinflammatory cytokine. HMGB1 mediates many inflammatory diseases, including many forms of arthritis. The purposes of this study were to investigate the effects of osteochondral (OC) injury on HMGB1 concentrations in synovial fluid (SF) from Thoroughbred (TB) racehorses.

Fig. 1. Scatter plots of synovial fluid aggrecan turnover (A), CTX II concentrations (B) and aggrecan:CTX II ratio (C) in normal and osteochondral (OC) injured metacarpo/metatarsophalangeal (MP) (triangles) and carpal joints (circles). The short horizontal solid lines represent the mean value for each group. *P < 0.05, ** P < 0.01, ***P < 0.001.

118 Type II Collagen synthesis to Degradation Imbalance in Synovial fluid after Osteochondral Injury in Thoroughbred Racehorses

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Purpose: Type II collagen is a major component of articular cartilage and is highly specific for this tissue. CP II (cleaved C-propeptide of type II collagen) has been directly correlated with type II collagen synthesis. CTX II (crosslinked C-telopeptide fragments of type II collagen) has been used to assess collagen degradation. The objectives of the current study were to evaluate the effects of osteochondral (OC) injury on type II collagen synthesis (CP II), degradation (CTX II), and the ratio of synthesis to degradation (CP II:CTX II) in synovial fluid (SF) of horses.

Methods: SF was taken from the metacarpo-1/metatarsophalangeal or carpal joints of 2 groups of Thoroughbred racehorses: (1) normal rested horses, (2) OC injured horses: racehorses that had arthroscopic surgery for removal of OC fragments resulting from racing injury. From group 1 horses, SF was obtained from 12 metacarpophalangeal joints (MCP). From group 2 horses, SF was obtained from 16 MCP. 5 metatarsophalangeal