Relationship between biomarkers of cartilage in serum and degenerative joint disease in Lusitano horses

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Introduction:

Cartilage degradation biomarkers are a potential tool for early diagnosis of degenerative joint disease (DJD). In young horses, ColI2-1 and ColI2-1NO2 have been studied in serum and reported to be useful in the assessment of joint disease. Fib3-2 has been described to be higher in serum of humans with osteoarthritis but was never assessed in horses. The aim of the current study was to evaluate biomarkers' changes with age, sex and exercise and correlate them with DJD.

Material and Methods:

Blood collection and radiographic examination were performed in 51 Lusitanian horses. Moreover, inertial sensor-based detection of lameness was used to assess pain together with subjective examination.

Results:

Females presented significantly higher concentrations of ColI2-1 ($p = 0.015$) and ColI2-1NO2 ($p = 0.014$) compared to males. We have found significant influence of high level of work in lower concentration of ColI2-1 ($p = 0.001$) and significant influence of sex in concentration of ColI2-1NO2 ($p = 0.030$). There was no influence of sex, age and work on Fib3-2. All biomarkers were increased in the DJD group ($n = 35$) compared to healthy controls ($n = 16$). This difference was significant for ColI2-1 ($p = 0.015$). When sorted by sex and age groups, significant difference in ColI2-1 between disease and healthy controls disappeared in old horses and females.

Discussion/ Conclusion:

ColI2-1 is a good marker of cartilage degradation in horses with DJD, being more specific in young horses and males. Fib3-2 may be further explored to help identify disease in particular cases.