COMPARISON OF DIGITAL RADIOGRAPHY AND STANDING LOW-FIELD MAGNETIC RESONANCE IMAGING IN THE DETECTION OF SPECIFIC OSSEOUS PATHOLOGY OF THE METACARPO-/METATARSOPHALANGEAL JOINT

Vanessa G. Peter, MedVet(Berne), MRCVS
Sarah E. Powell, MA, VetMB, Assoc. (LA) ECVDI, MRCVS

Rossdales Equine Diagnostic Centre, Newmarket, United Kingdom

vanessa.peter@rossdales.com

Introduction

Radiography is widely used as the principal imaging technique in the detection of thoroughbred racehorse metacarpo- and metatarsophalangeal joint pathology. The accurate diagnosis and differentiation of fetlock joint pathologies are important as they may have significant welfare and economic implications for the racehorse, from preventing catastrophic injury to reducing days lost out of training. To the author's knowledge, there is no study to date, comparing the ability of digital radiography in detecting specific pathology affecting the metacarpo/metatarsophalangeal joints of thoroughbred racehorses in training with that of standing low field MRI.

Materials and Methods

73 horses (146 condyles) have been included in the study. All limbs underwent radiographic examination on the same day as the MRI examination. The radiographic images were assessed for pathologies such as fissures, fractures, sclerosis and osteochondral defects affecting the distal metacarpus/metatarsus and proximal phalanx. A comprehensive MRI study was acquired, using a commercial low field equine MR unit and the images were assessed.

Results

The means of radiographic lesions detected relative to the reported MRI lesions were as follows: 7/24 palmar/plantar osteochondral defects, 4/11 condylar fissures, 3.5/10 condylar fractures, 7.5/23 dorsal condylar bone mineral densifications, 3/18 dorsal proximal phalanx bone mineral densifications and 1/7 proximal phalangeal fractures. Increased bone mineral densification of the condyles was identified in 51.5/66 condyles. A false positive radiographic diagnosis was made on 17 occasions.

Conclusions

The detection rate of significant metacarpo/metatarsophalangeal joint pathology using digital radiography in comparison with low-field MRI was shown to be relatively low in this study. Radiographic examination of the metacarpo/metatarsophalangeal joint can provide a final diagnosis in some cases, however, the rate of false positives and false negatives using digital radiography is high when compared to the information gained with low-field standing MRI.

References

1. Powell, S.E. Low-field standing magnetic resonance imaging findings of the metacarpo/metatarsophalangeal joint of racing Thoroughbreds with lameness localized to the region: a retrospective study of 131 horses. Equine Veterinary Journal (2012) 44(2): 169-177