



Thermographic Evaluation of Second Carpal Bone Fracture in a Javelin Horse

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Abstract: Poor carpal structure, high-speed gallop exercise, racing, and chronic carpal diseases can be considered as predisposing factors of equine carpal fractures. This case report was aimed to present the evaluation of thermographic findings of a 7-year-old male javelin horse with a second carpal bone fracture. The dorsal view of healthy left carpal joint was measured as 26.8°C, while the dorsal view of the right carpal joint was recorded as 29.9°C. After clinical and thermographic examination, dorsopalmar and lateromedial radiography of the left carpal joint were obtained. Radiographic examination revealed second carpal bone slab fracture in the left forelimb of the horse. In conclusion, thermographic examination may be superior to radiography for determining the localization of lesions. The increase in temperature eventually causes inflammation at the surrounding region, which can be detected by using the thermography.

Keywords: Equine, Inflammation, Lameness, Radiography, Thermography.

INTRODUCTION

The carpal joint in horses is a complex joint made up of seven bones. Carpal bone fractures may occur in horses as a result of acute or chronic traumas. Clinical symptoms include pain on palpation, swelling and lameness. There are three basic types of carpal fractures: chip, corner and slab. Fractures involving two adjacent joints, an upper and a lower one, are called slab fractures. Slab fractures are common in Arabian horses and mostly formed in the third carpal bone (1).

The diagnosis of carpal fractures is made using anatomical imaging techniques such as ultrasonography, radiography, computed tomography and magnetic resonance imaging (1).

Thermography, a physiological imaging modality, provides non-invasive evaluation of associated structure (2). Because thermography can show the localization of injury, it protects veterinarian from the harmful effects of radiographic scanning (3,4). However, it does not give precise information about the specific nature of the problem (2,3). The aim of this case report was to present the thermographic evaluation of second carpal bone fracture in a javelin horse.

CASE REPORT

A 7-year-old male javelin horse brought to Atatürk University Veterinary Faculty, Animal

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Hospital with complaints of chronic lameness, pain on palpation, swelling in the region. Resting was applied by owner to the horse for 2 weeks after the trauma, training was not done during this period, but it was unsuccessful. Informed consent form was obtained. For thermographic examination horse was rested 15 minutes in a closed room without sunshine. Thermographic examination was performed before to the clinical examination because physical examination may alter the temperature over the region. A thermal camera (IR Flexcam-S®, Burlington-USA) was used to detect the temperature differences between the left and right forelimbs. The dorsal view of the left carpal joint was measured as 26.8°C (Figure 1), whereas dorsal thermogram of the right carpal joint was recorded as 29.9°C (Figure 2). In the clinical examination, flexion of the carpal joint caused a pain response. After thermographic and clinical examinations, radiographs of the left carpal joint from the cranio-caudal (Figure 3) and latero-medial (Figure 4) views were obtained. Radiographic examination revealed a slab fracture in the second carpal bone of the left forelimb.

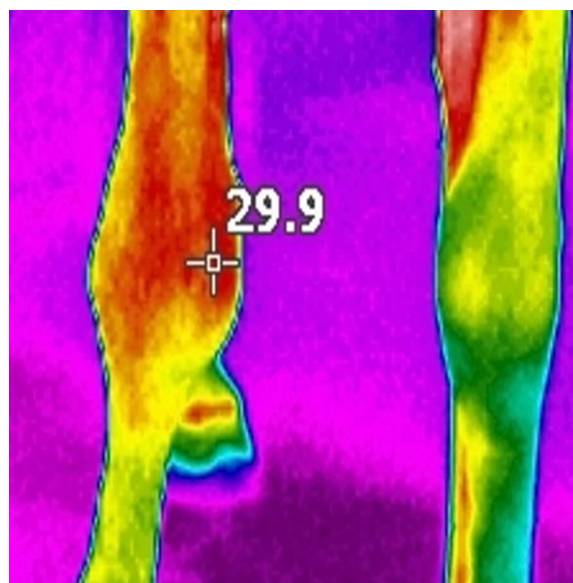


Figure 2. The dorsal thermographic view of the slab fracture in the second carpal bone on the right forelimb.

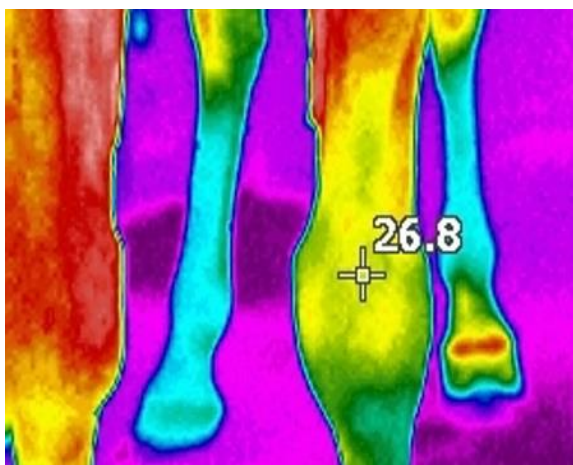


Figure 1. The dorsal thermographic view of healthy left carpal joint.



Figure 3. The cranio-caudal radiographic view of the slab fracture in the second carpal bone on the right forelimb.



Figure 4. The latero-medial radiographic view of the slab fracture in the second carpal bone on the right forelimb

DISCUSSION and CONCLUSION

This case report indicates that thermography may be used for the detection of the localization of the orthopedic problems in horses. This finding is consistent with previous studies which stated that thermography could be utilized if the region is close contact with the skin (3,5). Thermography has been mainly used for the direct diagnosis of dorsometacarpal disease and laminitis in horses (5). With the use of thermography may demonstrate physiological changes over the observed structures. Although thermography helps to detect the localization of the disorder, it is not sufficient to exact diagnosis of the situation. Therefore, alternative imaging modalities such as radiography are needed for certain diagnosis (3).

Thermographic evaluations should be conducted on four different views including dorsal, palmar, medial and lateral directions (4). In this study, only dorsal temperature of the carpal joint was measured. Previous work has been pointed out that dorsal and medial views of the carpal joint display the temperature related with inflammation (3). It has been emphasized that if the temperature differences

between two symmetrical regions is above the 1°C, it could be considered as important sign for diagnosis (4). In this case report, the temperature difference between left and right carpal region was about 3°C, which shows the inflammation over the fractured area.

In conclusion, thermographic examination may be superior to radiography for determining the localization of lesions. The increase in temperature eventually causes inflammation at the surrounding region, which can be detected by using the thermography.

Conflict of Interest

The authors declare that they have no conflict of interest.

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