Proceedings of the 50th British Equine Veterinary Association Congress
BEVA

Sep. 7 – 10, 2011
Liverpool, United Kingdom

Next Congress:

BEVA CONGRESS 2012
12-15 September, Birmingham

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Results of contrast enhanced computed tomography in horses with lameness localised to the distal limb

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**Aims:** To describe the use of contrast enhanced computed tomography (CECT) to diagnose and treat orthopaedic and soft tissue injuries of the distal limb and report the findings in 95 cases with lameness localised to below the fetlock. **Methods:** Retrospective review of all cases undergoing CECT of the distal limb at the Rainbow Equine Hospital between April 2006 and January 2011. **Results:** Two-hundred-and-seven lesions were identified in 95 cases undergoing CECT. Ninety-five percent of cases had one or more lesions and 41% of lesions involved the deep digital flexor tendon (DDFT). Lateral and medial lobes were affected equally (51% and 49%, respectively). Deep digital flexor tendon lesions were just proximal to (54%), at the level of (21%) or just distal to (14%) the navicular bone. Deep digital flexor tendon insertional lesions were identified in 10% of cases. Core lesions, horizontal splits, fibrillation of the dorsal and palmar/plantar borders, lobe enlargement and mineralisation were seen. Twenty-five percent of DDFT lesions had contrast enhancement. Twenty-eight percent showed marked, 44% moderate and 28% mild contrast enhancement. Navicular bursal effusion was present in 23% of all cases, navicular bursal adhesions in 9% of cases. Bony pathology included phalangeal subchondral bone cysts (10 cases), navicular bone avulsion fractures (4), navicular bone remodelling (11) and incomplete sagittal fractures of P3 (4). Other soft tissue abnormalities included lesions of the distal sesamoidean ligament lesions (6), distal sesamoidean impar ligament (7), suspensory ligament of the navicular bone (7), medial (7) and lateral (5) collateral ligaments of the distal interphalangeal joints, distal digital annular ligament (2), distal interphalangeal joint effusion (12) and keratomas (2). Computed tomography was used to facilitate intralesional therapy in 12 cases. **Conclusions and practical significance:** Contrast enhanced computed tomography provides detailed diagnostic information of soft tissue and bone related injuries in the distal limb in cases lacking radiographic or ultrasonographic findings. It facilitates intralesional treatment of soft tissue injuries, which can be conducted during the same examination.

**15.45–16.00**

**Results of contrast enhanced computed tomography in horses with lameness localised to the distal limb**

**Position:**

**Stand:**

**Aim:**

**Method:**

**Result:**

**Conclusion:**

**Reference:**

**16.15–16.30**

**Using positive reinforcement to train young horses to cooperate during handling**

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**Aims:** Interventions on young horses may be particularly risky for breeders or veterinarians due to the young animals’ bad/nonexistent education, often leading them to use constraint and punishment. Here, we investigated the effects of using positive reinforcement (food reward) to train young horses to stand still and cooperate during handling, and we evaluated the effects of such training on the horse-human relationship. **Methods:** Twenty-three yearlings were trained to remain immobile on a vocal order and accept various handling procedures (brushing, picking feet, surcingle, rectal thermometer), giving half of them a food reward (positive reinforcement group, N<sub>exp</sub> = 11) whenever they responded correctly to the command (i.e. remained immobile throughout the handling procedure), while the other half (control group, N<sub>con</sub> = 12) was never given any reward. **Results:** Results showed that using positive reinforcement promotes faster learning (P<0.001) and better memorisation of the immobility task (P<0.05). Horses that received
the food reward also behaved better during training (less biting, kicking, P<0.05) than controls, and not only did they easily accept the tasks included in training, but also it was easier and safer to perform new tasks such as oral deworming or radiography, and at a later stage to perform saddle breaking (P<0.05). Moreover, rewarded animals sought and accepted more contact, both with the familiar trainer (P<0.001 and P<0.01, respectively) and with a nonfamiliar person (P<0.01 and P<0.01, respectively), even several months after completion of training (at least 6 months later).

Conclusions and practical significance: This study reveals that using positive reinforcement can be used to safely train horses to stand still and accept diverse handling or veterinary procedures and it promotes a long-term positive human-animal relationship.

Acknowledgements: Thanks to the COST of the Haras Nationaux and the region Bretagne, France, for funding this research.

16.30–16.45
Saddle pressure patterns are altered by diagnostic analgesia in ridden horses with poor performance
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Aim: To investigate the correlation between saddle pressure measurements and clinical findings in ridden horses with poor performance, before and after diagnostic analgesia. Methods: Saddle pressure patterns were obtained for walk, trot and canter in 4 horses with loss of performance and resistance, poor hindlimb engagement and mild to moderate lameness when ridden. Three horses were re-measured after diagnostic local analgesia that improved each horse’s symptoms. Gait was graded subjectively by the clinician and a professional rider blinded to saddle pressure measurements, and results were compared with saddle pressure data. Results: On initial measurement all horses had an asymmetric pressure distribution between the 4 saddle quadrants. These asymmetries corresponded very well to the clinician’s evaluation of each horse. Following diagnostic analgesia these asymmetries were markedly reduced. Further, the sum of pressures (total force) showed an increased range of fluctuation during the stride cycle. The mean increase ranged between 12–48% in canter and between 14–50% in trot for the different horses. However, stride frequency differed <2% in canter and <5% in trot. This indicates an increase in intra-stride accelerations, which corresponds to the improved hindlimb impulsion appreciated by the clinician and rider. There was also an increase in the cranio-caudal excursion of the centre of pressure, in canter by 6–21% and for 2 horses also in trot by 8–41%. The horse with unaltered trot also had the lowest increase in canter and was perceived by the rider as persistently uncomfortable to ride, despite improvement. Conclusion: Saddle pressure measurements can detect gait abnormalities appreciated by an experienced clinician and a professional rider. It was possible to detect improved hindlimb propulsion and altered gait following diagnostic analgesia. This warrants further study on saddle pressure measurements in riding horses with decreased performance.

16.45–17.00
Outcome after standing fracture repair in twenty-seven racing Thoroughbreds
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Aim: To describe outcome in a case series of horses that had lower limb fractures repaired under standing sedation at Rossdales Equine Hospital between 2004 and 2010. Methods: Inclusion criteria consisted of racing Thoroughbred horses that had a surgical fracture repair under standing sedation and local analgesia by R.J.P. Medical records of these horses were examined, and racing performance data retrieved from the Racing Post website. Results: Twenty-seven horses satisfied the inclusion criteria. These horses had a metacarpal/metatarsal condyle fracture (n = 11), an incomplete sagittal fracture of the proximal phalanx (n = 10) or a parasagittal or spiral metacarpal fracture (n = 6) repaired under standing sedation. One horse was subjected to euthanasia due to ceacal rupture 10 days post operatively; no other significant post operative complications were recorded. Racing records were available for 21 of the remaining horses. At time of writing 11 (52.4%) of these horses had returned to racing (follow-up period 0.4–6.9 years; median 2 years). Mean time from operation to return to racing was 186 days. Lateral condyle repair carried the best prognosis for a return to racing (54.4%). Of the horses that had raced post operatively, 45.5% had won money.

Conclusions: Thoroughbreds that have these fractures repaired under standing sedation are able to return to racing. Longer-term follow-up studies will allow precise evaluation of prognosis and post-operative racing performance. Practical significance: Few data have been produced on outcome after repair of lower limb fracture in the horse under standing sedation. It is a procedure that has tangible benefits: it avoids the inherent risk of general anaesthesia, especially catastrophic failure of cannon bone repairs during recovery; the hospitalisation/recovery period is reduced; and it is more financially accessible. The preliminary findings in this series of horses are encouraging and informative when discussing the options available to owners and trainers.

Acknowledgements: The Margaret Giffen Charitable Trust; Rossdales staff.

17.00–17.15
Musculoskeletal injury following local corticosteroid injection in Thoroughbred racehorses
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Aims: To determine the rate of musculoskeletal injury (MSI) following local corticosteroid injection (LCI) in Thoroughbred racehorses. Methods: Veterinary records for 1911 horses were obtained from 3 veterinary practices that exclusively serviced 36 trainers. A LCI was defined as any injection of corticosteroid into/adjacent to a synovial structure, muscle, or tendon/gigas. A MSI was defined as any limb injury following which the horse was rested, and did not race for at least 6 months, or was retired. Hazard ratios (HR) were calculated using a Cox proportional hazards model with time varying covariates. Results: Three-hundred-and-ninety-two horses (20.5%) received at least one LCI (median 2, range 1–16), most bilaterally (71.4%) using triamcinolone (65.4%) or betamethasone (31%), and intra-articularly into the carpal (49.7%) or fore fetlock (29.3%) joints. There were 219 MSIs; carpal injuries (47%), fore fetlock (34%) and forelimb tendon injuries (16.0%) were the most common. The

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incidence rate of MSI in untreated horses was 1.2 injuries per 100 horse-months. The incidence rate of MSI was greater following LCI than in nontreated horses (HR 4.83, 95% CI 3.54–6.61, P<0.001). The incidence rate of MSI in horses receiving LCI on more than one occasion was greater than in horses receiving only a single LCI (HR 2.10, 95% CI 1.31–3.36, P = 0.002). **Conclusions and practical significance:** Thoroughbred racehorses receiving LCI suffer MSIs at approximately 4.5 times the rate of horses not receiving treatment, and for horses receiving multiple LCI the rate is approximately twice that of horses receiving single LCIs. Whether LCI contributes to MSI or is a proxy for other contributing factors is unknown and requires further investigation, however trainers and owners should be made aware of these injury rates. **Acknowledgements:** Funded by the Rural Industries Research and Development Corporation of Australia.

**17.15–17.30**

The effect of collection and extension on tarsal and fetlock compression at trot

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**Background:** It has been recognised that young horses prepared for dressage horse sales, where they are presented with extravagant extended trots, have a high incidence of suspensory ligament damage. It was hypothesised that extended trot would be associated with gait characteristics that could predispose to suspensory ligament (SL) injury. **Aim:** To compare hindlimb movement patterns between collected and extended trot. **Methods:** Four dressage horses were fitted with reflective markers and inertial motion sensors (IMS). High speed video was obtained for 2 strides on each rein in collected and extended trot on 3 different surfaces: waxed outdoor, sand/plastic granules, waxed indoor. Maximal tarsal compression during stance and distal metatarsal coronary band ratio (MTCR) representing fetlock hyperextension, were determined. IMS data determined stride duration, speed and stride length. Data was compared between collected and extended paces within each horse on each surface, and compared between surfaces. **Results:** Collected trot had significantly lower speed and stride length but longer stride duration than extended trot on all surface types (P<0.0001). All horses had less tarsal compression and smaller MTCR value in collected compared to extended trot. **Conclusions:** Greater tarsal compression combined with greater fetlock hyperextension was observed in extended compared to collected trot, which is likely to increase load on the SL. The study findings therefore indicate that extended trot may increase SL strain, providing a possible explanation for the high incidence of SL in horses trained for extravagant movement. It is possible this may be a particular risk for horses without good muscle development to support the limb. **Practical significance:** Considerable use of extended trot might be a risk factor for development of suspensory desmitis and could explain prevalence of proximal suspensory desmitis in successful young horses pushed for extravagant movement or those who are prepared for sales. **Acknowledgements:** British Dressage for funding.