musculoskeletal problem (n=151; 68.3%) while fewer involved a new problem (n=70; 31.7%). A musculoskeletal problem was the primary reason for presentation in 117 (52.9%) cases and an additional problem discussed in 104 (47.1%) cases. The owner raised the musculoskeletal problem in 127 (57.5%) cases while the veterinary surgeon raised the problem in the remaining 94 (42.5%) cases. The most common clinical signs noted were lameness (n=79; 35.7%), stiffness (n=36; 16.3%) and pain (n=16; 7.2%). The most common diagnoses were osteoarthritis (n=106; 48.0%), soft tissue injury (n=30; 13.6%) and cranial cruciate ligament rupture (n=28; 12.7%). Non-steroidal anti-inflammatory drugs (n=120; 54.3%), controlled exercise (n=65; 29.4%) and nutraceuticals (n=45; 20.4%) were the most common methods used to treat or manage

these musculoskeletal problems.

The results provide insight into the types of canine musculoskeletal problems seen in first opinion practice and may have implications for veterinary education, practice and research. The findings suggest these problems are often chronic and painful and so are likely to be important from an animal welfare perspective. Musculoskeletal problems were often an additional problem discussed and were frequently raised by the veterinary surgeon, highlighting the role of the practitioner in ensuring these problems are adequately detected and managed. Comparison of the results with existing literature could be used to identify knowledge gaps in the evidence base and pinpoint focused, relevant topics for future research on musculoskeletal problems.

Construct validity and internal consistency for three quality of life questionnaires for cats with chronic musculoskeletal pain

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INTRODUCTION AND AIM

Behavioral and lifestyle changes are the most common symptoms of chronic pain caused by musculoskeletal disease in cats. Owner questionnaires are an important tool in order to identify these cats. The aim of the present study was to establish the construct validity and the internal consistency for three quality of life (QoL) questionnaires in sound, pain free cats and in cats with chronic pain due to musculoskeletal disease. The hypothesis for testing the construct validity was that the questionnaires could distinguish between the cats with chronic pain and the pain free ones. The hypothesis for testing the internal consistency was that analyzing Cronbach's alpha would indicate good internal consistency ($\alpha > 0$).

MATERIAL AND METHODS

The health status of 69 cats was examined with a veterinary

orthopedic examination and registrations on a pressure sensitive mat system (Walkway™ System High Resolution HRV4). Cats with painful joints had the affected joints radiographed. Of the three QoL questionnaires, the Swedish QoL questionnaire was used in 58 healthy cats and in 11 cats with musculoskeletal disease. The QoL questionnaire by Bennett and Morton and the questionnaire by Zamprogno *et al.* were used in 28 healthy cats and in 11 cats with musculoskeletal disease. Construct validity was tested by use of Wilcoxon signed rank test ($p < 0.05$) and the internal consistency was evaluated by calculating Cronbach's α .

RESULTS

There was a significant difference between pain free cats and cats with chronic pain, in the results from the QoL questionnaires. This confirms the hypothesis that the three questionnaires have good construct validity, in that they can distinguish between cats with chronic pain and pain free ones. Cronbach's α was > 0.7 for all three QoL questionnaires which confirms the hypothesis that they have good internal consistency.

CONCLUSION

The three QoL questionnaires have good construct validity and internal consistency. Further studies are needed to confirm the results and add to the process of validating QoL questionnaires for cats with chronic pain due to musculoskeletal disease.

Outcome following surgical stabilisation of tarsocrural instability in dogs

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OBJECTIVE

To evaluate the outcome and complications following surgical stabilisation of canine tarsocrural luxation/subluxations.

METHODS

Medical records of dogs with tarsocrural joint instability treated at the Royal Veterinary College from 2007-2014 were reviewed. Complications were divided into **minor** (no additional surgical treatment), or **major** (additional surgical treatment). Data were tested for normality and groups compared using Mann-Whitney or Fishers-exact test. $P < 0.05$ was considered significant.

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RESULTS

24 dogs underwent stabilisation. All were traumatic in origin, with 13/24 (54%) due to a road traffic accident. Concurrent injuries were present in 9/24 (38%). All dogs had fractures associated with the tarsocrural joint; mostly malleolar fractures 20/26 (77%); 13 (65%) medial, 7 lateral (35 %). Two dogs had bilateral instability giving 26 limbs stabilised. 12/26 (46%) had tarsal soft-tissue wounds of which eight were shear injuries. Instability associated with the collateral ligaments was medial in 15/26 (58%), lateral in 5/26 (19%) and bilateral in 6/26 (23%) of limbs.

Nine joints had fracture stabilisation with transarticular external skeletal fixators (TESF), five had TESF alone, four had prosthetic ligament (PL) with a TESF, and four had PL with external-coaptation. Two limbs were stabilised by plated pancarpal arthrodesis. Two had primary ligament repair, one with TESF, the other with coaptation. TEFs were applied in 19/26 (73%) of limbs.

Complications occurred in 24/26 (92%) of limbs; minor in 13/26 (50%); including pin-tract infections, dressing sores, pin migration/breakage (not requiring replacement) and minor instability. Major complications occurred in 19/26 (73%);

including pin-breakage, implant failure, sequestrum formation, implant migration, implant infection and septic arthritis. Of all complications, 31/45 (69%) were TEFs associated, however overall TEFs were not a significant risk factor ($p=0.12$). Eight limbs were stabilised with PLs; six with fiberwire, two nylon-leader-line. 5/8 (63%) of these suffered major long-term complications requiring implant removal from infection, with owners reporting swelling or sinus tract formation at a median of 156 days (range 105–1006). Placement of PLs was significantly associated with postoperative complications ($p=0.017$). A significant association was seen between the cost of treatment and the presence major complications ($p=0.017$) or soft-tissue wounds ($p=0.03$).

CLINICAL SIGNIFICANCE

Complications following surgical stabilisation are extremely high, however over half are fixator related. Use of PL was significantly associated with a major complication, which can be delayed and hence careful consideration should be given to the use of PLs.

Complications and outcome of tibial tuberosity advancement surgery performed in Boxer dogs

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OBJECTIVE

To retrospectively review the incidence of complications and outcome of tibial tuberosity advancement (TTA) surgeries in a group of Boxer dogs and compare the data with a control population of Labrador Retrievers.

METHODS

All TTA procedures were performed at our institution. Information extracted from the medical records included signalment, body weight, surgery date, surgeon, affected limb, lameness score, status of cranial cruciate ligament (CCL) at surgery, CCL treatment, status of menisci at surgery, meniscal treatment, surgical and anaesthetic times, perioperative medication and use of bandage in the immediate postoperative period. Follow-up data included radiographic assessment at 6 weeks, presence of additional implants, complications and whether further surgical intervention was required to address the complications. An owner questionnaire was used as outcome measure tool.

RESULTS

Of the 100 stifles (67 Labrador stifles and 33 Boxer stifles) included in this study, 37 complications were reported in 25 joints. The complication rate differed significantly between groups ($p=0.001$). Boxers presented a complication rate of 45.5% (15/33) while the control group developed complications in 14.9% of the times (10/67). Major complications recorded included tibial tuberosity fracture (5.88%), late meniscal injury (17.6%), implant failure (8.82%), implant associated infection (8.82%), surgical wound infection (23.5%), wound dehiscence (partial or complete) with implant exposure (8.82%) and use of additional implants (17.6%). Boxers were 5 times more likely to undergo revision surgery. Surgical residents in training performed 52% of the TTA procedures under direct supervision with the remaining 48% being performed by ECVS diploma holders and board-eligible surgeons with no statistical difference found for their level of experience. No statistical significance was detected between the two groups for any of the variables assessed by radiography. The follow-up questionnaire showed statistical difference for time to peak-activity, which was significantly longer in the Boxer group; and owner satisfaction, with Boxers' owners being more dissatisfied with the outcome of the surgery.

CLINICAL SIGNIFICANCE

Boxer dogs had more major complications after TTA surgery, higher rate of revision surgery and superficial wound infection than the control group. The time to peak-activity was longer, long-term outcome was inferior and the degree of satisfaction was lower when compared to the Labrador population. The pertinence and value of breed-specific recommendations for CCL disease appears to be a subject worthy of further investigation where ideally objective outcome measures should also be assessed.

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