Oral presentations

Clinical efficacy of intra-articular injections of autologous mesenchymal stem cells in moderate to severe osteoarthritis (OA): a case series of 19 dogs evaluated using both LOAD and CBPI owner questionnaires

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OBJECTIVES

To evaluate the clinical efficacy of adipose-derived mesenchymal stem cells (adMSCs) in dogs with OA, using

two validated pet-owner questionnaires, LOAD (Liverpool Osteoarthritis in Dogs) and CBPI (Canine Brief Pain Inventory) to assess pain and mobility levels before and after intra-articular (IA) stem cell injections.

METHODS

Culture-expanded adMSC injections were prepared for a cohort of dogs, each with a documented history of moderate to severe OA inadequately controlled by conventional therapy. All dogs were treated with an IA injection of autologous adMSCs (>2.5 million/joint) into each affected joint. LOAD and CBPI questionnaires were completed by each owner before stem cell treatment and 3 months after treatment.

RESULTS

Nineteen dogs were included. CBPI data showed highly significant reductions in pain scores after treatment with adMSC injections (mean score before injection=43, mean score 3 months after injection=8; $p<0.001$).

Treatment success criteria were predefined in accordance with published CBPI data as a reduction ≥ 1 in Pain Intensity Score and ≥ 2 in Pain Severity Score. Based on these criteria, 18/19 of dogs met the definition of treatment success, each demonstrating a clinically significant reduction in their pain scores.

LOAD scores mirrored the CBPI data for all 19 dogs and demonstrated significant improvements in mobility (LOAD before injection of adMSCs=20, LOAD 12 weeks after adMSC injection=7.03; $p<0.001$).

STATEMENT (CONCLUSIONS)

Intra-articular injections of adMSCs demonstrated significant clinical efficacy in dogs with moderate-severe OA, confirmed using both CBPI and LOAD questionnaires.

Direction of travel can influence canine gait characteristics

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OBJECTIVES

To investigate the effect of direction of travel on measurements of peak vertical force (PVF) and vertical impulse (VI) obtained using a Tekscan walkway system.

METHODS

Following acclimatisation, recordings were obtained for six healthy dogs walking twice in each direction along the walkway. PVF and VI measurements were normalised and used to calculate left:right symmetry ratios for forelimb and hindlimb loading in each travel direction and for all recordings.

RESULTS

Mean walking speed was 1.2 ± 0.14 m/s. Mean body mass was 25 ± 5 kg. No gross evidence of pulling to left or right was observed. Mean symmetry ratios for PVF and VI varied consistently but insignificantly with direction of travel. However, individual variation in symmetry ratios ranged from ± 0.4 –14% for PVF and ± 0.4 –11% for VI. Forelimb to hindlimb ratios of both PVF and VI varied by ± 3 –4% with direction of travel.

STATEMENT (CONCLUSIONS)

Direction of travel may influence gait characteristics and thereby both determination of local reference intervals and discriminatory ability between normal and abnormal limbs. Consistent walkway room setup and use

of multiple passes in both directions appear sensible in order to minimise error between measurements at different times, and to compensate for the effect of direction of travel on outcome measures.

Effect of osteoarthritis on the repeatability of patella tendon angle measurement in dogs

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OBJECTIVES

To evaluate the effect of the degree of osteoarthritis on the measurement of patella tendon angle (PTA) and determine intra- and inter-observer variability.

METHODS

Retrospective observational clinical study using pre-operative medio-lateral surgical planning radiographs for tibial tuberosity advancement (TTA). Degree of osteoarthritis scored by two individuals. Measurement of PTA

performed by three different individuals on 87 stifle radiographs by the standard conventional tibial plateau method. Measurement of PTA performed on three occasions, with at least seven days between measurements.

RESULTS

The osteoarthritis score agreement was 48%. Weighted Kappa analysis revealed a fair strength of agreement between observers. The intra-observer average bias between PTA measurements 1 and 3 ranged from -0.38 to -0.94° . Inter-observer bias in angle measurement ranged from -0.92 to -2.00° . Observer 1 had the narrowest range of PTA differences (12.1°), and observer 3 the highest (23.5°). Observer 2 had the lowest mean bias (-0.38°). The mean bias was lowest between observers 1 & 2 (-0.92°) and highest between 1 & 3 (-2.0°). The mean intra-observer standard deviation of the PTA measurement differences was 2.90° and inter-observer was 2.26° . Kruskal-Wallis testing revealed no evidence of a difference in PTA with regards to degree of osteoarthritis present. There was no evidence of a change in variability of the PTA with higher or lower osteoarthritis scores.

STATEMENT (CONCLUSIONS)

Overall degree of osteoarthritis did not appear to affect the variability of the patellar tendon angle measured. Variability in PTA measured between observers may affect the clinical outcome of surgery.

Medio-lateral humeral intracondylar fissure screw placement – 4.5 mm titanium screws

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OBJECTIVES

Evaluating the influence of categorical patient variables on the time elapsed from the surgical date and date of the final recheck following treatment of humeral

intracondylar fissure in dogs with medio-lateral placement of 4.5 mm titanium screws.

METHODS

Retrospective data analysis was applied to 100 dogs treated for humeral intracondylar fissure. The breed, sex, age, weight, date of surgery and date of final recheck were reviewed.

RESULTS

Thirty eight of the study group diagnosed with a humeral intracondylar fissure were treated with a 4.5 mm titanium screw placed in a medio-lateral direction. The mean duration of time between the surgical date and final recheck was 69 days. Six of the cases required revision surgery due to inadequate screw placement. Five cases presented with complications (superficial surgical site infection and seroma formation), which were treated conservatively. The mean age of dog was 1581 days and mean weight 20.5 kg.