Three-dimensional estimation of brain ventricular system volume in brachycephalic dogs with and without Chiari-like malformation and syringomyelia

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OBJECTIVES

To ascertain if dogs with Chiari-like malformation (CM) and syringomyelia (SM) are more likely to have dilation of the lateral, third and fourth ventricles and whether these measurements could enhance CMSM screening.

METHODS

Case control study that obtained quantitative volume measurements of lateral, third (including cavum velum interpositum and quadrigeminal cistern) and fourth

(including mesencephalic aqueduct) ventricles using Cavalieri's principle of stereology from T2-weighted sagittal brain magnetic resonance imaging (MRI).

The sample was composed of a Chihuahua group; five with CMSM and five normal and a mixed brachycephalic toy breed group; eight with CMSM and eight normal breed matched. Cavalier King Charles Spaniels (CKCS) were not included in the cohort.

Data analysis included descriptive statistics, Two-sample T-Tests and Mood Median Tests.

RESULTS

Stereology measurements showed no significant difference in the lateral, third or fourth ventricle volume between Chihuahuas and mixed brachycephalic breeds with and without CMSM.

STATEMENT (CONCLUSIONS)

A novel stereology based methodology has successfully quantified ventricular volumes and may be applicable for future studies in diseases that affect brain and ventricular volume.

Currently a recommendation cannot be made that the Kennel Club British Veterinary Association CMSM Health Scheme should include assessment of ventricular size.

Continued research with increased sample sizes to reduce biological variability and inclusion of CKCS would further confirm whether assessment of ventricular size could provide added benefit. Additional screening methods for CMSM are required to improve the health and welfare of predisposed breeds.

A glomus cell tumour on the head of a cat

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OBJECTIVES

Glomus cell tumours are rare in animals and there is only one previous case report in a cat. They are most commonly located on the distal extremities of the limbs.

Here we describe a skin neoplasm with histopathological and immunohistochemical characteristics of a glomus cell tumour in a unique location.

METHODS

A solitary mass, approximately 8 mm in diameter, was found on the left temporal region of a 7-year-old neutered female cat. A wedge biopsy taken prior to the referral was inconclusive: a carcinoma was considered more likely than a sarcoma based on histopathology.

After referral, additional staging, including a fine needle aspirate of the mandibular lymph node and inflated thoracic radiographs, was performed before fully excising the mass. Histopathology and immunohistochemistry were performed.

RESULTS

Clinical staging was unremarkable. On histopathology, the neoplasm comprised of aggregates of uniform round

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to polygonal and occasionally spindle cells surrounding frequent blood vessels.

On immunohistochemistry, more than 95% of the cells were positive for vimentin, muscle actin, smooth muscle actin, neuron-specific enolase and negative for cytokeratin, S100, desmin and Von Willebrand factor.

These results are strongly suggestive of a glomus cell tumour. No recurrence was reported during a three years follow-up period.

STATEMENT (CONCLUSIONS)

To the best of our knowledge, this is the first reported case of a glomus cell tumour on the head of a cat and only the second case reported in this species.

Specific immunohistochemistry appears to be of fundamental importance in the diagnosis of this neoplasia, as cytopathology and histopathology are usually uncertain.

Palliative neck radiation in dogs with chemoresistant high grade lymphoma

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OBJECTIVES

To report the clinical benefit of palliative neck radiation (RT) in dogs with chemoresistant high-grade lymphoma.

METHODS

The clinical records of four dogs with high grade B-cell multicentric lymphoma that received palliative neck radiation as part of their treatment were reviewed.

RESULTS

Dogs received 1600–2700 Gy in 2–3 fractions administered once weekly. Two dogs received adjunctive radiation to the neck due to progressive disease after standard of care and rescue chemotherapy and two dogs received radiation concurrently with standard of care chemotherapy due to a poor response to the induction protocol.

Two dogs that received radiation after multiple chemotherapy protocols had a complete response to RT and improved quality of life. The dogs maintained a complete response in the treated lymph nodes for >57 and 65 days after RT, and survived for 94 and 79 days after RT respectively.

Two dogs that failed to achieve remission with chemotherapy had stable disease following radiation treatment. The dogs maintained stable disease in the treated lymph nodes for 3 and 42 days after RT, and survived for 3 and 42 days after RT respectively.

All four dogs were euthanised due to progressive disease distant to the neck. Progression was evident in peripheral lymph nodes (1 dog), intraabdominal lymph nodes (1 dog), intrathoracic lymph nodes (1 dog) and liver (1 dog).

STATEMENT (CONCLUSIONS)

Palliative neck radiation can provide clinical benefit and improved quality of life in some patients with chemoresistant lymphoma.

Investigation of the PD-1/PDL-1 pathway in histiocytic sarcoma of Flatcoated Retrievers

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OBJECTIVES

Canine histiocytic sarcoma is an aggressive tumour that originates from cells of the myeloid lineage.

Flatcoated Retrievers are predisposed to the development of this sarcoma. Previous studies documented high expression of FoxP3 in tumour-infiltrating lymphocytes, suggesting the presence of regulatory T cells. PD-L1 is involved in reducing apoptosis in regulatory T cells via the PD-1 pathway. The aim of this study was to evaluate the pathways involved in maintenance of regulatory T cells within the tumour microenvironment.

METHODS

A preliminary study was performed on five formalin fixed and paraffin-embedded histiocytic sarcoma samples. Tumours were all localized in soft tissue and belonged to the histopathological histiocytic subgroup. Immunohistochemistry was performed, with immunolabeling for CD3, MHC-II, E-cadherin, FoxP3, and PD-L1. A scoring system of 1 to 5 describes the percentage of positive cells in 10 fields at 40x magnification.