

endoscopy focused on intracorpore (IC) and extracorpore (EC) exam. The EC was performed after the isolation of the lungs in order to obtain a better examination of cranial lobes, difficult in IC for their orientation. We considered the visualisation and the ability to pass through the lumen of each branch with the endoscope. After that, on the same lungs, casts of polyurethane foam were made and diameter and length of the bronchial branches were measured through a digital calliper. Furthermore, to name the structures and to draw the bronchial map, we defined them by looking at their direction and position. All the casts conformed to the orientation, the branching pattern and the topographic relationship of the bronchial system. For each lung lobe it was possible to define a new descriptive nomenclature for the first three series of bronchial division. The morphometric examination allowed to obtain a mean value of diameter and length of bronchi for each group of weight and to confirm the monopodial branching system. During bronchoscopy it was possible to locate and/or move in the principal, lobar and segmental bronchi, with significant differences between the groups.

After comparison with previous studies, we draw a new bronchial map and gave a descriptive nomenclature for the first three series of canine bronchial division. Moreover, we analysed the accessible airways with a 6mm diameter flexible endoscope in the different groups. Finally, our results provided accurate reference values useful in diagnostic imaging procedures, especially during bronchoscopy.

#### Disclosures

No disclosures to report.

### ESVIM-P-7

#### A novel CMAH gene variant leading to blood type b in ragdolls

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In domestic cats, the AB blood group system consists of the three types A, B and C (also called AB), which vary in frequency among breeds and geographic regions. Mismatches cause acute hemolytic transfusion reactions and neonatal isoerythrolysis. The cytidine monophosphate-N-acetylneuraminic acid hydroxylase (CMAH) is converting the N-acetylneuraminic acid (type B) to N-glycolylneuraminic acid (type A), and type C erythrocytes express both antigens. Sixteen variants in the CMAH gene were described to be associated with type B in different breeds, but in some breeds such as Ragdoll, Siberian and Turkish Angora, those variants did not correlate well with the phenotype.

We studied the feline CMAH coding regions of 70 blood typed Ragdolls (34 type A, 26 type B) by Sanger Sequencing and/or TaqMan SNP genotyping and compared the sequences to published CMAH sequences.

Four novel CMAH variants (c.213A>G, c.593A>C, c.898A>G and c.1322delT) were identified beside seven previously reported variants. (c.142G>A, c.268T>A, c.993A>G, c.1269G>A, c.1392T>C, c.1603G>A and Δ-53). The three previously described variants associated with blood type B (c.142G>A, c.268T>A and c.1603G>A) cosegregated in

all Ragdolls. However, only seven cats were homozygous for those mutant alleles. The variant c.1322delT, causing an early stop codon at p.L411\*, was found homozygously in another 7 type B cats. The remaining 12 type B Ragdolls were compound heterozygotes for c.268T>A and c.1322delT. No type A cats were homozygous for any one of these variants.

In conclusion, type B in Ragdolls is caused by two CMAH variants: c.268T>A and c.1322delT in the homozygous or compound heterozygous state. General and particularly Ragdoll genotype screening should include both variants.

#### Disclosures

Disclosures to report.

Laboklin and PennGen are offering blood typing and blood compatibility testing. A patent has been submitted on the molecular genetic markers and panel testing discovered in this investigation and described in this abstract.

### ESVIM-P-8

#### Evaluation of diet's effects and ability of the Hemocult assay for the detection of faecal occult blood in healthy dogs

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The guaiac-based faecal occult blood (FOB) test is widely used for colorectal cancer screening in humans. In dogs, it has been reported to be able to detect FOB after oral administration of 20 mg of haemoglobin/Kg body weight ( $\text{mg}_{\text{hgb}}/\text{kg}_{\text{bw}}$ ) of autologous blood, but it is not routinely used.

The aims of the work were: i) to evaluate the ability of Hemocult<sup>®</sup> to detect FOB in healthy dogs and to assess the influence of two diets; ii) to assess the influence of the time between faecal sampling and test results; iii) to find the lowest canine haemoglobin concentration to achieve all positive tests.

Initially, five healthy dogs were enrolled and each dog was fed with a meat-free protein diet (HA Purina<sup>®</sup>) then switched to gastrointestinal diet (EN Purina<sup>®</sup>) with 8 days of wash-out. No extra foods were permitted, apart from fresh or whey cheeses. The faeces of each dog were tested with Hemocult<sup>®</sup> assay the day before starting HA diet and four- and five-day after. Starting from day six and every 4 days, progressive doses of autologous blood (5, 15, 20, 25 and 40  $\text{mg}_{\text{hgb}}/\text{kg}_{\text{bw}}$ ) were administered orally and faeces were daily tested. Faeces were mixed with a wooden spatula before their collections. Thereafter, the same schedule described above was applied to each dog fed with EN diet. Then, the faeces of one dog were collected 6, 18 and 42 hours after a single 40  $\text{mg}_{\text{hgb}}/\text{kg}_{\text{bw}}$  blood-added meal. Seven test cards from each time-point faecal sample were prepared. Tests were assessed every two days until 14-day after collection. Finally, canine whole blood (18.0  $\text{g}_{\text{hgb}}/\text{dL}$ ) was progressively diluted in saline solution and directly applied on a set of three test cards until a negative result was found.

For the first aim, a total of 185 Hemocult<sup>®</sup> tests were examined. Twelve (6,5%) were positive and no association between positive tests and administered amount of blood was found. None of the blood-free stool specimens was positive. Regarding the second set of

samples, only one resulted positive. Finally, 6.5  $\mu\text{g}_{\text{Hgb}}/\text{mL}$  was the lowest concentration to achieve all positive tests.

In conclusion, Hemocult<sup>®</sup> was not been influenced by both HA and EN diets, but its reproducibility to detect FOB in stools was unsatisfactory. Although, Hemocult<sup>®</sup> was able to detect up to 6.5  $\mu\text{g}_{\text{Hgb}}/\text{mL}$  when directly added to the card, the individual blood digestion and bowel transit time may be play a role on its poor reproducibility.

#### Disclosures

No disclosures to report.

## ESVIM-P-9

### Eosinophilic lung disease in 86 dogs (2006-2016)

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Eosinophilic lung disease in dogs can be associated with parasitic disease or can occur due to presumed primary hypersensitivity. The aim of this study was to report clinical variations in a large population of affected dogs.

In this retrospective study (2006 to 2016), 86 dogs were diagnosed with eosinophilic lung disease based on airway cytology (bronchoalveolar lavage eosinophils >14%) or histopathology. Records were reviewed for clinical and radiographic findings.

Mean body weight was 21.6±12.5kg with 5 dogs <5kg, 19 dogs 5-10kg, 10 dogs 10-20kg, and 50 dogs >20kg. German Shepherds (4), Labradors (4), and Standard Poodles (4) were most commonly affected. Clinical complaints included cough (80/87, 92%) and nasal discharge (25/87 dogs, 29%). Thoracic radiographs were normal in 14/86 (16%) dogs with variable pulmonary patterns in the remaining dogs. The most common bronchoscopic findings were hyperemia (61/86; 71%), increased airway mucus (57/86; 66%), airway collapse (24/86; 28%), and bronchiectasis (10/86; 12%). Inspissated intraluminal material was observed in 9/86 (10%) of dogs. One of these dogs had airway eosinophils of only 2% but demonstrated histologic evidence of eosinophilic infiltration. Median airway eosinophilia in the remaining 85 dogs was 39% (range 15-95%). Bronchoalveolar lavage total nucleated cells/ $\mu\text{l}$  ranged from 200 to 33,800/ $\mu\text{l}$  (median 1800). Neoplasia and pulmonary parasites were diagnosed in 1 dog each, and 2 dogs had concurrent bacterial infection. *Aspergillus* spp. were detected on aerobic culture in 2 dogs but were considered probable contaminants.

In this group of dogs, eosinophilic lung disease was rarely associated with an identifiable underlying cause.

#### Disclosures

No disclosures to report.

## ESVIM-P-10

### Systemic and local immunoglobulin concentrations in Irish wolfhounds with recurrent bacterial pneumonia

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An increased incidence of bacterial pneumonia (BP) has been identified in the Irish wolfhound (IWH) and recurrence of BP occurs

commonly in this breed. The etiology is largely unestablished; Immunoglobulin A (IgA) deficiency has been suggested as underlying factor. Purpose of this study was to investigate serum and bronchoalveolar lavage fluid (BALF) IgA, IgG and IgM concentrations in IWHs with recurrent BP as well as in healthy dogs.

A prospective, cross-sectional observational study included 11 IWHs (median age 6.3 years, IQR 5.7-7.0 years) with recurrent BP (median number of previous BPs 5, range 2-6). Healthy dogs were included as controls: 25 IWHs, 28 dogs of sighthound breeds and 16 dogs of other breeds (median age 6.6 years, IQR 6.3-8.9; 6.8, 5.3-8.7 and 6.5, 5.7-10.4 respectively). Six healthy laboratory beagles were included as controls for BALF immunoglobulin analysis. IgG, IgA and IgM were measured with ELISA method from serum and BALF. Statistical analysis was performed with an analysis of covariance models (ANCOVA).

Serum immunoglobulin concentrations (IgA in affected IWHs 104.8 mg/dl [IQR 76.0-238.6 mg/dl] in healthy IWHs 137.7, [92.5-168.5] in healthy sighthounds 87.3 [54.5-125.4] and in healthy dogs of other breeds 125.1 [75.9-226.9]; IgG 1000.4 [858.3-1368.0], 1227.0 [965.9-1482.5], 1349.5 [1042.8-1570.3] and 1164.0 [930.8-1266.3]; IgM 317.4 [251.1-378.3], 296.5 [220.0-404.1], 145.8 [131.9-219.6] and 187.9 [164.8-295.3] respectively) did not differ significantly between healthy and affected IWHs. BALF immunoglobulins did not differ significantly between affected IWHs and healthy beagles. These results indicate that immunoglobulin deficiency is unlikely a predisposing factor to recurrent BP in IWHs.

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## ESVIM-P-11

### Evaluation of bronchoscopy and bronchoalveolar lavage findings in cats with *Aelurostrongylus abstrusus* in comparison to cats with feline bronchial disease

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The cat lungworm *Aelurostrongylus abstrusus* causes lower respiratory tract disease in cats worldwide. Bronchoscopy is an important tool for diagnosis of respiratory disease in cats; however, its role in the diagnosis of aelurostrongylosis remains unclear.

To investigate the usefulness of bronchoscopy in cat aelurostrongylosis, bronchoscopic and bronchoalveolar lavage (BAL) findings of 23 cats from Italy with *A. abstrusus* (Aa) were compared to those of 11 cats from the US with Feline Bronchial Disease (FBD).

Bronchoscopic lesions and bacterial isolation were recorded as present/absent, while inflammation type was classified by differential cytology of BAL. Data were analyzed using Mann-Whitney or Fisher's exact tests.