REVIEW

JSAP’s commissioned reviews address problem areas in clinical practice

Ureteral ectopia and urethral sphincter mechanism incompetence: an update on diagnosis and management options

L. Gamble, A. Gibson, S. Mazeri, B. M. de C Bronsvoort, I. Handel, R. J. Mellanby

Rabies kills approximately 60,000 people each year, mainly in sub-Saharan Africa and Asia, of which 40% of victims are less than 15 years old. Once clinical signs develop, the disease is almost invariably fatal. Globally, rabies has been estimated to cause 3.7 million disability-adjusted life years and $8.6B in economic losses annually. The vast majority of human rabies cases are caused by bites from rabies infected dogs. Despite this loss of human life and resultant economic and societal costs, rabies can be prevented in both humans and dogs by vaccination. This has been demonstrated in many countries, notably in Central and South America, where large-scale, high coverage mass dog vaccination programmes have dramatically reduced the incidence of rabies. Even in parts of Africa and Asia, projects have shown that rabies can be eliminated locally. Nevertheless, rabies remains an important cause of mortality in many sub-Saharan and Asian countries. The reasons why some countries have been able to effectively eliminate rabies whereas others have not are complex and often impossible to definitively identify; commonly cited explanations include political, economic, logistical and societal barriers.

ESSAY

Development of non-governmental organisation-academic partnership to tackle rabies in Africa and Asia

L. Gamble, A. Gibson, S. Mazeri, B. M. de C Bronsvoort, I. Handel, R. J. Mellanby

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PAPERS

Gastrointestinal effects following acupuncture at Pericardium-6 and Stomach-36 in healthy dogs: a pilot study

D. I. Radkey, V. E. Writt, L. B. C. Snyder, B. G. Jones, R. A. Johnson

Objectives

To quantify changes in gastric and intestinal emptying times in the conscious dog following gastrointestinal acupoint stimulation.

Materials and Methods

In a randomised, blinded crossover study, six dogs were fed 30×1.5 mm barium-impregnated polyethylene spheres and underwent: (1) no acupuncture (Control); (2) stimulation of target points PC6 and ST36 (Target) and (3) stimulation of non-target points LU7 and BL55 (Sham). Abdominal radiographs were assessed immediately after feeding the spheres and every hour for 12 hours and their number in the stomach and large intestines was counted.

Results

The number of barium-impregnated polyethylene spheres found distal to the stomach in the Target group compared to the Control and Sham groups between hours 2 and 4, but no differences between groups were seen for the remainder of the treatment period. The number of spheres found within the colon/rectum was less in the Target group compared to the
Control and Sham groups between hours 4 and 6, and compared to the Sham group only at hour 7 but no differences between groups were seen after hour 8.

**Clinical Significance**
Acupuncture targeted at the gastrointestinal tract of dogs was associated briefly with slowed gastric emptying and gastrointestinal transit time. This foundational study lays the groundwork for additional studies of acupuncture effects associated with altered physiologic states.

Health-related quality of life following surgical attenuation of congenital portosystemic shunts versus healthy controls

**Objectives**
To design a health-related quality of life questionnaire for dogs with congenital portosystemic shunts, use it in a cohort of dogs treated with suture attenuation and compare results with those obtained from a healthy control cohort.

**Materials and Methods**
Data were collected from the hospital records of dogs treated with suture ligation of an intrahepatic or extrahepatic congenital portosystemic shunt at two referral centres. Owners were asked to complete a questionnaire assessing their dog’s health-related quality of life preoperatively (retrospectively) and at the time of follow-up. Owners of control dogs also completed the questionnaire.

**Results**
One hundred and twenty-eight dogs with congenital portosystemic shunts and 131 control dogs were recruited. Median follow-up time was 64 months (range 19.7 to 157.2). The median long-term health-related quality of life score was excellent for both intrahepatic and extrahepatic shunt cases and similar to that of control dogs. The long-term portosystemic shunt clinical sign scores for both intrahepatic and extrahepatic congenital portosystemic shunt dogs were significantly worse than the those of the control group.

**Clinical Significance**
Suture attenuation of congenital portosystemic shunts is associated with an excellent health-related quality of life score at long-term follow-up.

The addition of metronomic chemotherapy does not improve outcome for canine splenic haemangiosarcoma

**Objectives**
To determine whether the addition of metronomic chemotherapy improved outcome for dogs with splenic haemangiosarcoma treated with splenectomy and adjuvant maximum tolerated dose chemotherapy.

**Materials and Methods**
Medical records were examined retrospectively for dogs with splenic haemangiosarcoma that had undergone splenectomy followed by anthracycline-based chemotherapy. Thirty-nine dogs underwent splenectomy followed by maximum tolerated dose chemotherapy with an anthracycline, cyclophosphamide, or both (Group 1). Twenty-two dogs underwent splenectomy followed by adjuvant maximum tolerated dose chemotherapy with an anthracycline, cyclophosphamide, or both, plus metronomic chemotherapy (Group 2). Dogs in both...
groups were further separated into those treated with either maximum tolerated dose anthracycline or maximum tolerated dose anthracycline and cyclophosphamide.

Results
Median progression-free survival was 165 days and median overall survival time was 180 days in Group 1. Median progression-free survival was 185 days and median overall survival time was 212 days in Group 2. In both groups, the overall survival was shorter in dogs that had received maximum tolerated dose cyclophosphamide.

Clinical Significance
The addition of metronomic to maximum tolerated dose chemotherapy protocols does not appear to improve outcome in dogs with splenic haemangiosarcoma treated with splenectomy and maximum tolerated dose chemotherapy.

Serological prevalence of toxoplasmosis and neosporosis in dogs diagnosed with suspected meningoencephalitis in the UK
A. M. Coelho, G. Cherubini, A. De Stefani, A. Negrin, R. Gutierrez-Quintana, E. Bersan, J. Guevar

Objectives
To assess the prevalence of antibodies to *Toxoplasma gondii* and *Neospora caninum* in a population of dogs with a diagnosis of suspected inflammatory meningoencephalitis.

Materials and Methods
Medical records of three referral centres were reviewed from 2008 to 2016 to identify a cohort of dogs diagnosed and treated for suspected inflammatory meningoencephalitis after testing for evidence of exposure to these pathogens.

Results
In our sample of 400 dogs the prevalence for exposure (IgG ≥ 1:50) to *Toxoplasma gondii* was 8/201 (3.98%). Active infection (IgG titre >1:400 or/and an IgM titre >1:64 and/or positive PCR in CSF) was suspected in 1/400 (0.25%). The prevalence for exposure [Indirect fluorescent antibody (IFA) titre >1:50] and active infection (IFA titre ≥ 1:400 and/or positive PCR in CSF) with *Neospora caninum* were 14/201 (6.96%) and 9/400 (2.25%), respectively.

Clinical Significance
In view of the low prevalence of protozoan infections, the risk associated with starting immunosuppressive medication in dogs with evidence of inflammatory meningitis or encephalitis in the UK appears low.

Evaluation of compounded aqueous milbemycin oxime: issues with formulation potency and reproducibility

Objectives
To determine the potency and reproducibility of milbemycin oxime when compounded as an aqueous suspension (20 mg/mL).

Materials and Methods
Preparation choice reflected current prescribing practices. Samples were acquired by prescription from two national veterinary compounding pharmacies at three time points. Two different storage conditions were evaluated and sampled at four time points from the order date (day 7, 14, 21 and 28). Milbemycin oxime recovery was performed by solid-phase extraction and concentration strength measured via high-performance liquid chromatography.

Results
The average concentration on day 7 for Pharmacy A samples was 16.29 mg/mL [confidence interval (CI): 15.66 to 16.92] with a coefficient of variation (CV) 11%, while for Pharmacy B it was 20.46 mg/mL (CI: 19.83 to 21.08) with CV 22%. The mean decrease
in concentration over 28 days for Pharmacy A was 22% (CI: 9% to 34%) while Pharmacy B was 18% (CI: 2% to 35%).

**Clinical Significance**
The compounded milbemycin oxime suspensions evaluated in this study deviated by more than 10% from their labelled strength in five of the six lots. Clinical efficacy of compounded milbemycin oxime suspensions remains unknown and the use of these products should be discouraged at this time.

**CASE REPORT**

Presumptive migrating gall bladder mucocoele in two dogs with gall bladder rupture

R. K. Burchell, L. Thornton, C. K. Lim, M. Murakami, Y. Nakamura, A. Gal

A 10-year-old neutered female soft-coated wheaten terrier and a 10-year-old, entire female Pomeranian were presented for vomiting and anorexia. Using ultrasound, an oval structure with a stellate, kiwifruit-like appearance typical of a gall bladder mucocoele was observed in the caudal abdomen of the soft-coated wheaten terrier and adjacent to the liver in the Pomeranian. There was also a moderate volume of abdominal effusion in both dogs. Cytology of the peritoneal fluid indicated a sterile exudative process but varied between the two dogs, with an absence of bile pigment in the soft-coated wheaten terrier and marked bile peritonitis in the Pomeranian. An entire free-floating ectopic mucocoele was confirmed via exploratory laparotomy with concomitant gall bladder rupture and common bile duct obstruction. Both dogs recovered completely after surgery. This is the first report of cases of gall bladder rupture with entire free-floating gall bladder mucocoeles in dogs.

**Letter to the Editor**

Life-threatening arterial haemorrhage following venous occlusion during nephrectomy for renal carcinoma

T. Charlesworth

A report of a 33 kg, 11-year-old Weimaraner.

**Images in Small Animal Practice**

Right atrial aneurysm in a dog

L. A. Murphy, N. J. Russell, R. K. Nakamura

This case of a 9-year-old Boston Terrier is accompanied by additional illustrations and videos available with JSAP online.

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British Small Animal Veterinary Association Annual General Meeting

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