JAVMA Lit Review Nov 15 2019 – Feb 15 2020

Duloxetine ingestion in 364 dogs

Natalie K. James DVM

Tina A. Wismer DVM

Pedro Paulo V. P. Diniz DVM, PhD

From Emergency and Critical Care Section, Veterinary Centers of America West Coast Specialty and Emergency Animal Hospital, 18300 Euclid St, Fountain Valley, CA 92708 (James); American Society for the Prevention of Cruelty to Animals, Animal Poison Control Center, 1717 S Philo Rd, Ste 36, Urbana, IL 61802 (Wismer); and the College of Veterinary Medicine, Western University of Health Sciences, Pomona, CA 91766 (Diniz).

Address correspondence to Dr. James (natalie.james@vca.com).

OBJECTIVE
To describe abnormal clinical signs following duloxetine ingestion in dogs.

ANIMALS
364 client-owned dogs that ingested duloxetine.

PROCEDURES
The American Society for the Prevention of Cruelty to Animals, Animal Poison Control Center electronic database was searched for records of dogs with duloxetine ingestion between January 2012 and December 2016. Data collected included age, body weight, breed, duloxetine exposure and dose, clinical signs, and overall outcome. Clinical signs were categorized as either neurologic, digestive, cardiovascular, respiratory, or metabolic and endocrine. Outcomes were categorized as no clinical signs, fully recovered, died, or unknown.

RESULTS
Clinical signs developed in 55 of the 364 (15.1%) dogs with known ingestion of duloxetine. The most common clinical signs were lethargy (22/55 [40%]), mydriasis (18/55 [33%]), vomiting (11/55 [20%]), and trembling (6/55 [11%]). Dogs that ingested an estimated dose of duloxetine ≥ 20 mg/kg (9.1 mg/lb) were more likely to have had abnormal clinical signs than were dogs that ingested < 20 mg/kg.

CONCLUSIONS AND CLINICAL RELEVANCE
Findings indicated that most dogs in the present study did not have clinical signs associated with ingestion of duloxetine and that development of clinical signs varied by individual dog. Further information is needed to determine toxic dose ranges for duloxetine ingestion in dogs. (*J Am Vet Med Assoc* 2019;255:1161–1166)

- Duloxetine = serotonin and norepinephrine reuptake inhibitor and limited inhibition of dopamine uptake
    - Well absorbed through GIT, highly PPB (alumin, a1-acid glycoprotein)
    - Metabolized through liver w/ cytochrome P450 isozymes
    - Metabolites excreted in urine
    - Elimination t ½ 12 hours in people
    - Toxicity Cx in people: serotonin syndrome, seizures, syncope, tachycardia, hypotension, hypertension, V+, coma, death
- In dogs, largely idiosyncratic and patient-dependent

Prevalence of selected cardiotropic pathogens in the myocardium of adult dogs with unexplained myocardial and rhythm disorders or with congenital heart disease

Roberto A. Santilli DMV, PhD

Elena Grego DMV, PhD

Stefano Battaia DMV, MS

Paola Gianella DMV, PhD

Massimiliano Tursi DMV

Nicola Di Girolamo DMV, PhD

Ilaria Biasato DMV, PhD

Manuela Perego DMV

From Dipartimento di Cardiologia, Clinica Veterinaria Malpensa, Via Marconi, 27, 21017 Samarate, Varese, Italy (Santilli, Perego); Dipartimento di Scienze Veterinarie, L'Universita di Torino, Grugliasco, Torino, Italy (Grego, Gianella, Tursi, Biasato); Ospedale Veterinario I Portoni Rossi, Via Roma, 57/a, 40069 Zola Predosa, Bologna, Italy (Battaia); and EBMVet, Via Sigismondo Trecchi 20, 26100 Cremona, Italy (Di Girolamo).

Address correspondence to Dr. Santilli (r.santilli@ecgontheweb.com).

OBJECTIVE

To determine the prevalence of nucleic acid from selected cardiotropic pathogens in endomyocardial biopsy samples from dogs with unexplained myocardial and rhythm disorders (UMRD) and compare prevalence with that for a group of control dogs with congenital heart disease (CHD).

ANIMALS

47 client-owned dogs.

PROCEDURES

Right ventricular endomyocardial biopsy was performed in dogs with UMRD (dilated cardiomyopathy [n = 25], atrioventricular block [6], and nonfamilial ventricular [4] and supraventricular arrhythmias [2]) or CHD (10) that required right ventricular catheterization. Biopsy samples were evaluated histologically, and PCR assays were used for detection of nucleic acid from 12 pathogens.

RESULTS

197 biopsy samples were collected from dogs with UMRD (n = 172) or CHD (25). At least 1 pathogen was detected in 21 of 37 (57%; 95% confidence interval [CI], 41% to 71%) dogs with UMRD, and canine coronavirus was detected in 1 of 10 (10%; 95% CI, 2% to 40%) dogs with CHD. Dogs with UMRD were significantly more likely than dogs with CHD to have pathogens detected in biopsy samples (OR, 11.8; 95% CI, 1.3 to 103.0). The most common pathogens in dogs with UMRD were canine distemper virus, canine coronavirus, canine parvovirus 2, and *Bartonella* spp. No pathogens were detected in available blood samples from dogs with pathogens detected in biopsy samples.

CONCLUSIONS AND CLINICAL RELEVANCE

Detection of nucleic acids from selected cardiotropic pathogens in myocardial tissue from dogs with UMRD suggested a possible association between the 2. Further studies are needed to explore whether this association is causative or clinically important. (*J Am Vet Med Assoc* 2019;255:1150–1160)

Postoperative thrombocytosis and thromboelastographic evidence of hypercoagulability in dogs undergoing splenectomy for splenic masses

Whitney E. Phipps DVM

Armelle M. de Laforcade DVM

Bruce A. Barton PhD

John Berg DVM, MS

From the Department of Clinical Sciences, Cummings School of Veterinary Medicine, Tufts University, North Grafton, MA 01536 (Phipps, de Laforcade, Berg); and the Division of Biostatistics, Department of Quantitative Health Science, University of Massachusetts Medical School, Worcester, MA 01655 (Barton). Dr. Phipps' present address is Pieper Veterinary, 730 Randolph Rd, Middletown, CT 06457.

Address correspondence to Dr. Berg (john.berg@tufts.edu).

OBJECTIVE

To determine the frequency and severity of thrombocytosis and thromboelastographic evidence of hypercoagulability during the first 2 weeks after splenectomy in dogs with splenic masses and to investigate relationships between platelet counts and thromboelastography values.

ANIMALS

34 dogs undergoing splenectomy for splenic masses.

PROCEDURES

Blood samples for platelet counts and thromboelastography were obtained at induction of anesthesia (day 0) prior to splenectomy and on days 2, 7, and 14.

RESULTS

Mean platelet counts were 167.9 X 10^3/μL, 260.4 X 10^3 μ/L, 715.9 X 10^3/μL, and 582.2 X 10^3/μL on days 0, 2, 7, and 14, respectively, and were significantly higher at all postoperative assessment points than on day 0. Thrombocytosis was observed in 3% (1/34), 6% (2/33), 81% (21/26), and 69% (18/26) of dogs on days 0, 2, 7, and 14. Platelet counts > 1,000 X 10^3/μL were observed in 1 dog on day 2 and in 5 dogs on day 7. One or more thromboelastography values suggestive of hypercoagulability were observed in 45% (15/33), 84% (26/31), 89% (24/27), and 84% (21/25) of dogs on days 0, 2, 7, and 14. At each assessment point, higher platelet counts were correlated with thromboelastography values suggestive of hypercoagulability.

CONCLUSIONS AND CLINICAL RELEVANCE

Marked thrombocytosis and thromboelastography values suggestive of hypercoagulability were common during the first 2 weeks after splenectomy for the dogs of this study. If present, hypercoagulability could increase the risk for development of postsplenectomy thrombotic conditions such as portal system thrombosis and pulmonary thromboembolism. (*J Am Vet Med Assoc* 2020;256:85–92)

- Post-splenectomy thrombocytosis thought to occur as spleen functions as a reservoir for platelets and usually removes senescent and damaged platelets from circulation
    - In people, this occurs 2-10 days post-op, peaking at 7-20 days
    - A risk factor for portal system thrombosis (PST)

Effects of 2% lidocaine hydrochloride solution as a coinduction agent with propofol on cardiopulmonary variables and administered propofol doses in healthy dogs premedicated with hydromorphone hydrochloride and acepromazine maleate

Callie E. Cazlan DVM

Bonnie L. Hay Kraus DVM

From the Department of Veterinary Clinical Sciences, Lloyd Veterinary Medical Center, College of Veterinary Medicine, Iowa State University, Ames, IA 50011. Dr. Cazlan's present address is Ocean State Veterinary Specialists, 1480 S County Trail, East Greenwich, RI 02818.

Address correspondence to Dr. Hay Kraus (bhkraus@iastate.edu).

OBJECTIVE

To evaluate the effects of lidocaine as a coinduction agent with propofol on cardiopulmonary variables and administered propofol doses in healthy dogs premedicated with hydromorphone hydrochloride and acepromazine maleate and anesthetized with isoflurane.

ANIMALS

40 client-owned dogs (American Society of Anesthesiologists physical status classification I or II and age ≥ 6 months) scheduled to undergo anesthesia for elective procedures.

PROCEDURES

In a randomized, blinded, controlled clinical trial, dogs received 2% lidocaine hydrochloride solution (2.0 mg/kg [0.9 mg/lb], IV; n = 20) or buffered crystalloid solution (0.1 mL/kg [0.05 mL/lb], IV; 20; control treatment) after premedication with acepromazine (0.005 mg/kg [0.002 mg/lb], IM) and hydromorphone (0.1 mg/kg, IM). Anesthesia was induced with propofol (1 mg/kg [0.45 mg/lb], IV, with additional doses administered as needed) and maintained with isoflurane. Sedation was assessed, and anesthetic and cardiopulmonary variables were measured at various points; values were compared between treatment groups.

RESULTS

Propofol doses, total sedation scores, and anesthetic and most cardiopulmonary measurements did not differ significantly between treatment groups over the monitoring period; only oxygen saturation as measured by pulse oximetry differed significantly (lower in the lidocaine group). Mean ± SD propofol dose required for endotracheal intubation was 1.30 ± 0.68 mg/kg (0.59 ± 0.31 mg/lb) and 1.41 ± 0.40 mg/kg (0.64 ± 0.18 mg/lb) for the lidocaine and control groups, respectively.

CONCLUSIONS AND CLINICAL RELEVANCE

No propofol-sparing effect was observed with administration of lidocaine as a coinduction agent for the premedicated dogs of this study. Mean propofol doses required for endotracheal intubation were considerably lower than currently recommended doses for premedicated dogs. (*J Am Vet Med Assoc* 2020;256:93–101)

Francisella tularensis infection in dogs: 88 cases (2014–2016)

Natalie A. Kwit DVM, MPH
Nicole A. Middaugh ScD, MS
Elizabeth S. VinHatton BS
Sandra D. Melman MS
Lisa Onischuk MPH
Adam S. Aragon MS
Christina A. Nelson MD, MPH
Paul S. Mead MD, MPH
Paul J. Ettestad DVM, MS

From the CDC, 3156 Rampart Rd, Fort Collins, CO 80521 (Kwit, Nelson, Mead); and the New Mexico Department of Health, 1190 S St Francis Dr, Santa Fe, NM 87505 (Middaugh, VinHatton, Melman, Onischuk, Aragon, Ettestad). Dr. Kwit's present address is Vermont Department of Health, 108 Cherry St, Burlington, VT 05402.

Address correspondence to Dr. Kwit (natalie.kwit@vermont.gov).

OBJECTIVE
To characterize the epidemiology, clinical signs, and treatment of dogs with *Francisella tularensis* infection in New Mexico.

ANIMALS
87 dogs in which 88 cases of tularemia (1 dog had 2 distinct cases) were confirmed by the New Mexico Department of Health Scientific Laboratory Division from 2014 through 2016 and for which medical records were available.

PROCEDURES
Dogs were confirmed to have tularemia if they had a 4-fold or greater increase in anti–*F tularensis* antibody titer between acute and convalescent serum samples or *F tularensis* had been isolated from a clinical or necropsy specimen. Epidemiological, clinical, and treatment information were collected from the dogs' medical records and summarized.

RESULTS
All 88 cases of tularemia were confirmed by paired serologic titers; the first (acute) serologic test result was negative for 84 (95%) cases. The most common reported exposure to *F tularensis* was wild rodent or rabbit contact (53/88 [60%]). Dogs had a median number of 3 clinical signs at initial evaluation; lethargy (81/88 [92%]), pyrexia (80/88 [91%]), anorexia (67/88 [76%]), and lymphadenopathy (18/88 [20%]) were most common. For 32 (36%) cases, the dog was hospitalized; all hospitalized dogs survived.

CONCLUSIONS AND CLINICAL RELEVANCE
Dogs with *F tularensis* infection often had nonspecific clinical signs and developed moderate to severe illness, sometimes requiring hospitalization. Veterinarians examining dogs from tularemia-enzootic areas should be aware of the epidemiology and clinical signs of tularemia, inquire about potential exposures, and discuss prevention methods with owners, including reducing exposure to reservoir hosts and promptly seeking care for ill animals. (*J Am Vet Med Assoc* 2020;256:220–225)

- Tularemia caused by g-ve coccobacillus F. tularensis
    - Known to cause epizootics in terrestrial and aquatic mammals
    - >50% human cases occur in Arkansas, Missouri, South Dakota, Oklahoma and Kansas
- Dogs and cats can become infected via contact w/ tissues of infected animals, tick/deerfly bites, or through inhalation or ingestion of the bacteria
- Nonspecific cx: pyrexia, lethargy, anorexia, lymphadenopathy, V+, D+, mucopurulent oculonasal discharge and skin lesions possible
- Infection confirmed by 4x increase in antibody titers and take up to 2-3w post-exposure to be detected
- Tx: doxycycline, enrofloxacin, gentamicin and chloramphenicol

Evaluation of atrial natriuretic peptide and cardiac troponin I concentrations for assessment of disease severity in dogs with naturally occurring mitral valve disease

Yasutomo Hori DVM, PhD
Masayuki Iguchi DVM
Atsushi Hirakawa DVM, PhD
Zenta Kamiya DVM
Shigeki Yamano DVM
Toshiki Ibaragi DVM
Noriko Isayama DVM, PhD
Yohei Yamashita DVM
Naoki Iwasa DVM
Haruki Inaba DVM
Yasuhiro Heishima DVM
Masashi Yuki DVM, PhD

From the School of Veterinary Medicine, Rakuno Gakuen University, Hokkaido 069-8501, Japan (Hori, Heishima); Iguchi Animal Hospital, 6-2-34 Kamijima, Naka Ward, Hamamatsu, Shizuoka 433-8122, Japan (Iguchi); Pet Clinic Hallelujah, 2544-1 Nakabaru, Kasuya-machi, Kasuya County, Fukuoka 811-2304, Japan (Hirakawa); Esora Animal Hospital, 5-3-10 Togasaki, Nishio, Aichi 445-0075, Japan (Kamiya); Ueda Animal Clinic, 2-202 Ueda, Tenpaku Ward, Nagoya, Aichi 468-0051, Japan (Yamano); Miyoshi Inter Animal Hospital, 3-1-8 Neura-machi, Miyoshi, Aichi 470-0217, Japan (Ibaragi); Uenonomori Animal Clinic, 1-5-11 Yanaka Taito Ward, Tokyo, 110-0001, Japan (Isayama); Ebisu Animal Hospital, 3-3-43 Nishitaga, Taihaku Ward, Sendai, Miyagi 982-0034, Japan (Yamashita); Hashima Animal Hospital, 2-17 Asahira, Fukujyu-cho, Hashima, Gifu 501-6255, Japan (Iwasa); Inaba Veterinary Hospital, 533-2 Shimojo, Fujinomiya, Shizuoka, 418-0114, Japan (Inaba); Heisei Animal Hospital, 2-1-1 Futago-cho, Kasugai, Aichi 486-0955, Japan (Heishima); Yuki Animal Hospital, 2-99 Kiba-cho, Minato-ku, Nagoya, Aichi 455-0021, Japan (Yuki).

Address correspondence to Dr. Hori (y-hori@rakuno.ac.jp).

OBJECTIVE
To evaluate and compare the clinical usefulness of plasma atrial natriuretic peptide (ANP) and cardiac troponin-I (cTnI) concentrations for assessment of disease severity in dogs with naturally occurring mitral valve disease (MVD).

ANIMALS
316 dogs with MVD and 40 healthy control dogs.

PROCEDURES
Each dog underwent a physical examination and echocardiographic and thoracic radiographic assessments. Blood samples were obtained and processed for measurement of plasma ANP and cTnI concentrations. Dogs with MVD were categorized into 3 groups (stages B1 [no clinical signs or evidence of cardiac enlargement], B2 [no clinical signs with evidence of cardiac enlargement], and C [history of congestive heart failure and pulmonary edema]) on the basis of American College of Veterinary Internal Medicine guidelines. Receiver operating characteristic curve analysis was used to evaluate the accuracy of plasma ANP and cTnI concentrations for assessment of MVD severity.

RESULTS
Plasma ANP and cTnI concentrations increased as disease severity increased. Median plasma ANP concentrations for all 3 MVD groups and median plasma cTnI concentrations for the stage B2 and C groups were significantly greater than the corresponding concentrations for the control group. Plasma ANP concentration, but not cTnI concentration, appeared to be useful for detection of dogs with subclinical (stages B1 and B2) MVD, whereas both concentrations appeared useful for detection of dogs with stage C MVD.

CONCLUSIONS AND CLINICAL RELEVANCE
Results indicated that plasma ANP and cTnI concentrations should not be used independently to diagnose MVD but can be used to assess MVD severity and supplement echocardiographic findings. *(J Am Vet Med Assoc* 2020;256:340–348)

Outcomes for dogs with functional thyroid tumors treated by surgical excision alone

Alyson N. Frederick DVM

Anthony D. Pardo DVM, MS

Chad W. Schmiedt DVM

Whitney D. Hinson DVM

Ada O. Youk PhD

Bridget K. Urie DVM, MS

From the Departments of Surgery (Frederick, Pardo) and Oncology (Urie), Pittsburgh Veterinary Specialty and Emergency Center, 807 Camp Horne Rd, Pittsburgh, PA 15237; the Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia, Athens, GA 30602 (Schmiedt); the Department of Small Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX 77843 (Hinson); and the Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA 15261 (Youk). Dr. Frederick's present address is Veterinary Specialty Center of Delaware, 290 Churchmans Rd, New Castle, DE 19720.

Address correspondence to Dr. Frederick (Alyson.frederick@bluepearlvet.com).

OBJECTIVE

To describe clinical findings and survival times for dogs with functional thyroid tumors treated with surgery alone and investigate potential prognostic factors for outcome in these patients.

ANIMALS

27 client-owned dogs.

PROCEDURES

Medical records of 9 institutions were reviewed to identify dogs with hyperthyroidism secondary to thyroid neoplasia that were treated with surgery alone between 2005 and 2015. Data collected included signalment, hematologic and physical examination findings, tumor staging results, time from diagnosis to treatment, surgical procedure performed, histologic findings, evidence of recurrence or metastatic disease, and date of death or last follow-up. Median survival time and 1-, 2-, and 3-year survival rates were assessed by Kaplan-Meier analysis. Associations between variables of interest and the outcome of death were assessed with Cox proportional hazards models.

RESULTS

Dogs from 8 institutions met inclusion criteria. Median age at diagnosis was 10 years (range, 8 to 13 years). Golden Retrievers and Labrador Retrievers were commonly represented (5 dogs each). Polyuria with polydipsia (15/27 [56%]) and weight loss (12 [44%]) were the most common clinical signs; 2 dogs without clinical signs had hyperthyroidism identified by routine hematologic analysis. One dog had metastatic disease at the time of diagnosis. Most tumors (23/27 [85%]) were malignant. Estimated median survival time was 1,072 days. No significant prognostic factors were identified.

CONCLUSIONS AND CLINICAL RELEVANCE

Dogs with resectable functional thyroid tumors had a good prognosis with surgical excision alone. Survival times for these dogs were similar to those in previous studies that included dogs with nonfunctional thyroid tumors. (*J Am Vet Med Assoc* 2020;256:444–448)