

Radiographic findings and clinical factors in dogs with surgically confirmed or presumed colonic torsion

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Abstract

Colonic torsion is a life-threatening condition in dogs and radiographic findings for this condition have not been well described. The purpose of this retrospective case series was to describe radiographic findings and clinical signs in a group of dogs with colonic torsion. Inclusion criteria were dogs presenting during the period of 2006 and 2016, and that had abdominal radiography and a surgically confirmed or presumed diagnosis of colonic torsion. For each dog, clinical data were recorded from medical records and imaging findings were recorded from retrieved plain radiographs and positive contrast radiographs in which barium enema was performed. Fourteen dogs met inclusion criteria. Of these, nine dogs had colonic torsion confirmed at surgery, with five dogs having surgical confirmation of colonic congestion or mesenteric torsion. Radiographic findings included segmental distention of the colon (14/14), focal narrowing of the colon (11/14), displacement of cecum (11/14), displacement of descending colon (14/14), and mild to no small intestinal distention (14/14). In cases where barium enema was performed, focal narrowing of the colon and longitudinal striations that course in a helical pattern were identified, termed the “torsion sign.” Vomiting was the most common clinical sign observed (12/14), followed by abdominal pain in a small majority of cases (8/14). Severe abdominal pain and hypovolemic shock were uncommon in the patients reported (3/14). Colonic torsion should be considered as a differential diagnosis for dogs with radiographic segmental colonic distention with displacement of the descending colon and cecum. Barium enema is recommended for more definitive diagnosis.

KEYWORDS

canine, radiography, small animal, torsion sign

- 14 dogs
- Clinical signs: acute-subacute (7h-7days), vomiting observed in 12/14, abdominal pain 8/14, tenesmus only 4/14.
- Patient population: young-middle aged (mean age 5.2 years old) with increased prevalence in male dogs (71%) of medium and large breeds (100%)
- 64% of dogs had prior GI dz hx, 36% had prior gastropexy. Majority had mild, nonspecific GI signs
 - o Suspicion for colonic torsion should be increased in patients with intermittent Cx and/or prior hx of GZ disease, GDV, or prior sx
- 64% confirmed to be colonic torsion at time of sx. Remaining cases had grossly abnormal colons with evidence of congestion at time of sx
 - o Suspect to have dynamic colonic torsion and torted b/w time of imaging to time to sx
- Limitations: time from imaging to sx was lacking, not a case-matched study, surgical database from a single referral institution, lack of surgical confirmed dx of colonic torsion in all cases

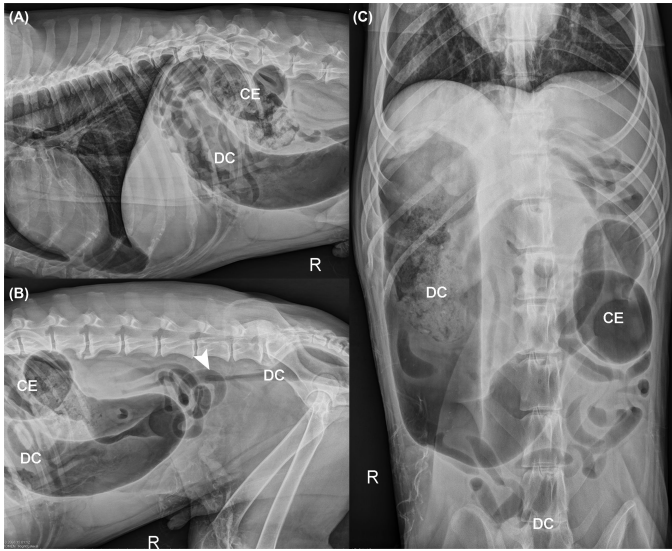


FIGURE 1 Right lateral radiographs of the A, cranial and B, caudal abdomen and a ventrodorsal radiograph (C) of the abdomen of a patient with surgically confirmed colonic torsion. Note the segmental distention of the colon with focal narrowing of the distal descending colon (arrow head). The cecum (CE) is displaced to the left of the vertebral column and the descending colon (DC) is displaced to the right of the vertebral column in the ventrodorsal view

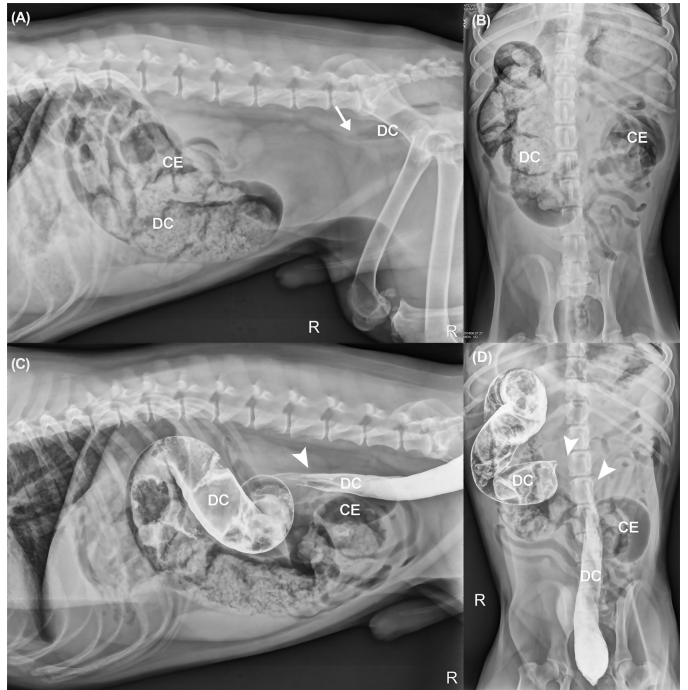


FIGURE 2 Right lateral and ventrodorsal radiographs of the abdomen of a patient with surgically confirmed colonic torsion pre- (A and B) and post-barium enema (C and D). Segmental distention, focal narrowing of the distal descending colon (white arrow), and displacement of the descending colon (DC) and cecum (CE) is seen on pre-contrast images. Post-barium enema, longitudinal and helical striations are visible in the narrowed section of descending colon (arrow head), termed the "torsion sign"

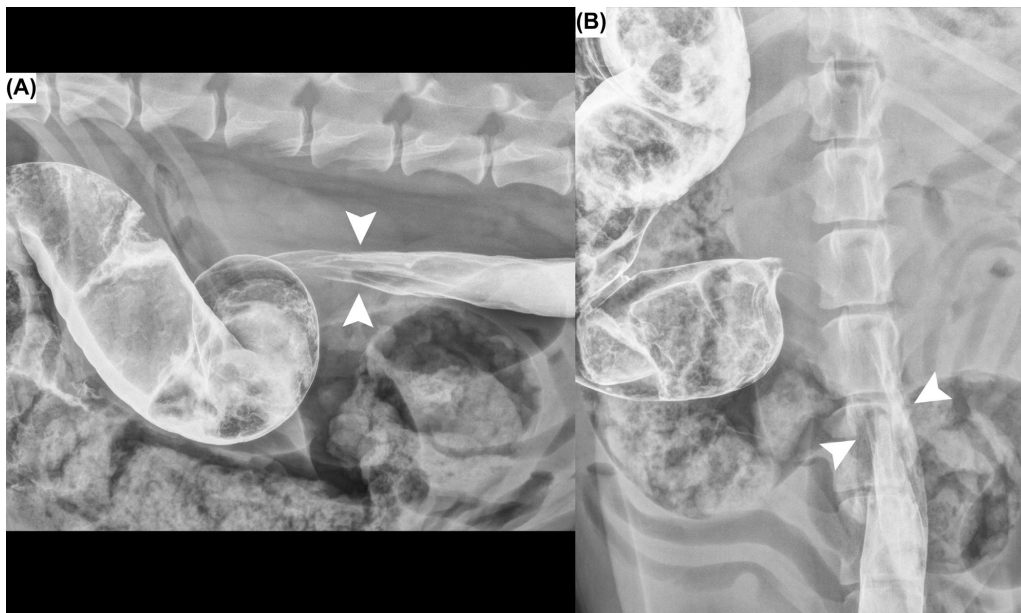


FIGURE 3 Close-up view of right lateral and ventrodorsal radiographs of the abdomen of the same patient in Figure 2 post-barium enema. The longitudinal, helical striations consistent with the "torsion sign" are seen (arrow heads)

Bronchoalveolar lavage affects computed tomographic and radiographic characteristics of the lungs in healthy dogs

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Abstract

Bronchoalveolar lavage is a common diagnostic test for dogs with suspected pulmonary disease, however there is no published information on whether this procedure could affect the imaging characteristics of the lungs. Aims of this prospective experimental study were to describe computed tomography (CT) and radiographic features of the lungs after bronchoalveolar lavage in a sample of healthy dogs. Thoracic CT and radiographic images of eight healthy Beagles were acquired at the following time points: before bronchoalveolar lavage, immediately following bronchoalveolar lavage, and at 2, 4, 8, 12, and 24 h following bronchoalveolar lavage. Lung consolidation or interstitial patterns were seen in CT and radiographic images immediately after the procedure. Radiographic lung patterns resolved within 2 h and CT patterns resolved within 24 h. Resolution of the CT pulmonary patterns in the ventral areas of the lungs was delayed compared to the dorsal areas. Mean CT imaging scores differed over time ($P < 0.001$), while mean radiographic imaging scores did not differ over time. This study suggests that thoracic radiography and CT imaging assessments should precede bronchoalveolar lavage procedures if possible, or be performed at least 24 h afterward.

KEYWORDS

airway, fluid distribution, fluid infusion, pulmonary changes, serial computed tomography scans

- Prospective experimental design.
- 8 healthy research Beagles were used
- TXR and CT were performed pre-BAL, immediately after BAL, and at 2,4, 6, 8,12 and 24 hours post-BAL
- Standardized BAL protocol used in all 8 dogs with a well described scoring system
- Conclusion: pulmonary CT or TXR should be performed at least 24 hours after BAL for interpretation w/o lavage-associated disturbances
 - o CT more sensitive to detect pulmonary changes than TXR
 - o BAL site recommended in veterinary patients are the right middle lung lobe and the caudal segment of left cranial due to their ventral position
- Limitation: lack of cytological and histological evaluation, small sample size, lack of concurrent pulmonary pathology (pathology may affect fluid clearance time), different volumes of infusion not tested

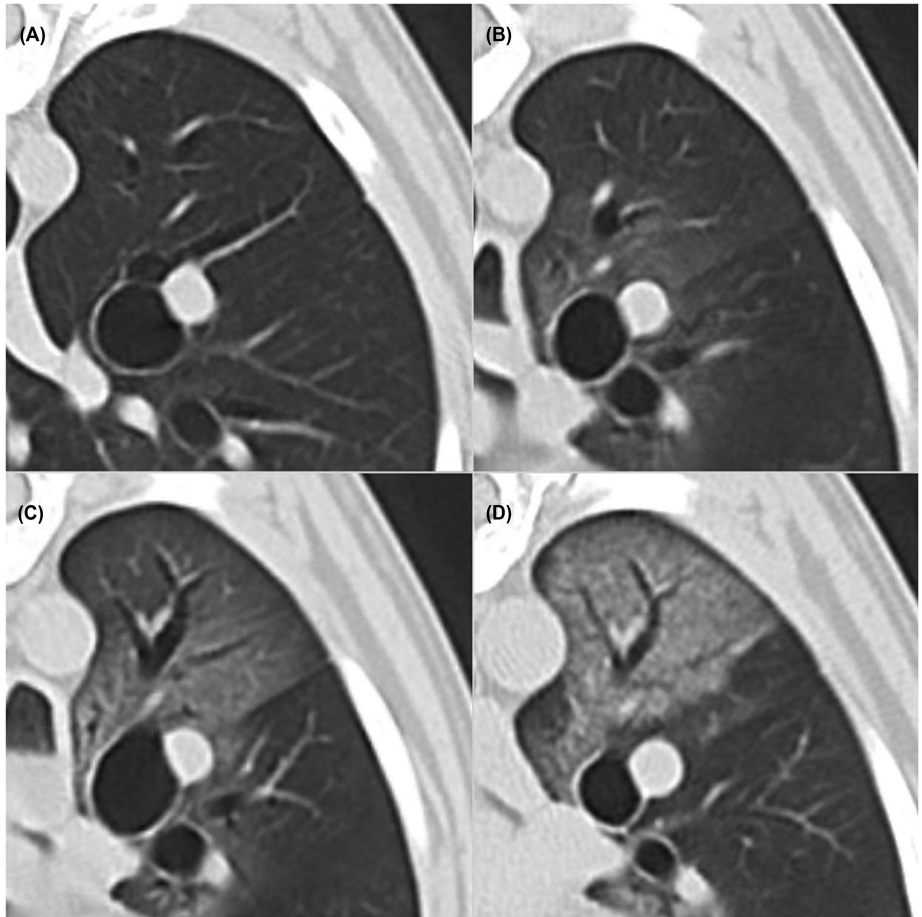


FIGURE 1 Thoracic computed tomography images corresponding to each computed tomography image score. The images were scored from 0 to 3: (A) 0, normal; (B) 1, mild ground glass opacity (GGO) with distinct vascular margins; (C) 2, moderate GGO without vascular obscuration; and (D) 3, consolidation with vascular obscuration

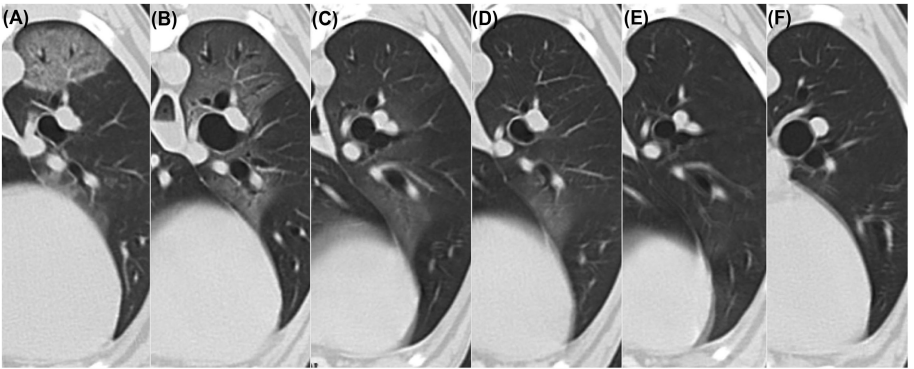


FIGURE 4 Thoracic CT images of the left caudal lung lobe with time in Dog 3: (A) immediately after bronchoalveolar lavage, (B) 2 h, (C) 4 h, (D) 8 h, (E) 12 h, and (F) 24 h postprocedure

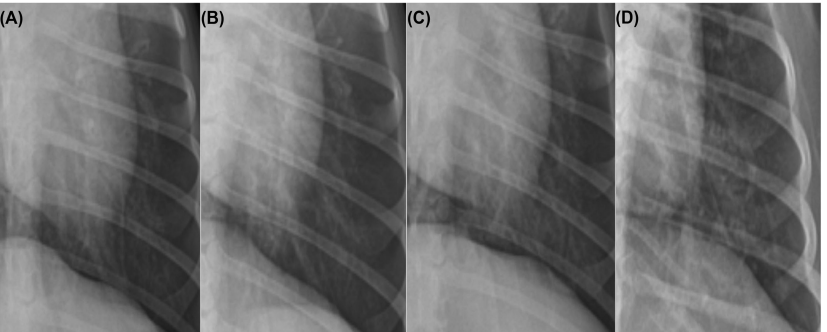


FIGURE 2 Thoracic radiographic images corresponding to each radiographic image score. The images were scored from 0 to 3: (A) 0, normal; (B) 1, mild interstitial pattern (barely perceptible); (C) 2, moderate interstitial pattern with blurred bronchial and vascular markings; and (D) 3, severe interstitial pattern that almost obscures pulmonary vessels

Utility of two-view vs. three-view abdominal radiography in canines presenting with acute abdominal signs

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Abstract

There are clear differences in the normal radiographic appearance of the abdominal organs between a left lateral vs. a right lateral view. While a few veterinary academic institutions have transitioned to a three-view abdominal radiographic study protocol, obtaining only two views of the canine abdomen remains the current standard in veterinary medicine. In this combined retrospective and prospective, case-controlled study, 48 canine patients presenting with signs of acute abdomen were recruited. Four board-certified veterinary radiologists and four general practice veterinarians with greater than 3 years of experience in small animal practice were asked to determine if 10 predetermined findings were present within the set of images and if surgery was recommended based on those findings. Image readers were unaware of the clinical history. Three-view studies did not yield statistically significantly greater accuracy than two-view studies when evaluating all readers together. No statistically significant associations between the availability of the third view and increased accuracy or confidence were found in evaluations of general practitioners specifically. Evaluation of three-view radiographic examination, as compared to two-view examination, did not have perceived or statistically significantly increased diagnostic utility. Based on our findings, there is no statistically increased utility to justify a standard three-view abdominal radiographic examination over a two-view study for canines presenting with signs of acute abdomen.

KEYWORDS

abdomen, abdominal radiographs, dog, ileus, mechanical obstruction, X-ray

- 48 canine patients presenting w/ acute abdomen were recruited
 - o Assuming 50% sensitivity for all study questions, powering a study for an odds ratio increase of 1.75 when having the third view, we found that 272 data points had a statistical power of 0.901 for logistic regression analysis. Therefore, approximately 34 patients needed to be recruited (power 0.9, alpha 0.05).
 - o They initially retrospectively recruited 16 patients only, so had to prospectively recruit an additional 32 cases for a total of 48 cases
- Recruiters determine if 10 predetermined findings were present w/o knowing clinical history (normal abdomen, focal SI dilation, diffuse DI dilation, SI plication, GI wall thickening, gastric dilation, hepatomegaly, loss of abdominal serosal detail, opaque GI foreign body, and mass effect)
- Answer submitted based on degree of certainty or confidence that finding was present using a Likert
- Results:
 - o No significant difference in greater accuracy of 3-view vs 2 view by DACVR or GP
 - o No specific areas where GP were statistically significantly more confident if a 3-view was available in their review
- Conclusion: 3-view AXR did not have perceived or statistically significantly increased diagnostic utility in correctly identifying key abnormalities w/in the images or determining whether surgical intervention was needed, and this was true for both DACVR and GPs

The Effect of a Hydrocolloid Dressing on Second Intention Wound Healing in Cats

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ABSTRACT

The objective of the present study was to evaluate the effect of a hydrocolloid dressing on second intention wound healing in cats. Two full-thickness skin wounds, measuring 2×2 cm, were created on both sides of the dorsal midline of 10 cats; bilaterally, one randomly selected wound was bandaged with a hydrocolloid dressing and the second one (control) with a semiocclusive pad. Subjective clinical evaluation of granulation tissue formation, of the quantity and nature of wound exudate, and planimetry were performed on the right-side wounds, and histological examination on the left. No significant differences in subjective clinical evaluation or in planimetry were observed between the hydrocolloid-treated wounds and controls. Most wounds had serous or absence of exudate (41.25% and 25%, respectively), whereas purulent exudate was observed in 7.5% of wounds. Edema was significantly increased in the hydrocolloid-treated wounds compared with controls on day 7 but no significant differences in the other histological variables were observed. (*J Am Anim Hosp Assoc* 2018; 54:125–131. DOI 10.5326/JAAHA-MS-6604)

- Prospective study performed on purpose-bred laboratory cats in Greece
- 10 DSH – 5 females, 5 males – were included
- Cats were anesthetized with standard protocol and 2 full-thickness wounds were created on left and right trunk; first wound has hydrocolloid dressing as contact layer and second wound served as control



FIGURE 1 Representative open wounds on days 7 (A, D), 14 (B, E) and 21 (C, F) treated with a hydrocolloid dressing (treatment C) and with a semi-occlusive dressing (treatment M).

- They were subjectively evaluated daily by the same DVM
 - o Edema, absence of separation of cells/collagen, collagen density, angiogenesis, and epidermal thickness were scored histologically
- Results:
 - o All dressing remained in place until changing
 - o No significant differences were found in planimetry variables b/w hydrocolloid vs control

- Did not significantly promote granulation tissue formation, epithelization, contraction or total wound healing
 - No difference in amount of exudate b/w treatments
- Well tolerated by cats, may be able to be performed by owners, and may be more cost-effective than wet-to-dry dressings
- Future research needed to see if hydrocolloid dressings have different effects on acute feline wounds vs chronic/indolent wounds

Safety and Tolerability of Hyperbaric Oxygen Therapy in Cats and Dogs

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ABSTRACT

This prospective clinical trial was designed to evaluate the safety of hyperbaric oxygen therapy (HBOT) in a population of cats and dogs with a variety of naturally occurring diseases. Seventy-eight dogs and twelve cats with various naturally occurring disease conditions, who had the potential to benefit from HBOT, were enrolled in the study. These patients were treated with HBOT in a monoplace hyperbaric oxygen chamber at 2 air pressure absolute for a treatment length of either 45 min or 60 min. There were 230 hyperbaric oxygen treatments performed during the study period. No major adverse effects were observed. There were 76 minor adverse effects recorded, which were not considered to be of clinical significance. Hyperbaric oxygen therapy was well tolerated and there were no major adverse effects recorded during treatment. (*J Am Anim Hosp Assoc* 2018; 54:188–194. DOI 10.5326/JAAHA-MS-6548)

- Prospective clinical trial
- Goal of study to evaluate the incidence of adverse effect during HBOT in a population of cats and dogs with a variety of naturally occurring diseases. Hypothesized that HBOT would be well tolerated and rate of adverse effect would be low
 - o Minor: caused minimal patient distress and were unlikely to cause persistent morbidity (i.e. intermittent head shake, ear flick, or vocalization classed as minor if duration < 2 min and occurred <5 times in a single tx)
 - o Major: contributed to mortality or persistent morbidity, caused significant distress or required emergency decompression
- Privately-owned canine and feline patients with HBOT as part of their treatment protocol were eligible for inclusion in this prospective clinical trial performed between July 2013 and May 2014 at Brisbane Veterinary Specialist Centre
 - o 12 cats and 78 dogs were enrolled
- Treatment regimens were either a single 60-min/24 hr or two 45-min/24hr treatments
- Results/conclusion: 0% incidence of major adverse effects. 55 minor adverse effects in 60-min tx, and 21 minor adverse effect in 45-mins tx.
 - o They considered this inconsequential
- Limitations: low # of feline patients, assessment of minor adverse effects is fairly subjective (e.g. no neurological or otoscopic exam), small sample size, referral caseload bias
- Future studies should assess therapeutic benefit of HBOT in various disease states

A Prospective Evaluation of a Modified Belt-Loop Gastropexy in 100 Dogs with Gastric Dilatation-Volvulus

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ABSTRACT

Gastropexy is a surgical technique performed to prevent and decrease the recurrence rate of gastric dilatation and volvulus (GDV). The objective of this prospective, a descriptive cohort study on 100 client-owned dogs who were presented with GDV, is to describe a modified belt-loop gastropexy and determine its intraoperative complications and long-term efficacy.

The transversus abdominis muscle was used to make an oblique belt-loop. A seromuscular antral fold, instead of a seromuscular antral flap, was passed through the belt-loop, and then, the passed portion of the antral fold was sutured to the dissected edge of the abdominal wall. Intraoperative complications related to gastropexy were recorded, and the incidence of GDV recurrence was determined a minimum of 1 yr postoperatively via telephone with the referring veterinarians and the owners. There were no intraoperative complications related to the modified belt-loop gastropexy technique. Based on follow-up conversations, none of the dogs presented signs of GDV recurrence during the follow-up period. Based on the results, there is strong clinical evidence that a modified belt-loop gastropexy prevents recurrence of GDV in dogs surviving an acute episode. (*J Am Anim Hosp Assoc* 2018; 54:239–245. DOI 10.5326/JAAHA-MS-6596)

- Goal of study: describe complication and GDV recurrence rate in patients who underwent a modified belt-loop gastropexy after derotation/decompression of stomach after GDV. Hypothesized that his technique would have minimal or no intraoperative complications, can be rapidly performed, and would create a stable adhesion b/w gastric antrum and right abdominal wall
- Descriptive prospective cohort study performed in Italy
- 100 dogs evaluated, followed up for 1-year post-operative
- No statistics performed. No conclusions can really be made, but they reported 0 complications associated with the technique perioperatively and 0 recurrence of GDV

Comparison of Initial and Postlavage Bacterial Culture Results of Septic Peritonitis in Dogs and Cats

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ABSTRACT

Septic peritonitis is a common, life-threatening condition encountered in dogs and cats. Efficacy of peritoneal lavage has not been proven in veterinary studies. Our objective was to evaluate differences in bacterial identity and susceptibility in samples obtained pre- and postlavage in animals who underwent laparotomy for treatment of septic peritonitis and to assess the effect of empirical antimicrobial selection on survival. Culture samples were collected from the peritoneal surface pre- and postlavage from dogs and cats treated surgically for septic peritonitis. Culture results were compared for each patient with regard to bacterial isolates and bacterial susceptibility profiles. Survival to discharge was evaluated.

Microbial growth occurred in at least one culture in 88.6% of patients. There was no significant difference in bacterial isolates or susceptibility profiles pre- versus postlavage. Positive culture pre- or postlavage and appropriate antimicrobial selection did not significantly affect survival. For individual animals, culture results differed between pre- and postlavage samples, although no definitive effect of peritoneal lavage was seen for the population as a whole. Antimicrobials most commonly effective against isolates were Cefotaxime, Ceftazidime, and Imipenem. If prompt surgical source control is employed, antibiotic choice may not affect clinical outcome. (*J Am Anim Hosp Assoc* 2018; 54:257–266. DOI 10.5326/JAAHA-MS-6651)

- Goal: to evaluate & compare the differences in bacterial identity and susceptibility in samples obtained from the peritoneal surface on initial entry (prelavage) and after evacuation and lavage (postlavage) in dogs and cats who underwent exlap for septic peritoneal effusion
- 2nd objective to assess empirical broad-spectrum antimicrobial selection in comparison w/ bacterial culture results w.r.t. effect on short-term survival
- Prospective study at AMC Jan 2011- Dec 2015
- 35 patients met criteria, 29 dogs and 6 cats included
- Results:
 - o Source of contamination was GI (68.5%), urogenital (20%), and hepatobiliary (11.4%)
 - o 71% of them treated w/ ABX prior to transfer to Sx
 - o Microbiological growth occurred in 74.3% of sample prelavage, and 74.3% post-lavage. Growth (pre- or postlavage) occurred in 88.6% of patients
 - o Overall survival rate 74.3%
 - o No significant difference in survival based on having a +ve vs. -ve prelavage or postlavage culture
 - o 3 ABX most commonly effective vs cultured isolates include Cefotaxime, Ceftazidime, and Imipenem
 - ABX selection was appropriate in 53.8% of cases
 - Survival for patients with appropriate vs inappropriate ABX selection was not significantly different, based on prelavage and postlavage susceptibility results
- Discussion:
 - o Lack of significant difference may be due to small sample size
 - o Most common isolates were E. coli, then Enterococcus sp. → recommend empirical ABX based on these results

- Confounding factors that may have influenced:
 - Bacterial virulence – e.g. endotoxin associated w/ greater morbidity regardless of susceptibility
 - Host immunocompetence
 - Multiple ABX may have synergistic effects leading to increased efficacy
 - In vitro susceptibility do not consistently predict in vivo efficacy (e.g. DQ for treatment of enterococcal infections)
- 5 cases w/ -ve prelavage but +ve postlavage culture results – maybe they had walled off, localized source of peritonitis that was then spread with lavage, or maybe due to inappropriate sample handling in the prelavage sample
- Limitations: small sample size, lack of standardization of surgical techniques, lack of standardization of ABX protocol, lack of standardization of amount of fluid used for lavage
- Future study: assess if clinical outcome is affected by only obtaining culture pre- or post-lavage, or by treating with empirical ABX not based on culture results for cases of septic peritonitis