

SEPTIC PERITONITIS

EARLY DIAGNOSIS IN THE POSTOPERATIVE PATIENT

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Septic peritonitis usually results from bowel perforation, penetrating wounds, surgical contamination, extension of a urogenital infection (ruptured pyometra or prostatic abscess), or secondary to biliary rupture with bacterial contamination. Such infections are usually polymicrobial, with increasing contribution from anaerobic bacteria the more aboral the penetration to the intestinal tract. Endotoxin is liberated as bacteria proliferate in the peritoneal exudates causing a cascade of events that affects many organ systems and can lead to septic shock and death.

Septic peritonitis, as a postoperative complication in small animal patients, most commonly occurs after intestinal surgery. However, it can occur after biopsy procedures or other routine abdominal procedures, as well. While it can certainly occur from other conditions (penetrating wounds, urogenital tract infections with or without rupture, biliary rupture, pancreatitis, or pyometra), if your patient had surgery recently and it is not recovering normally, don't overlook this serious problem. An index of suspicion is the greatest asset to early diagnosis.

Certain patient populations may be at increased risk of complications after surgery. Patients with low serum albumin levels and the presence of an intestinal foreign body at the time of surgery may be at increased risk for postoperative dehiscence and secondary septic peritonitis. Most intestinal dehiscence is recognized in the first 3-5 days after surgery, but it can occur anytime in the first few postoperative weeks.

DIAGNOSIS

Early diagnosis is the first step to avoiding serious secondary systemic disease from sepsis. Unfortunately, common clinical signs seen with peritonitis are non-specific. Vomiting is a common symptom, as serosal inflammation causes ileus and intestinal distension. Auscultation of the abdomen will reveal decreased or absent bowel sounds. Anorexia, depression, and abdominal splinting, or pain on palpation are common, but not always present. Fevers may be present, but some patients may be hypothermic. Effusion is present, but may not be of sufficient volume to be found on abdominal palpation or cause visible abdominal distension. Hypovolemia and dehydration, with signs of shock, are usually present at the time of diagnosis.

- a) **Radiography**** - look for free fluid, free air, evidence of ileus (distended loops of intestine).
** Iodinated contrast should be used instead of barium for contrast studies if bowel/urinary tract leakage is suspected.
- b) Ultrasonography - free fluid – may be localized to the site of the problem
- useful to guide peritoneal fluid collection
- c) **Abdominocentesis** is proving to be very important to early diagnosis. Aseptic preparation of the abdomen is paramount. A needle or butterfly catheter work well (if you are in fluid, gravity flow is usually sufficient). A single tap can be

performed on midline 1-3cm caudal to the umbilicus. If no fluid is recovered, tap all four quadrants after aseptic preparation of the abdomen.

- d) If no fluid is recovered, **diagnostic peritoneal lavage** using 20ml/kg of warmed saline can be infused and then withdrawn.
- i. **Compare glucose in abdominal fluid to blood glucose**. If abdominal fluid glucose levels are 20mg/dl lower than the blood, septic peritonitis is present (dog: 100% sensitive and specific, cat: 86% sensitive, 100% specific)
 - ii. Cytology (Diff-quick and gram stain): look for degenerate neutrophils with intracellular bacteria and foreign material,
 - iii. Save samples for culture. Special tubes for anaerobic culture are required, as most transport tubes are not sufficient for anaerobic culture. Contact your laboratory for information about transport tubes.

TREATMENT

Once a diagnosis of septic peritonitis is made and the patient has been adequately resuscitated, surgical exploration of the abdomen is indicated. Broad spectrum intravenous antimicrobial therapy is started as soon as culture samples have been obtained. Antimicrobial therapy often includes an aminoglycoside, third generation cephalosporin, and metronidazole. Surgical correction/elimination of the primary source of contamination is performed. Sutures used should be monofilament with long duration of holding strength (NO gut, Monocryl, or Biosyn). For intestinal revisions, omentalization or serosal patching are performed after resection/anastomosis. The abdomen is lavaged copiously (200-300ml/kg) and all fluid removed from the abdomen. Closed suction drains are placed in the abdomen for continued removal of fluid during the postoperative period.

On-going and aggressive post-operative medical support and monitoring is vital to improving outcome. Cardiovascular and pulmonary complications, as well as coagulation, glucose, albumin, and electrolyte alterations must be anticipated and addressed as early as possible in the course of hospitalization. The quantity and character (to include cytology) of the fluid from the abdominal drains is examined daily to guide drain removal or the possible need for surgical re-exploration.

PROGNOSIS

Reported survival rates vary widely (27-80%) depending on the source of infection and treatments given. It is of no debate that early recognition of the problem and aggressive treatment improve survivability of the patient.