

Septic Shock in Dogs

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Sepsis, an overwhelming infection in the body, results in severe inflammation. Untreated, it can turn to severe sepsis, which can cause multi-organ failure (e.g., acute kidney failure, acute respiratory distress syndrome, or liver failure). When severe sepsis overwhelms the body, it results in septic shock. Even with aggressive treatment, septic shock can be fatal in dogs and cats; reported mortality rates range from 20% to 68% in dogs.

One cause of septic shock could be an untreated, severe infection, such as from:

- Ruptured intestines (typically from intestinal cancer or a foreign body obstruction)
- Kidney infection (e.g., pyelonephritis)
- Uterine infection in intact females (e.g., pyometra)
- Prostatic infection in male dogs (e.g., prostatic abscess)
- Severely infected wound (e.g., abscess or bite wound)
- Pneumonia
- Bacterial infection in the vertebrae (e.g., diskospondylitis)
- Joint infection
- Bacterial infection on the heart valves (e.g., bacterial endocarditis)
- Blood infection
- Pancreatic infection (e.g., pancreatitis or pancreatic abscess)
- Ruptured organs (e.g., a ruptured stomach secondary to gastric dilatation volvulus, a ruptured bladder secondary to bladder stones, or a ruptured gall bladder secondary to gall bladder stones)

Symptoms of septic shock include:

- Not eating
- Vomiting
- Drooling
- An elevated heart rate
- Dark red gums
- Pale, pink gums
- Dehydration
- Panting
- Difficulty breathing
- Weakness or lethargy
- Abdominal pain
- Diarrhea
- Straining to urinate or defecate
- Collapse
- Excessive licking of the rear end
- A foul odor from the rear end
- Vaginal discharge
- Fever
- A distended abdomen
- Death, even with treatment

Diagnosing septic shock in dogs

To diagnose sepsis, your veterinarian will need to run certain tests, including the following:

- Complete blood count (looking at the white and red blood cells and platelets)
- Chemistry (looking at the kidney and liver function, protein, blood glucose, electrolytes)
- Urinalysis
- Urine culture
- Chest and abdominal x-rays
- Coagulation testing (including a PT, PTT, and platelet count)
- Abdominal ultrasound
- Fluid analysis if there is abnormal fluid in the abdomen or chest
- Catscan or MRI
- Ultrasound of the heart (e.g., echocardiogram)

Blood work findings consistent with sepsis include:

- A highly elevated or decreased white blood cell count
- A highly elevated (i.e., hyperglycemic) or decreased blood sugar (i.e., hypoglycemic)
- An elevated or decreased red blood cell count (from dehydration or anemia)

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- Increased liver enzymes (e.g., total bilirubin)
- Increased kidney values
- Abnormal clotting due to [a severe complication called disseminated intravascular coagulation \(DIC\)](#)

Septic shock treatment

Treatment for sepsis depends on the underlying cause, but is aimed at removing the source of infection (which is typically done by surgery, if involving the abdomen) or symptomatic supportive care. Specific treatment to counter septic shock includes:

- Intravenous (IV) fluids
- IV colloid fluids (e.g., Hetastarch [to help increase the protein in the blood stream and blood pressure])
- IV antibiotics
- Anti-vomiting medication
- Pain medication
- Vasopressors to increase the blood pressure
- Nutritional support
- Dextrose (sugar) supplementation
- Blood work monitoring (specifically of the electrolytes, blood sugar, white and red blood cell count, and clotting)
- Possible plasma transfusions if DIC is present
- Surgery, if indicated

Prognosis of septic shock

Unfortunately, even with aggressive treatment, the prognosis is poor to grave once septic shock has set into the body. The best thing that an owner can do is to seek veterinary treatment immediately. The sooner a problem or infection is recognized, the sooner treatment can be started, hopefully mitigating the risk of sepsis.

If you have any questions or concerns, you should always visit or call your veterinarian -- they are your best resource to ensure the health and well-being of your pets.