

# WOODVALE PARK

## VETERINARY HOSPITAL



Unit 10, 923 Whitfords Avenue, Woodvale WA 6026

Phone: (08) 9409 6968

[www.woodvaleparkvet.com.au](http://www.woodvaleparkvet.com.au)

Aimeroy Pty Ltd ABN 53 165 893 701

# Generalized Bacterial Infection (Sepsis) and the Presence of Bacteria in the Blood (Bacteremia)

## Basics

### OVERVIEW

- “Sepsis”—generalized (systemic) inflammatory response to bacterial infection (such as fever or low blood pressure [known as “hypotension”])
- “Bacteremia”—the presence of bacteria in the blood

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Dogs
- Cats

#### Predominant Sex

- Large-breed male dogs—more susceptible to developing bacterial infection/inflammation of the lining of the heart (known as “bacterial endocarditis”) and bacterial or fungal infection of the intervertebral disks and adjacent bone of the spine (vertebral bodies; condition known as “diskospondylitis”)

### SIGNS/OBSERVED CHANGES IN THE PET

- Signs may be sudden (acute) or may occur in a vague or episodic fashion
- Variable and may involve multiple organ systems
- More severe when gram-negative bacteria are involved
- Dogs—earliest signs usually involve the gastrointestinal tract (including the stomach and intestines)
- Cats—usually involves the respiratory system (including the lungs)
- Intermittent or persistent fever
- Low body temperature (known as “hypothermia”) may be more common in cats than fever
- Lameness

- Depression
- Rapid heart rate (known as “tachycardia”)
- Slow heart rate (known as “bradycardia”) may be more common in cats than rapid heart rate
- Heart murmur
- Low blood pressure (hypotension)
- Weakness

## CAUSES

- Dogs—bacteria; gram-negative bacteria (especially *E. coli*) most common; gram-positive cocci and obligate anaerobes also are important; infection with more than one type of bacteria (known as “polymicrobial infection”) reported in about 20% of dogs with positive blood cultures (that is, bacteria are grown in the laboratory from samples of blood); “obligate anaerobes” are bacteria that must live and grow in the absence of oxygen
- Cats—bacteria; disease-causing agents usually are gram-negative bacteria or obligate anaerobes; *E. coli* and *Salmonella* are the most common gram-negative bacteria cultured
- *Pseudomonas aeruginosa*—uncommon isolate from animal blood cultures

## RISK FACTORS

- Very sudden (known as “peracute”) disease—most often associated with infection/inflammation of the uterus with accumulation of pus (known as “pyometra”) and disruption of the gastrointestinal tract
- More prolonged onset of disease—associated with infections of the skin, upper urinary tract (kidneys and ureters), mouth, or prostate
- Excessive levels of steroids produced by the adrenal glands (known as “hyperadrenocorticism” or “Cushing's disease”); diabetes mellitus (“sugar diabetes”); liver or kidney failure; surgical removal of the spleen (known as “splenectomy”); cancer; and burns
- Inability to develop a normal immune response (known as “immunodeficiency”)—chemotherapy; feline immunodeficiency virus (FIV); surgical removal of the spleen (splenectomy)
- Administration of steroids—considered an important risk factor for the presence of bacteria in the blood (bacteremia); allows greater multiplication of bacteria in body tissues
- Intravenous catheter—provides rapid access for bacteria to enter the bloodstream
- Indwelling urinary catheters
- Rectal examination

## Treatment

### HEALTH CARE

- Successful treatment requires early identification of the problem and aggressive intervention; careful monitoring is essential—patient status may change rapidly
- Low blood pressure (hypotension)—intravenous fluids (such as lactated Ringer's solution)
- Colloids (fluids that contain larger molecules that stay within the circulating blood to help maintain circulating blood volume and expand blood volume), such as hydroxyethyl starch (hetastarch)
- Low blood glucose or sugar (hypoglycemia)—may add dextrose to intravenous fluids
- Electrolytes and acid–base balance—correct abnormalities
- Abscesses—locate and drain
- External sources of infection—give appropriate attention to wound care and bandage changes
- Internal sources of infection (such as infection/inflammation with accumulation of pus in the uterus [pyometra] or disruption of the bowel)—surgical intervention is essential

### DIET

- Nutritional support—provide by assisted feeding or placement of a feeding tube

### SURGERY

- Surgery may be required for treatment of certain disorders (such as infection/inflammation with accumulation of pus in the uterus [pyometra] or disruption of the bowel) and to establish drainage for abscesses

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Antibiotics—usually selected before bacterial culture and sensitivity test results are available; do not delay treatment while waiting for test results; direct therapy to cover all possible types of bacteria (gram-positive and negative bacteria; aerobic and anaerobic bacteria); “aerobic bacteria” are bacteria that can live and grow in the presence of oxygen; “anaerobic bacteria” are bacteria that can live and grow in the absence of oxygen
- Antibiotics—administered intravenously
- If the pet is not in shock—a good choice of antibiotics is a first-generation cephalosporin, such as cefazolin
- Aminoglycosides (class of antibiotics)—may be added to the treatment protocol, if more aggressive therapy is warranted; example is gentamicin

## Follow-Up Care

### PATIENT MONITORING

- Aminoglycoside therapy—monitor kidney function
- Blood pressure and electrocardiogram to monitor circulation and the heart

### POSSIBLE COMPLICATIONS

- Multiple organ failure
- Gram-negative generalized disease caused by the spread of bacteria in the blood (known as “septicemia” or “blood poisoning”)—high death rate; death owing to low blood pressure (hypotension), electrolyte and acid–base disturbances, and shock due to the presence of bacterial toxins in the blood (known as “endotoxic shock”)

### EXPECTED COURSE AND PROGNOSIS

- Depend on underlying cause
- Generalized (systemic) response to bacterial infection (sepsis) and the presence of bacteria in the blood (bacteremia) are serious conditions, which may be fatal

## Key Points

- Generalized (systemic) response to bacterial infection (sepsis) and the presence of bacteria in the blood (bacteremia) are serious conditions, which may be fatal
- Successful treatment requires early identification of the problem and aggressive intervention; careful monitoring is essential—patient status may change rapidly
- Do not delay treatment while waiting for bacterial culture and sensitivity test results
- Direct therapy to cover all possible types of bacteria (gram-positive and negative bacteria; aerobic and anaerobic bacteria); “aerobic bacteria” are bacteria that can live and grow in the presence of oxygen; “anaerobic bacteria” are bacteria that can live and grow in the absence of oxygen

# Notes

---

Enter notes here



*Blackwell's Five-Minute Veterinary Consult: Canine and Feline, Fifth Edition*, Larry P. Tilley and Francis W.K. Smith, Jr. © 2011 John Wiley & Sons, Inc.