

# Helicobacter Infection

## Basics

### OVERVIEW

- *Helicobacter* species are gram-negative, urease-positive bacteria
- The discovery of an association of *Helicobacter pylori* with inflammation of the stomach (known as “gastritis”), stomach ulcers, and stomach cancer has changed the understanding of stomach disease in people
- Several *Helicobacter* species have been isolated from stomachs of dogs and cats To date *Helicobacter pylori*, the most important species affecting people, has only been identified in a single colony of laboratory cats
- A possible cause-effect relationship of *Helicobacter* species and stomach inflammation in dogs and cats remains unresolved; inflammation accompanies infection in some, but not all dogs and cats
- The role of *Helicobacter* species in intestinal and liver disease in dogs and cats is unclear
- *Helicobacter canis* has been isolated from both clinically healthy dogs and cats and also in dogs and cats with diarrhea
- *Helicobacter canis* has been isolated from the liver of a puppy with active, multifocal inflammation of the liver (known as “hepatitis”)



### GENETICS

- No genetic basis for susceptibility to *Helicobacter* species infection has been established

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Dogs
- Cats

#### Breed Predilections

- None known

#### Mean Age and Range

- Stomach infection with *Helicobacter* species appears to be acquired at a young age
- The puppy with *Helicobacter canis*-associated inflammation of the liver (hepatitis) was 2 months of age

## SIGNS/OBSERVED CHANGES IN THE PET

- *Helicobacter* infection without any signs of disease is common
- Vomiting, lack of appetite (known as “anorexia”), abdominal pain, weight loss, and/or rumbling or gurgling sounds caused by movement of gas in the intestinal tract (known as “borborygmus”) have been reported in dogs and cats with *Helicobacter* infections of the stomach
- *Helicobacter canis* infection in dogs may be associated with diarrhea
- Vomiting, weakness, and sudden death was reported in a dog with *Helicobacter canis* infection of the liver
- May have signs of dehydration from fluid and electrolyte loss due to vomiting and/or diarrhea

## CAUSES

### **Helicobacter Infection of the Stomach**

- *H. felis*, *H. heilmannii*, *H. bizzozeronii*, *H. salomonis*, *H. bilis*, and *Flexispira rappini* and *H. cynogastricus* have been identified in pet dogs
- *H. felis*, *H. heilmannii* and *H. baculiformis* have been identified in pet cats
- *Helicobacter Infection of the Intestines and Liver*
- *H. bilis*, *H. canis*, *H. cinaedi*, and *Flexispira rappini* have been identified in bowel movement (feces) from normal dogs and dogs with diarrhea
- *H. cinaedi*—has been identified in one cat (significance unknown)
- *H. canis*—has been reported in one dog with sudden (acute) inflammation of the liver (hepatitis)

## RISK FACTORS

- Poor sanitary conditions and overcrowding may facilitate spread of infection

## Treatment

### HEALTH CARE

- The ability of *Helicobacter* species to cause disease in dogs and cats is still unclear; therefore, no generally accepted guidelines have been adopted for treatment of *Helicobacter* infections in dogs and cats
- Currently pets with *Helicobacter* infection and no clinical signs do not need treatment; this is in sharp contrast to the situation in people, who are treated regardless of symptoms as *Helicobacter pylori* infection is associated with an increased risk for stomach cancer
- Consider treatment of *Helicobacter* infection in dogs and cats with stomach disorders that have compatible clinical signs, which cannot be attributed to another disease process
- Fluid therapy in dehydrated pets

### DIET

- Easily digestible diets in pets with signs of gastrointestinal disease

## 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

- A triple combination therapy (that is, combination of two antibiotics and one antisecretory drug) is effective in people with *H. pylori* infection with cure rates of approximately 90%
- Combination therapy may eliminate *Helicobacter* infections in dogs and cats less effectively than in people
- Treat for 2–3 weeks

### DRUG(S) OF CHOICE

#### **Antibiotics (Two Antibiotics with One Antisecretory Agent)**

- Possible antibiotics: clarithromycin, metronidazole, amoxicillin, azithromycin, or tetracycline
- Bismuth subsalicylate (original Pepto-Bismol)—used to protect the lining of the stomach and intestines, to counter the effects of bacterial toxins (known as an “anti-endotoxemic effect”), and weak antibiotic properties

#### **Antisecretory Agents (One with Two Antibiotics)**

- Omeprazole, famotidine, ranitidine, or cimetidine

- *Helicobacter Infection in the Intestines and Liver of Dogs*
- Combination of amoxicillin and metronidazole may be effective

## Follow-Up Care

### PATIENT MONITORING

- Serologic tests (blood tests that detect the presence of antibodies to a certain disease-causing agent or antigen; an “antibody” is a protein that is produced by the immune system in response to a specific antigen, in this case to *Helicobacter*) are not useful to confirm eradication of the bacteria from the stomach—serum immunoglobulin G (IgG) titers may not decrease for up to 6 months after the infection has been cleared
- <sup>13</sup>C-urea breath and blood test have been evaluated to monitor the eradication of *Helicobacter* in dogs and cats; however, these tests currently are not available commercially If vomiting persists or recurs after cessation of combination therapy, a repeat stomach biopsy to determine whether the infection has been cleared successfully may be necessary

### PREVENTIONS AND AVOIDANCE

- Avoid overcrowding and unsanitary conditions

### POSSIBLE COMPLICATIONS

- Recurrence
- Zoonotic potential; potential “zoonoses” are diseases that can be passed from animals to people

### EXPECTED COURSE AND PROGNOSIS

- The effectiveness of treatment currently employed in dogs and cats for eradicating *Helicobacter* infections is questionable
- Metronidazole, amoxicillin, and famotidine for 14 days effectively eradicated *Helicobacter* in 6 of 8 dogs evaluated 3 days post-treatment, but all dogs were reinfected by day 28 after completion of treatment
- Clarithromycin, metronidazole, ranitidine, and bismuth for 4 days was effective in eradicating *H. heilmannii* in 11 of 11 cats by 10 days, but 2 cats were reinfected 42 days post-treatment
- Amoxicillin, metronidazole, and omeprazole for 21 days transiently eradicated *H. pylori* in 6 cats, but all were reinfected 6 weeks post-treatment

## Key Points

- Establishing a definitive diagnosis of *Helicobacter* infection is difficult
- *Helicobacter* may be found in normal dogs and cats; the role of *Helicobacter* species in gastrointestinal and liver disease in dogs and cats is unclear
- The effectiveness of treatment currently employed for eradicating *Helicobacter* infections is questionable, as reinfection has been seen in many dogs and cats
- *Helicobacter* infections have zoonotic potential; potential “zoonoses” are diseases that can be passed from animals to people