

Deadly Water Mold: Under-Diagnosed and Difficult to Treat

If your pet has access to freshwater ponds or wetlands, be aware of this serious infection caused by water-loving organisms. Unfortunately, it typically isn't diagnosed until it's too late. Early treatment is key to saving your pet's life, so know the five red flags.

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STORY AT-A-GLANCE

- Pythiosis is a serious infection caused by *Pythium insidiosum* organisms, which are closely related to algae but behave more like fungus
- *P. insidiosum* is often found in ponds, swamps, bayous and other forms of stagnant water, which is why it's sometimes called "swamp cancer"
- While once only found in U.S. states that border the Gulf of Mexico, its range has expanded, with reports showing cases of pythiosis in New Jersey, Wisconsin, Northern California and more
- Signs of pythiosis include nonhealing sores, chronic diarrhea or vomiting and unexplained weight loss; gastrointestinal masses may also occur
- Pythiosis often goes unnoticed until it's advanced and may be misdiagnosed as a fungal infection

Pythiosis is a serious, potentially life-threatening infection caused by *Pythium insidiosum* organisms, which are closely related to algae but behave more like fungus. Sometimes referred to as "water mold," *P. insidiosum* is often found in ponds, swamps, bayous and other forms of stagnant water, which is why it's sometimes called "swamp cancer."¹

While once only found in U.S. states that border the Gulf of Mexico, its range has expanded, with reports showing cases of pythiosis in New Jersey,² Wisconsin,³ Northern California and more.⁴ The infection is caused by direct contact with water or moist soil that harbors the organism, and is not contagious.

While pythiosis has been described as early as 1884,⁵ cases have been increasing significantly in the last decade. One report noted, "Pythiosis spanned 23 tropical, subtropical, and temperate countries worldwide," but 79.2% of the animals affected — most often horses, dogs and cows — were in the U.S.⁶

Unfortunately, pythiosis is under-diagnosed and difficult to treat.⁷ Because pythiosis often isn't diagnosed until it has progressed into severe disease, it can be deadly in dogs.⁸ Being aware of its signs and symptoms, especially if your pet has access to ponds or wetlands, may help with early, more successful treatment.

Pythiosis Signs and Symptoms

While any dog can develop pythiosis, it's most common in large breed hunting or sporting breed dogs, perhaps because they're more likely to be in freshwater areas. For unknown reasons, it's also more common among German shepherds.

Cutaneous, or skin, pythiosis occurs when a wound becomes infected, leading to large, red, itchy bumps. Nonhealing sores or ulcers that drain pus develop, and tissue death can occur, with the affected skin turning black.⁹ There's also a gastrointestinal (GI) form, which causes vomiting and diarrhea. Dogs may lose weight and can develop blockages in the GI tract.¹⁰

The infection can also spread to other areas, including the liver, pancreas or uterus. Pythiosis of the sinus, brain or lungs will cause stuffiness, headache, fever, coughing and swelling of the sinuses. As noted in *Veterinary Microbiology*:¹¹

“Depending on the site of entry, infection can lead to different forms of pythiosis, i.e. a cutaneous, vascular, ocular, gastrointestinal and a systemic form, which is rarely seen. The infection is not contagious; no animal-animal or animal-human transmission has been reported so far.”

But, as mentioned, pythiosis often goes unnoticed until it's quite serious and may be misdiagnosed as a fungal infection. As a result, the condition is often fatal. In one study, the mortality rate of pythiosis in dogs was 83.9%.¹²

Early Treatment Is Critical

The sooner you get your dog to your veterinarian after the first signs appear, the better the prognosis. The infection can be diagnosed using a *P. insidiosum* ELISA test, which checks for antibodies indicative of exposure. A biopsy of an infected lesion can also be taken for diagnosis.

Dogs that contract the disease typically undergo surgical removal of the affected tissue, and the earlier, the better. However, depending on the location of the lesions and the severity of the condition, it's not always possible to remove all of the infected tissue. It's also possible for the infection to come back after surgery.

Antifungal medications are also typically given and have resolved pythiosis in several of case reports,¹³ particularly when given along with corticosteroids. In one report, three dogs with colonic pythiosis had “complete resolution of clinical signs, regression of colonic masses” after treatment with the medications itraconazole, terbinafine and corticosteroids.¹⁴

“This treatment protocol represents a promising treatment for dogs with GI pythiosis in which surgical intervention is not feasible,” the researchers noted.¹⁵ However, because *P. insidiosum* is not a fungus, medications alone aren't typically enough to cure the infection. As noted in an editorial in the *Journal of the American Veterinary Medical Association*:¹⁶

“Treatment of intestinal pythiosis has been described as frustrating, and the prognosis is generally poor in cases where wide resection of affected tissue is not possible.

Administration of a combination of itraconazole and terbinafine may be successful in approximately 20% of affected dogs. Poor response to medical treatment has been attributed to absence of ergosterol within the cell membrane of oomycetes, which is the target of most antifungal agents.”

Immunotherapy options are also being explored. One such treatment, developed by Pan American Veterinary Laboratories, had a 55% effectiveness rate when given early on in the course of the infection.¹⁷ Because the disease is seen more often in immunosuppressed animals, measuring immunoglobins and beginning oral immunoglobins, if low, is also recommended.

Investigating root causes and contributing factors as to why animals fall victim to this condition, immunologically, is best done in partnership with a functional medicine vet. Ozone therapy and hyperbaric oxygen therapy can offer adjunctive support, especially post-surgically.

If you notice nonhealing sources, chronic diarrhea or vomiting and unexplained weight loss in your pet, ask your veterinarian if pythiosis could be the cause — especially if your dog spends time in areas with stagnant water.

Sources and References

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⁸ [Rev Iberoam Micol. 2012 Oct-Dec;29\(4\):235-7. doi: 10.1016/j.riam.2012.01.002. Epub 2012 Jan 31](#)

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¹⁶ [Journal of the American Veterinary Medical Association March 1, 2015](#)
