

## Symptoms for Inclusion Body Disease in Snakes

### **My snake won't eat and seems lethargic, what's wrong with him?**

*By Margaret A. Wissman, DVM, DABVP*

I have a 3-year-old southern black-tail boa that weighs 20 pounds and is 6½ feet long. He has been healthy all of his life and has never missed a feeding. He recently went off his feed and has not had a bowel movement in several weeks. He seems to have lost muscle tone and strength in the last foot and half of his body.

My first thought was that he may be impacted. After two weeks of repeated lengthy soakings in warm water, no changes.

I am making arrangements to take him to a vet in another town several hours away. I am just so worried about him. Any ideas as to what could be happening?

My biggest concern is that your snake may have acquired a disease called inclusion body disease, IBD. You didn't mention if you own other herps, especially snakes, or if you have recently acquired any new boas or pythons.

IBD is a serious, fatal viral infection of boid snakes, first identified in the mid-1970s. It is thought to be a retrovirus. The disease has been seen in large collections in Europe, Africa, the United States and more recently, in Australia. Several cases of IBD have recently been diagnosed in Italy and the Canary Islands. Because the transport of captive snakes in the pet trade and between different zoological institutions frequently occurs, and snakes can harbor and shed the virus before manifesting overt clinical signs, we can expect this virus to spread worldwide eventually. The incidence of IBD in wild snakes is unknown at this time. Herpetologists have many names for this disease, such as twisty, stargazing disease and boid encephalitis.

In boa constrictors, the first signs may include off and on regurgitation, and some develop head tremors. Dysecdysis (abnormal shedding) may occur. Some develop chronic regurgitation and anorexia (they stop eating). Not all infected snakes regurgitate, however. Boas lose weight and may develop clogged nares (nostrils), stomatitis or pneumonia. The disease can rapidly progress to nervous system signs, such as disorientation, corkscrewing of the head and neck, holding the head in abnormal and unnatural positions, rolling onto the back or stargazing.

Clinical signs are quite variable. Regurgitation and signs of central nervous system disease are commonly seen in boa constrictors. Stomatitis, pneumonia, undifferentiated cutaneous sarcomas, leukemia and lymphoproliferative disorders have all been seen. Burmese pythons generally show signs of central nervous system disease without showing the respiratory signs. Regurgitation is not usually seen in Burmese pythons.

Pythons with IBD often develop neurological signs earlier than boas, and these signs are often more pronounced and obvious. Pythons don't regurgitate as often as boas will. Pythons often show a progressive loss of motor function, usually in the back half of the snake, which may lead to bloating and constipation. Both boas and pythons may hold their tongues out longer when flicking. Chronic pneumonia in boids that is not responsive to antibiotic therapy and nebulization therapy may actually be IBD. Some snakes with IBD are chronically shedding the virus and are capable of spreading it throughout a collection, before clinical signs of the sick snake are realized.

The snake mite (*Ophionyssus natricis*) is suspected to be a vector, passing the virus from one snake to another. Often, with an outbreak of IBD, the snakes also have concurrent mite problems. Other possible ways that the virus can be transmitted include direct contact between infected and noninfected snakes, contaminated bedding, venereal transmission and intrauterine transmission to developing embryos in viviparous species and to eggs in oviparous species, although the direct route of transmission has not yet been identified.

There is still much to be learned about this terrible disease. Blood tests may show signs of viral infection initially, but often the snake will develop secondary bacterial infections due to the immunosuppressive capabilities of this virus. Sometimes the classic inclusion bodies produced by this virus are found in the snakes' red or white blood cells. A presumptive diagnosis can be made by biopsying esophageal tonsillar crypts, or biopsy of the liver, pancreas, kidney or stomach, in addition to running a complete blood count and plasma chemistry panel. The history and physical examination are also helpful in trying to make a diagnosis. The classic inclusion bodies can be seen in the cytoplasm of certain cells; however, the absence of inclusion bodies does not rule out this disease. The characteristic inclusion bodies found in the cytoplasm are seen in epidermal cells, oral mucosal epithelial cells, visceral epithelial cells and neurons.

All boid snakes should be considered susceptible. While this disease has not been identified in snakes other than boas

and pythons, it is not known at this time whether other types of snakes can harbor or transmit this virus. Also, the primary host of IBD has not been identified.

Dr. Elliot Jacobson, at the University of Florida, College of Veterinary Medicine, is currently working on developing serologic tests, but this will take time and research money.

Affected snakes either die acutely or starve slowly after several years of anorexia. It is possible to keep a snake alive by force-feeding, but one should not expect a snake to recover from IBD. Infected snakes are chronic carriers and are capable of spreading this disease to other snakes, so euthanasia is recommended if a firm diagnosis is made. Many other diseases can present with the same or similar clinical signs, so euthanasia should not be performed solely based on clinical signs.

Infected snakes should be euthanized. All new snakes should be quarantined for a minimum of 90 days prior to introduction to an established collection. Recommendations for boas is a 6-month quarantine period. Mite control and elimination is essential. Fiberglass cages that housed infected snakes should be thoroughly disinfected with bleach and then left out in the sun to dry prior to housing another snake. Wooden cages, unless sealed with urethane or some other impervious sealant, should be discarded. The same holds true for wooden hide boxes and cage decorations.

For a single pet that the owners would like to keep alive, force-feedings are necessary. Support care is vital. Controlling any secondary infections (bacterial, fungal or protozoal) is important. One nutritional supplement that I highly recommend for any exotic with nervous system signs is called DMG, Dimethylglycine (Vetri-DMG Liquid, available through Vetri-Science Laboratories of Vermont, A Division of FoodScience Corporation, Essex Junction, VT, USA 05453, [www.vetriscience.com](http://www.vetriscience.com)). This product is very good for the immune system and really seems to be beneficial in controlling some central nervous system (CNS) signs in pets. An infected snake should be strictly quarantined away from all other snakes and reptiles, just to be on the safe side. Fastidious sanitation is mandatory.

If your snake hasn't been injured, i.e. the cage top fell on it or it sustained some other trauma, then IBD is a consideration. Other conditions can cause the clinical signs that you are describing. Your vet will want to take radiographs (X-rays) to evaluate the spine and internal organs, and will draw blood for a blood count and chemistries. Biopsies may be necessary. There is a chance that your snake might have a problem involving the spinal column, spinal cord or vertebrae. Infections, tumors and other lesions involving the spine can cause flaccid muscle tone in your snake. I hope your vet will be able to help you with your snake. If your veterinarian is not familiar with IBD, you can always suggest that he or she set up a consult with the lab they use to speak with a consultant with more reptile experience. This is usually offered free of charge to the vets using the lab.

I hope this helps and that you can get some answers regarding your boa. Good luck.

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#### Need a Herp Vet?

If you are looking for a herp-knowledgeable veterinarian in your area, a good place to start is by checking the list of members on the Association of Reptilian and Amphibian Veterinarian (ARAV) web site at [www.arav.com](http://www.arav.com). Look for DVMs who appear to maintain actual veterinary offices that you could contact.