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Metabolic Bone Disease

About the Diagnosis

Metabolic bone disease (MBD) is not a diagnosis in itself; rather, MBD is an umbrella term that encompasses a group of related skeletal diseases. Metabolic bone disease refers to one of the following diagnoses: nutritional secondary hyperparathyroidism, fibrous osteodystrophy, hyperparathyroidism, or hypocalcemia. MBD can be caused by deficiencies in calcium or vitamin D3, insufficient exposure to ultraviolet (UV) light, excess phosphorus in the diet, or kidney or parathyroid disease. When the patient does not take enough calcium or vitamin D3 into its diet or takes in too much phosphorus, the body enters a state of hypocalcemia. Calcium is necessary for neuromuscular function, muscle contraction, blood clotting, bone health, and various other processes. Without enough calcium entering your pet's body through the diet, it starts to use the calcium previously stored in its bones. This weakens the bones in the body, making them appear less dense on radiographs and predisposing them to fracture.

Clinical Signs

Several symptoms of nutritional metabolic bone disease are noted, including a swollen, soft jaw, bowing or a "Popeye" appearance of long bones in the legs, pathologic fracture of any bones in the body, and hypocalcemic tetany (involuntary muscle contractions).

Diagnosis

The diagnosis of nutritional metabolic bone disease usually is made by your veterinarian after some diagnostic testing. Your veterinarian will start by taking full-body radiographs; these usually show an overall decrease in bone density. Your veterinarian will also want to do some routine blood work, and if your pet has MBD, it usually will have low ionized blood calcium. Results of radiographs and blood work and a history of an incomplete diet and/or an inappropriate environment will lead to the definitive diagnosis of nutritional metabolic bone disease.

Living with the Diagnosis

Nutritional metabolic bone disease is a serious and life-threatening condition that can often be treated successfully with diligent medical care and appropriate husbandry changes. Many symptoms of MBD can be reversed with treatment, but it is important that your pet is diagnosed, and that veterinary care is sought early in the disease process.

Treatment

The immediate goal of treatment is to restore blood calcium to a level that is optimal for body system functioning. Secondary goals of treatment are to restore bone density and strength, and to prevent further skeletal derangement. The first step in treatment is to replenish the patient's calcium supplies with calcium injections. If the patient is dehydrated or anorectic, it may also need fluids and force feeding. If fractures are present, they may need to be treated with bandages and possibly surgery to stabilize them.

Long-term treatment of nutritional metabolic bone disease focuses on providing your pet with proper species-specific husbandry. Temperature and humidity appropriate for the species of reptile that you have should be provided. UVB light is incredibly important in prevention of MBD, and at least one UVB light should be provided in the cage (no farther than 12 inches away from your pet). Our light of choice is produced by the company Reptile UV; more information about these products can be seen on the company's Internet site at <http://www.reptileuv.com>.

Although your veterinarian may prescribe additional calcium supplementation for the first few weeks after diagnosis of MBD, a long-term balanced diet is necessary to prevent recurrence of this disease. A well-balanced diet that is high in calcium and low in phosphorus should be provided. Leafy green vegetables such as kale, turnip greens, collards, chard, dandelions, parsley, and spinach are high in calcium and are good options for your pet. Small quantities of fruits like bananas, melon, apples, and strawberries are also acceptable. We would not recommend feeding your reptile bread or pancakes because your reptile has no need for processed foods. If your reptile continues to be fed the foods it wants, it will continue to be picky and will not eat a balanced diet. In the meantime, you can obtain a calcium carbonate supplement that you can put into your pet's food to ensure that it gets the calcium that it needs. We recommend the vitamin/mineral supplement from ZooMed called Reptivite.

Do:

- Understand the importance of proper reptile husbandry, including a properly balanced diet and environment for your particular reptile species.
- Give calcium carbonate supplements and provide your reptile with 12 hours of UVB light per day.

Don't:

- Hesitate to contact your veterinarian about any questions or concerns that you may have.
- Feed your pet processed human foods such as breads and pancakes.
- Feed your pet iceberg lettuce because this contains almost no nutritional value. Instead of iceberg lettuce, feed your reptile green leafy vegetables that are higher in calcium.

When to Call Your Veterinarian

- Recurrence of original symptoms should be discussed with your veterinarian.
- Development of lameness (such as limping or inability to walk) may indicate bone disease and should be brought to your veterinarian's attention.

Signs to Watch For

- Recurrence of original symptoms (softening of jaw, pathologic fracture, hypocalcemic tetany, "popeye" legs)
- Lethargy, inappetence, poor growth rate, and any other sign that your pet is not feeling well

Routine Follow-Up

Nutritional metabolic bone disease is life threatening, but if diagnosed early and treated appropriately, your reptile should live a long and normal life. Your veterinarian may want you to come in for regular visits early in treatment of the disease to retake radiographs and to perform blood work again to make sure that the treatment is working. After your veterinarian has decided that your pet is healthy again, you should continue to visit your veterinarian for routine health screenings and annual wellness visits.

Even if you are only visiting your veterinarian annually, it is incredibly important to the health of your reptile that the husbandry changes you made be continued. Your reptile depends on you for every aspect of its environment and diet, so to prevent diseases like MBD, try to provide your pet with optimal living conditions.

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