ANIMAL MATTERS:
Tips & Treatments

Michigan Veterinary Specialists℠
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INTERNAL MEDICINE:
Alkaline Phosphatase in the Dog

Overview

There are 3 distinct forms of ALP in dogs that when combined, represent the serum total ALP: bone ALP (B-ALP), liver ALP (L-ALP), and corticosteroid-ALP (C-ALP). ALP is produced by cells lining the biliary tracts, and it is most commonly elevated because of cholestasis or drug induction (endogenous or exogenous steroids, phenobarbital). Also, increased ALP, because of B-ALP elevations, can be seen associated with bone growth, healing, or neoplasia (such as osteosarcoma).

Diagnostic Approach

It is important when beginning a diagnostic approach to a patient with an elevated ALP, that drug history is considered. Any glucocorticoid administration, including topical and ocular forms, can be associated with increased ALP. Because nonhepatic disease is a common cause of ALP elevation through reactive liver changes, other routine testing, including CBC, complete serum chemistry, and urinalysis should be performed to identify other potential conditions. The most common causes of elevated ALP levels in dogs are vacuolar (reactive) hepatopathy, neoplasia (hepatocellular carcinoma and lymphoma), nodular hyperplasia (regenerative nodules), drug induction (phenobarbital and topical or parenteral corticosteroids), obesity, age related increases, gallbladder disease, chronic pancreatitis, chronic hyperadrenocorticism, gastrointestinal disease, breed related (benign familial hyperphosphatemia of Scottish Terriers), and hepatitis.
For asymptomatic patients with elevated ALP, ultrasonography of the liver to check for the presence of masses or nodules is recommended before undertaking diagnostics for specific diseases. Ultrasound allows for the nearly complete visualization of the liver and gallbladder, aiding in determining whether a liver biopsy would be helpful in a particular case or not. Often, an elevation in ALP in an older patient that is asymptomatic, has no history of steroid administration, has no evidence of systemic illness, and has a normal, complete ultrasound, is considered normal for age, and no further diagnostics are necessary. For patients in which other liver enzyme elevations (ALT, AST, GGT, total bilirubin) or abnormal liver function tests (pre- and post-prandial bile acids) are found, further diagnostics, including liver biopsy may be necessary.

ALP and Cushing's Disease

While Cushing's disease is fairly common in dogs, it is overdiagnosed in many patients; many dogs undergoing treatment for the disease do not actually have the condition. Often, the diagnosis is made based on ambiguous clinical signs that are not necessarily attributable to Cushing's disease, such as obesity, and elevated ALP levels. ALP is extremely nonspecific, and can be elevated for a variety of reasons. ***Sole elevation of ALP should never be used as the primary reason to test a dog for Cushing's disease.*** Testing for Cushing's disease should be limited to dogs that have classic clinical signs of the disease including PU/PD, polyphagia, panting, muscle weakness, symmetrical alopecia, and a pot belly appearance. If a dog lacks these signs, then it doesn't have Cushing's disease. A presumptive diagnosis of Cushing's disease is based on clinical signs and history, not an increase in ALP. In Summery, since none of the tests for Cushing's disease has 100% specificity, the likelihood for false positives in dogs with other illnesses is possible, leading to incorrect diagnoses and treatment.

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Michigan Veterinary Specialists provides Internal Medicine Service at all three hospital locations. A member of the medicine team is on-call 24/7 to provide consultations to MVS emergency doctors and to perform the emergency services. Our specialists are available for questions and consultations on medical conditions during the weekdays.

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