The Promise of Pimobendan

Pimobendan has demonstrated clinical benefits and increased survival times in dogs with heart failure from dilated cardiomyopathy or mitral valve insufficiency. Positive inotropic effects result from sensitization of cardiac troponin C to calcium and phosphodiesterase (PDE) III inhibition; vasodilatory effects of pimobendan result from PDE III inhibition. The resulting venodilation and arteriolar dilation has the potential to activate the renin-angiotensin-aldosterone system (RAAS). As prognosis worsens with activation of the terminal portion of the RAAS cascade, the effects of certain drugs on this system need to be investigated. This study evaluated whether administration of a high dosage of pimobendan further stimulates the RAAS in dogs in which the RAAS has been activated by furosemide.

Two groups of 6 dogs were divided and given furosemide or furosemide plus pimobendan (F+P). The groups were compared based on measurement of systolic, mean, and diastolic blood pressure and urine aldosterone-to-creatinine ratio (A:C) concentrations each day. Both groups showed a significant increase in A:C (indicating activation of the RAAS system) over 10 days. However, the A:C was only significantly higher in the F+P group on day 1, indicating that any potentially stronger stimulus of RAAS was brief. Although not significant, there was an increase in serum creatinine in the furosemide but not F+P group. This may suggest that increased cardiac output from pimobendan may protect against prerenal azotemia associated with furosemide administration.

**Commentary**

Pimobendan is a novel drug of interest because of its positive effects in cardiac output in cases of congestive heart failure (specifically secondary to mitral valve disease or dilated cardiomyopathy), but also because it is a phosphodiesterase inhibitor and can improve energy in a patient, just like a cup of coffee. Although there is much controversy about when pimobendan is useful and when it may not be, some cardiologists wonder if it may simply provide more energy and therefore make a patient feel better. There are currently no studies in dogs to show benefits or disadvantages in other cardiac or noncardiac disease states, but the promise of pimobendan warrants further evaluation.—Heather Troyer, DVM, DABVP, CVA

**Source**