Update on Medical Management of Clinical Manifestations of Chronic Kidney Disease

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KEYWORDS

• Appetite • Anemia • Hypokalemia • Hypertension • Constipation • Renal disease

KEY POINTS

- Although chronic kidney disease is a progressive disease, multiple secondary medical derangements can be identified and treated with the hope of increasing quality of life and longevity.
- Blood pressure should be assessed in all patients with chronic kidney disease, as hypertension is common and should be medically addressed.
- Hypokalemia is common in feline chronic kidney disease patients and should be identified and medically addressed.
- Maintenance of body condition and nutritional management of chronic kidney disease is an important part of management, and antiemetics and appetite stimulants can be useful tools.
- Constipation can occur secondary to CKD and should be identified and managed.

MANAGEMENT OF HYPERTENSION

Introduction/Etiology/Epidemiology

Systemic hypertension seems to be common in dogs (31%–54%) and cats (20%–65%) with chronic kidney disease (CKD), but the exact pathophysiologic relationship is unknown.[1–3] Hypertension in veterinary patients with CKD is generally considered to be a sequela of CKD as opposed to an etiology of CKD as it is in humans, but this idea is still controversial. Although the pathophysiology of hypertension secondary to CKD is considered multifactorial and poorly understood, factors thought to be involved in the process include impaired sodium excretion and activation of the renal-angiotensin-aldosterone system, increased sympathetic tone,

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structural changes to vasculature, endothelial dysfunction, reduced bioavailability of the vasodilator nitric oxide, and increased production of the vasoconstrictor endothelin.[1] Systemic hypertension is important to identify and address in CKD patients because of numerous deleterious effects such as progression of CKD and proteinuria, left ventricular hypertrophy and subsequent cardiac impairment, ocular disease including retinal vascular tortuosity and hemorrhage, hyphema, blindness caused by retinal detachment, and neurologic sequelae including encephalopathy, vascular events, seizures, and death.[1,2,4–7]

Patient Evaluations

All dogs with renal proteinuria or azotemia should be assessed for hypertension. Elderly cats, particularly those with CKD, should be screened routinely at initial CKD diagnosis and throughout the course of the disease, as approximately 10% will have hypertension at a later date.[8] A variety of devices are available for evaluation of blood pressure in veterinary patients. At this time, there is no clear consensus on the most accurate and reliable methodology; however, Doppler and high-definition oscillometric devices seem to be most commonly recommended. Guidelines for obtaining blood pressure in veterinary patients are outlined in **Box 1**.

Box 1
Recommended procedure for obtaining blood pressure

The calibration of the blood pressure device should be verified twice annually.

The blood pressure measurement procedure should be standardized.

The environment should be isolated, quiet, away from other animals, and ideally with the owner present.

The patient should be allowed to equilibrate to the environment for 5 to 10 minutes before assessment.

The patient should be gently restrained in ventral or lateral recumbency to limit the distance from the heart base to the cuff.

The cuff should be approximately 40% of the circumference of the cuff site in dogs and 30% to 40% in cats.

The cuff may be placed on a limb or tail but should continue to be measured in the same location each time.

An experienced, trained technician should perform all blood pressure measurements.

The patient should be calm and motionless.

The first measurement should be discarded, and at least 3, preferably 5 to 7, consecutive consistent (<20% variability) values should be obtained.

Measurements should be averaged to obtain the final reading.

The process should be repeated if there is doubt about the readings.

A standard form in the medical record should be used to record the cuff size and location, patient temperament, values obtained and final average reading, and rational for any excluded values.

Adapted from Brown S, Atkins C, Bagley R, et al. Guidelines for the identification, evaluation, and management of systemic hypertension in dogs and cats. J Vet Intern Med 2007;21:544; with permission.