Hypokalemia in cats: 186 cases (1984-1987)

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Summary: *Retrospective review of serum biochemical data obtained from 501 cats over a 3-year period (1984-1987) indicated that 186 (37%) had hypokalemia (serum potassium concentration < 4.1 mEq/L). After adjusting for disease diagnosis, cats fed either of 2 commercial diets were 4 times more likely to be hypokalemic than cats fed other diets. Odds ratios (OR; measure of association), adjusted for diet type, were calculated to determine the odds of hypokalemia for a given disease, compared with odds of normokalemia for the same disease. Chronic renal failure (OR = 14.4), hepatic disease (OR = 5.7), systemic infectious diseases (viral or bacterial; OR = 2.7), and neuromuscular or CNS disease (OR = 2.4) were all significantly associated (P < 0.05) with the occurrence of hypokalemia. Significant differences in age or sex between hypokalemic and normokalemic cats were not found.*

Within the group of 186 hypokalemic cats, hypercholesterolemia (89 cats; 48%), hyperglycemia (88 cats; 47%), high serum urea nitrogen concentration (86 cats; 46%), hyperchloridemia (80 cats; 43%), and high serum creatinine concentration (73 cats; 39%) were the most common biochemical abnormalities. When disease diagnosis was compared among cats with severe hypokalemia (serum potassium concentration <3.0 mEq/L) and those with moderate hypokalemia, cats with severe hypokalemia were 3.5 times more likely to have chronic renal failure than cats with less severe hypokalemia. From these results, it was concluded that hypokalemia was common in cats and that certain diet types and diseases were associated with increased occurrence of hypokalemia.

Recently, the clinical manifestations of chronic potassium depletion in cats, ostensibly a result of inadequate dietary potassium intake relative to excessive urinary potassium losses, have been reported.[1,2] In cats with naturally developing renal disease, DiBartola et al[3] found hypokalemia to be the most common electrolyte abnormality. Hypokalemia is estimated to develop in 10 to 30% of hospitalized people, and is particularly prevalent in elderly patients.[4-6]

Our clinical experience with potassium depletion in cats suggested the prevalence of hypokalemia in cats had been underestimated and that hypokalemia might be associated with certain diseases and diets. A cross-sectional epidemiologic survey of cats was performed to (1) determine the prevalence of hypokalemia in cats evaluated at a large veterinary hospital, (2) determine possible diet types or diseases associated with occurrence of hypokalemia in cats, and (3) describe concurrent biochemical abnormalities present in hypokalemic cats.

Criteria for selection of cases

To identify cats with hypokalemia, we reviewed the medical records of 501 cats that had a complete serum biochemical analysis performed at the veterinary teaching hospital between June 1984 and July 1987. Because blood specimens had been obtained as part of a presurgical or medical evaluation, this population was considered to represent a population that was not as healthy as the larger population of all client-owned cats.

Whenever possible, only results of serum biochemical analysis performed on a specimen obtained on the day of admission were evaluated for cats admitted to the hospital for treatment. Each cat's medical record then was reviewed, and information pertaining to the cat's age, sex, diet history, and disease diagnosis was obtained. In each case, the diet history was obtained from the cat owners by a senior veterinary student and was assumed to represent the cat's primary food intake, although the duration for which a cat food was fed was not determined. Cats that recently had received treatment (within the preceding week) that might decrease serum potassium concentration (fluid therapy, diuretics, corticosteroids, intensive insulin treatment for diabetic ketoacidosis) prior to collection of blood for biochemical analysis were

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Supported in part by a grant from the American Association of Feline Practitioners.

The authors thank Ms. Kit Brown for technical assistance.