Changes in the SUSPPUP ratio and fractional excretion of strong monovalent electrolytes in hospitalized dogs with canine babesiosis

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Abstract

In this study an increased SUSPPUP ratio and fractional excretion of potassium in dogs infected with Babesia canis suggested mineralocorticoid excess in canine babesiosis. A significant increase in strong monovalent electrolyte fractional excretions in azotaemic dogs infected with B. canis probably resulted from acute tubular necrosis.

Key words: canine babesiosis, SUSPPUP, fractional excretion, sodium, potassium, azotaemia

Introduction

The SUSPPUP ratio (serum sodium/urinary sodium to (serum potassium)^2/urinary potassium) is a useful tool in the initial diagnosis of mineralocorticoid excess in humans. This parameter increases in overproduction of mineralocorticoids (Willenberg et al. 2009). In canine babesiosis strong monovalent electrolyte (SME) changes were observed. The authors of this study hypothesized that some SME changes in canine babesiosis might result from increased production of aldosterone (Zygner et al. 2012). Therefore, the SUSPPUP ratio may be different in healthy dogs and dogs with babesiosis. Fractional excretion (FE) of sodium (Na^+), potassium (K^+), and chloride (Cl^-) reflects urinary excretion of these ions. FE(Na^+) and FE(Cl^-) are useful in acute tubular necrosis (ATN) diagnosis (Waldrop 2008), which has been observed in canine babesiosis (Máthé et al. 2007). The aim of this work was to evaluate the SUSPPUP ratio and fractional excretion of SMEs in dogs with canine babesiosis.

Materials and Methods

Seventeen samples of serum and urine were collected from dogs admitted to the hospital of the Multiwet Small Animal Health Clinic with babesiosis (Group A). Babesia canis infection was initially diagnosed by blood smear examination and confirmed using the PCR method described previously (Zygner et al. 2012). Duration of the disease before admission to the clinic amounted to 1 to 7 days. Twelve clinically healthy dogs were used as the control group (Group B). Urine supernatant was analyzed. Concentrations of Na^+, K^+, and Cl^- in serum and urine samples were determined by chemistry analyser (MEDICA...