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MACROCYTOSIS WITHOUT ANEMIA FOUND IN TWO SHIBA DOGS

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Background: Compared with other dog breeds, erythrocytes in healthy Shiba dogs (Shibas) are typically microcytic. Approximately 10% of Shibas have erythrocytes with high K, low Na and high glutathione (GSH) concentrations, termed HK/HG cells. HK/HG cells have higher MCV (76.0 ± 5.1 fL [mean \pm SD]) than HK/LG cells (high K, low Na and low GSH) at 65.0–68.0fL or LK cells (low K, high Na and low GSH) at 65.7 ± 4.1 fL. Concentrations of several amino acids, including glutamate (Glu), aspartate (Asp) and glutamine (Gln) in HK/HG cells are higher than those in LK cells. Author's encountered two atypically macrocytic Shibas without anemia.

Objectives: This study aimed to investigate the physiological characteristics of erythrocytes in atypically macrocytic Shibas (Macs).

Methods: Blood samples were collected from two atypically macrocytic Shibas and three typical Shibas with HK/HG cells (HK/HG) using EDTA or heparine as the anticoagulant. CBC, concentrations of K, Na, GSH and 20 amino acids including Glu, Asp and Gln within erythrocytes were compared.

Results: MCV was higher in Macs than in HK/HG cells (Macs: 95.7 or 92.1fL, HK/HG 64.8–67.4fL). High K (Macs: 114 or 120mmol/L, HK/HG 119–138mmol/L), low Na (Macs: 8 or 7.2mmol/L, HK/HG: 8.9–11.5mmol/L) and high GSH (Macs: 51.3 or 53umol/gHb, HK/HG 32.2–36.3umol/gHb) concentrations within erythrocytes, indicating Macs' erythrocytes to be HK/HG cells. Total amino acid concentrations were approximately 2.5 or 5-fold higher in Macs compared to HK/HG cells.

Conclusion: Higher amino acid concentrations may be attributable to macrocytosis in Shiba dogs.

BIOGRAPHY

Sakurako Neo completed PhD from Azabu University, Japan in 2005, finished veterinary clinical pathology residency program in 2008 and became a Diploma of Veterinary Clinical Pathologist (ACVP) in 2010. Currently she is working as an Assistant Professor in Veterinary School, Azabu University. Her research interest includes hematology (Specie specific hematology, eryptosis and micro-particles) and coagulation.

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