**URINARY IMMUNOGLOBULIN G AND RETINOL BINDING PROTEIN AS BIOMARKERS OF RENAL DYSFUNCTION IN CANINE BABESIOSIS**

**URINARNI IMUNOGLOBULIN G I RETINOL VEZUJUĆI PROTEIN KAO BIOMARKERI ZA POREMEĆAJ FUNKCIJE BUBREGA U BABEZIOZI PASA**

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Renal dysfunction is often identified in canine babesiosis as minimal renal damage, but acute renal failure can also occur. The aim of this study was to assess the renal damage in dogs with babesiosisusing urinary markers for glomerular (immunoglobulin G, IgG) and proximal tubular dysfunction (retinol binding protein, RBP).

In the study 42 dogs naturally infected with *Babesia canis* and 14 healthy dogs were included. Dogs with babesiosis were divided in 3 groups: the first group consisted of 9 non-azotemic dogs (serum creatinine < 140 μmol/L) with normal urine protein to creatinine ratio (UPCR < 0.5), the second group of 27 non-azotemic dogs with UPCR > 0.5 and the third group of 6 azotemic dogs (serum creatinine > 140 μmol/L) with UPCR > 0.5. The urinary concentrations of IgG and RBP were measured by ELISA assays (ICL, Portland, USA) previously validated for use in canine urine. Statistical analysis was performed using GraphPad Prism 5 and differences between healthy and diseased dogs were assessed by Kruskal-Wallis test, with P-value < 0.05 considered as statistically significant.

Concentrations of both urinary IgG and RBP were significantly different among these four groups (P < 0.0001). For IgG, concentrations were significantly higher in the second (median, Q1-Q3 range: 129,9 µg/ml, 60 – 238,7 µg/ml) and the third group (181,4 µg/ml, 19,23 – 495,9 µg/ml) compared to healthy dogs (0,57 µg/ml, 0,49 – 1,01 µg/ml), as well as in the second group compared to the first group (10,05 µg/ml, 3,73 – 18,98 µg/ml). Similarly, RBP concentrations were significantly higher in the second group (312,5 ng/ml, 276,9 – 367,5 ng/ml) and the third group (275,4 ng/ml, 196,5 – 325,9 ng/ml) compared to healthy dogs (13,19 ng/ml, 8,43 – 29,25 ng/ml), as well as in the second group compared to the first group (47,16 ng/ml, 23,79 – 128,2 ng/ml).

These findings indicate the utility of urinary RBP and IgG in assessment of level and location of renal damage in canine babesiosis.