CKD. PATHOPHYSIOLOGY, PROGRESSION AND RISK FACTORS

MO439 NATURAL IMMUNISATION AGAINST ATHEROSCLEROSIS IN BEARS DURING HIBERNATION*

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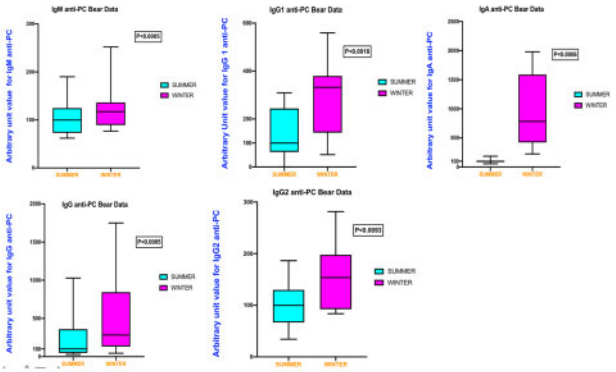
BACKGROUND AND AIMS: Brown bears (*Ursus arctos*) hibernate for 5-6 months during winter, but in spite of kidney insufficiency, dyslipidemia, insulin resistance and inactivity they do not seem to develop atherosclerosis or cardiovascular disease (CVD). Antibodies against phosphorylcholine (anti-PC) are associated with protection in atherosclerosis, CVD and uremia. Potential underlying protective mechanisms include anti-inflammatory effects, inhibition of cell death, promotion of T regulatory cells, clearance of dead cells and inhibition of oxidized Low density lipoprotein (OxLDL)-uptake in macrophages in atherosclerotic plaques. PC is an important antigen on nematodes, parasites, some bacteria, dead and dying cells and OxLDL.
METHOD: Paired serum from 12 brown bears sampled during winter and summer were analyzed for metabolic parameters and for IgM, IgG, IgG1/2 and IgA anti-PC by enzyme linked immunosorbent assay (ELISA). Differences in antibody levels between winter and summer were determined by paired Student's t test or Wilcoxon's signed rank test (when not normally distributed).
RESULTS: As expected, marked differences in metabolic parameters were found comparing median summer vs winter values; Cholesterol 5.9 vs 11.3 mmol/L; $p<0.001$, triglycerides 1.9 vs 3.7 mmol/L; $p<0.001$, glucose 5.4 vs 7.7 mmol/L; $p<0.05$, S-creatinine 76 vs 203 µmol/L; $p<0.001$, urea 12.1 vs 2.9 mmol/L; $p<0.002$. When determined as arbitrary units (AU; median set at 100 at summer), marked and significant differences were observed between summer and winter.
CONCLUSION: Anti-PC (strikingly so for IgA and IgG1) are significantly raised during hibernation as compared to levels during summer. We hypothesize that these changes contribute to the protection of arteries, but also kidneys and other organs, during the metabolic vulnerable hibernation period. Our observation may represent a natural immunization with microorganisms, preventing atherosclerosis during a period of severe kidney insufficiency and could have therapeutic implications for patients with chronic kidney disease.



MO440 Figure: ROC curves for serum and mRNA PBCs expression levels of Klotho predicting sCVD.