

Leukocyte, thrombocyte and cytokine profiles of the CKD affected people of Girandurukotte and Mahiyanganaya area of Sri Lanka

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In a cross sectional study aimed at investigation into the putative inflammatory reaction associated with chronic kidney disease of unknown etiology (CKDu) development and progression, whole blood, urine and questionnaire-information were collected from volunteer subjects in CKD endemic Girandurukotte and Mahiyanganaya areas of Sri Lanka. Total and differential leukocyte counts were obtained from Giemsa stained blood smears (n=172). Complementary counts of the blood cell types, platelets, and mean platelet volume (MPV), platelet distribution width (PDW) and plateletcrit (PCT) were obtained by automated hematology analyzer (n=162). Levels of plasma cytokines, IL-1, IL-6, TNF- α , IFN- γ and MCP-1 were quantified by sandwich-ELISA (n=76). Estimated glomerular filtration rate (eGFR) was determined alternatively by, MDRD, SCr-CKD-EPI, Cys C CKD-EPI, and SCr+CysC CKD-EPI equations. Subjects were sorted to CKD stages using eGFR (SCr-CKD-EPI). Subjects that had both eGFR <90 mL/min/1.73m² and urine albumin to creatinine ratio (UACR)>30 mg/g were considered CKD affected whereas those with eGFR>90 and UACR<30 were considered apparently healthy hence control. Lymphocytes, Monocytes, MPV, PDV and PCT showed decreased levels (p<0.05, one-way ANOVA, Tukey HSD) in CKD affected people as compared to the control from the same area. Basophils were however increased. Inter-stage differences were evident as well in the same parameters and in total leukocyte count. The CKD affected also showed higher MCP-1 levels (p<0.05) transiently. Cluster analyses yielded a dendrogram that depicted a close relation between all eGFRs and MPV suggesting whether the latter could be a kidney dysfunction marker. Similarly, UACR was related to basophils and MCP-1 levels. The results show that CKD progression modulates leukocyte and platelet repertoire in CKD affected people in Girandurukotte and Mahiyanganaya area. Research grant, RPHS/2016/CKDU/04 from the National Science Foundation, Sri Lanka is acknowledged.

Keywords: leukocytes, platelets, MCP-1, chronic kidney disease