Abstract

Background: Essential Hypertension (EH) accounts for majority of hypertension cases globally. Genetic factors along with haematological and biochemical changes may underlie EH and these have not been well studied in Kenya. A meta-analysis in African populations (excluding East Africa) identified the 1166A>C (rs5186) single nucleotide polymorphism (SNP) in the angiotensin II type 1 receptor gene (AGTR1) that encodes the angiotensin II type 1 receptor as likely to predispose some Africans to hypertension.

Aim: The purpose of the study was to determine whether the AGTR1 (rs5186) mutation, C-reactive protein (CRP) and selected haematological biomarkers may be associated with the onset of EHin Tharaka Nithi County, Kenya).

Study Design: A case control study design was adopted.

Place and Duration of Study: The research was conducted from March to July 2022 at Chuka County Referral Hospital in Tharaka Nithi County. Methodology: A total of 272 participants, both hypertensive and normotensive, were recruited and blood samples obtained. DNA was extracted and analyzed by PCR RFLP. Independent T-test, Mann Whitney U test and Odds ratios were used to compare the two groups. P values less than 0.05 were considered statistically significant.

Results: Median values for Red Cell Distribution Width (RDW), C-reactive Protein (CRP) and mean values for Mean Platelet Volume (MPV) and Neutrophil to Lymphocyte ratio (NLR) were significantly higher ($P < .001$) in hypertensive group compared to normotensive individuals. Mean Platelet Distribution Width (PDW) was not significantly different between cases and controls. ($P=.519$) There was no significant association between the AGTR11166A>C (rs5186) SNP frequency and EH in both groups ($P=0.6236$, OR=0.4952(95%CI:0.0442-5.5456)

Conclusion: The AGTR1 (rs5186) SNP is not associated with EH in Tharaka Nithi County, Kenya. EH is associated with elevated levels of CRP, RDW, MPV and NLR in the absence of other inflammatory and chronic diseases. Further studies of the genetics of hypertension in Kenya need to be conducted.