

Abstract

GLOMERULAR FILTRATION RATE ASSESSMENT USING CREATININE RELATED PARAMETERS FOR HEALTHY ADULT KENYAN POPULATION

Stanley K Waithaka, Clinical Chemistry Laboratory Kenyatta

Objective: The purpose of the study was to establish the reference ranges of measured creatinine clearance and estimated creatinine clearance for adult Kenyan population.

Method: A prospective study carried out in clinical chemistry laboratory of Kenyatta National Hospital involving 265 healthy individuals between 18-60years.

Reference ranges were constructed by using the parametric methods to estimate 2.5 and 97.5 percentiles of distribution as lower and upper reference limits. The glomerular filtration rate assessment of the adult healthy Kenyan population was carried out by investigating serum creatinine (SrCr), 24 hours urine creatinine clearance (Mcrcl), estimated creatinine clearance (Ecrcl), urine creatinine (UCr) and urine volume (UV). Two hundred and sixty five voluntarily study subjects comprising of 106 male and 159 females were recruited in the study.

Results: Sex related reference values were established as follows:- SrCr [male:68-128), female: 60-122] umol/l, Mcrcl [male:52-110), female: 60-122] ml/min, Ecrcl [male:54-118), female: 58-106]ml/min, UCr [male:3588-10,400), female: 3262-9886] umol/l and UV [male:875-2301, female: 802-2092] ml/24 hrs.

Same sex mean difference was found for the established reference ranges of M_{crcl} and E_{crcl} (male $p=0.021$ and female $p=0.000$). Decline rate in creatinine clearance in the ages under investigation were: male measured creatinine clearance (0.46 ml/min per year), male estimated creatinine clearance (0.29ml/ min), female measured creatinine clearance (0.39 ml/min per year) and female estimated creatinine clearance (0.2ml/min).

Conclusion: Sex specific reference ranges for the assessment of glomerular filtration rate has been established. Age is an important factor in the interpretation of creatinine clearance of an individual. These reference ranges are different from those reported in literature, therefore each clinical chemistry laboratory should establish its own.

Keywords: reference range, glomerular filtration rate, adult Kenyan, Kenyatta national hospital