Comparison of low-density lipoprotein cholesterol (LDL-C), Atherogenic Index of plasma (AIP) and Apolipoprotein B/Apolipoprotein A1 ratio in patients sent for routine lipid profile testing at Biochemistry laboratory - Kenyatta National Hospital, Nairobi Kenya.

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ABSTRACT

Background: Cardiovascular disease is a rising global concern accounting for one-third of mortalities. Notably, cardiovascular disease risk factors; including dyslipidemia, smoking, obesity, poor diet, and hypertension are modifiable. It has been established through various studies that dyslipidemia is at the core of atherosclerosis observed in cardiovascular diseases making it important in risk assessment and as a therapeutic target as informed by various guidelines. Plasma lipid profile has been key in the diagnosis of dyslipidemia particularly low-density lipoprotein cholesterol that is used in initial risk assessment and treatment monitoring. However, due to clinical and analytical challenges, LDLC is understated or overstated in some patients due to biological variability.

Objective: To compare low-density lipoprotein cholesterol, atherogenic index in plasma, and Apolipoprotein A1 / Apolipoprotein B ratio for cardiovascular risk assessment in patients sent for routine lipid profile testing at biochemistry laboratory - Kenyatta National Hospital
Methodology: This was laboratory-based cross-sectional study, 307 residual samples from patients sent for lipid profile testing were tested for, Apo A1, and Apo B concentrations using Mindray BS 2000M chemistry analyzer using Mindray reagents (Shenzhen Mindray Bio-Medical Electronics Co., Ltd) at biochemistry laboratory KNH. The obtained data was used to calculate the atherogenic index of plasma (AIP) and Apo B/ Apo A ratio.

Results:

The median age of the participants was 49 years, 56% were female. The median(range) values were Total cholesterol 4.17 (3.11, 5.20),High-density lipoprotein cholesterol 1.21 (0.88, 1.54)Low-density lipoprotein cholesterol 2.60 (1.84, 3.37)Triglycerides 1.12 (0.83, 1.62),APOA-1 1.38 (1.11, 1.57),APOB 0.95 (0.73, 1.21)Apo B/ApoA-1 ratio 0.75 (0.56, 0.94) and Atherogenic index of plasma 0.09 (-0.14, 0.45). More than a quarter (26.7%) of the participants had LDL-C above 2.35 mmol/l. More than a third of the patients (42%, n=124) were at risk of CVD according to Apo B/ApoA-1 ratio, while 40 %,(n=122) had a high CVD risk according to the atherogenic index stratification.

We observed a positive correlation between LDL-C and ApoA-1, Apo B and Apo B/ApoA-1 ratio. There is a significant agreement between atherogenic index and APOB/APOA-1 ratio in CVD risk identification kW=0.36 (95% CI, 0.27-0.46), p<0.001.

Conclusion:

Atherogenic Index of plasma, Apo A and Apo B markers offer additional benefits in CVD risk identification.

Key terms

Cardiovascular disease risk, Lipid profile, Atherogenic index of plasma, Apo B, Apo A1.