Different lipid profiles according to ethnicity in the Heart of Soweto study cohort of de novo presentations of heart disease

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Abstract

Background: Historically, sub-Saharan Africa has reported low levels of atherosclerotic cardiovascular disease (CVD). However as these populations undergo epidemiological transition, this may change.

Methods: This was an observational cohort study performed at Chris Hani Baragwanath Hospital in Soweto, South Africa. As part of the Heart of Soweto study, a clinical registry captured detailed clinical data on all de novo cases of structural and functional heart disease presenting to the Cardiology unit during the period 2006 to 2008. We examined fasting lipid profiles in 2 182 patients (of 5 328 total cases) according to self-reported ethnicity. The study cohort comprised 1 823 patients of African descent (61% female, aged 56 ± 16 years), 142 white Europeans (36% female, aged 57 ± 13 years), 133 Indians (51% female, aged 59 ± 12 years) and 87 of mixed ancestry (40% female, aged 56 ± 12 years).

Results: Consistent with different patterns in heart disease aetiology, there were clear differences in total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) and triglycerides across ethnicities (p < 0.001): patients of African descent had the lowest TC and LDL-C levels and Indians the highest. However, there were no significant differences in high-density lipoprotein cholesterol (HDL-C) levels between ethnicities (p = 0.20). Adjusting for age, gender and body mass index, patients of African descent were significantly less likely to record a TC of > 4.5 mmol/l (OR 0.33, 95% CI: 0.25–0.41) compared to all ethnic groups (all p < 0.001).

Conclusions: These data confirm important blood lipid differentials according to ethnicity in patients diagnosed with heart disease in Soweto, South Africa. Such disparities in CVD risk factors may justify the use of specialised prevention and management protocols.

Keywords: Africa, heart disease, lipids, ethnicity/race, epidemiologic transition

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The historical distribution of risk and communicable versus non-communicable forms of cardiovascular disease (CVD), particularly its major component heart disease, reflects the influence of cultural and ethnic factors. Historically, low levels of atherosclerotic CVD in populations of African descent were, in part, attributed to low levels of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) and triglycerides (TGs) and high levels of high-density lipoprotein (HDL-C). Indeed, it appears a great deal of the burden of CVD in those of African descent can be attributed to hypertension, rather than dyslipidaemia. However, other ethnic groups, such as South Asians, have been shown to be more prone to the high levels of TC and TG and low HDL-C dyslipidaemia, associated with atherosclerotic forms of CVD.

While a significant proportion of the excess risk of CVD in certain ethnic groups can be explained by environmental, nutritional and lifestyle factors, they do not fully account for such disparities. In order to apply appropriate CVD preventative and management strategies, it is crucial to understand the underlying processes that vary between ethnic groups, especially in settings where the burden of CVD is rapidly increasing.

In sub-Saharan African communities, such as the urban enclave of Soweto, South Africa, there is clear evidence that the historical balance between communicable and non-communicable forms of heart disease is in epidemiological transition. The Heart of Soweto study of more than 5 000 de novo presentations of heart disease to the Baragwanath Hospital involved patients from an eclectic mix of cultural and ethnic backgrounds and the pattern of heart disease differed accordingly.

We sought to determine if there were differences in the lipid profiles (and other major CVD risk factors) of patients with de novo presentations of heart disease in Soweto, South Africa according to ethnicity and whether these were independent of socio-economic profile.