Editorial

'Indian Dyslipidaemia': A unique challenge

Dyslipidaemia, diabetes and hypertension are key risk factors for coronary heart disease. These abnormalities of lipids consist of high levels of total cholesterol, low-density lipoprotein (LDL)-cholesterol, very low density lipoprotein (VLDL) and triglycerides (TG) along with low levels of high-density lipoprotein (HDL)-cholesterol. Most epidemiological and interventional studies are based on data from western populations. A different pattern of dyslipidaemia among South Asians was first observed in the western literature when data from a migrant population were analysed. The prevalence of hypercholesterolaemia in India varies from 10%–15% in rural to 25%–30% in urban populations in various studies.[1] The pattern of Indian dyslipidaemia is different from that observed in western populations with low HDL-cholesterol (<40 mg/dl in males and <50 mg/dl in females), low apolipoprotein A1 and higher TG, lipoprotein (a) and apolipoprotein B. The total levels of LDL-cholesterol in South Asians are comparable to those of Caucasians, but there is an increased small-dense atherogenic component. The exact cause for this different pattern is not known. In a study of over 1000 Asian Indians in the USA, the factors that most significantly correlated with low HDL were low physical activity, increased body mass index, diabetes and age.[2] Other possible factors may be genetic polymorphism, insulin resistance, maternal nutrition, intrauterine and epigenetic influences, vitamin B12 deficiency and high homocysteine levels, other dietary factors and possibly some unknown environmental factors.[3–5]

There is a dearth of good-quality epidemiological studies showing the prevalence and trends of dyslipidaemia from the South Asian region. Moreover, data available are small and cannot be nationally representative. The CAARS study, published in this issue of the *Journal*, assessed the prevalence, types and factors associated with dyslipidaemia in South Asians.[6] The study is large with >16 000 urban adults >20 years of age, and the results are in tune with similar studies from the region. The prevalence of any dyslipidaemia was 76%, and the pattern of dyslipidaemia suggested a high prevalence of low HDL-C (60%) and high TG (33%). The variation in sex was also observed in the study, with females having a higher prevalence of low HDL-C and males of high TGs. The most worrisome data were of use of lipid-lowering drugs, which was only 2.4% of the total participants. The ICMR INDIAB study of more than 2000 rural and urban participants from four states of India had similar results.[7] The prevalence of any dyslipidaemia was 79%, and the pattern was also similar with high TGs and low HDL. The most common lipid abnormality was low HDL-C in 72.3%, with 44.9% of the patients having it as an isolated abnormality.

The different pattern of dyslipidaemia in the South Asian region shown in the epidemiological studies presents a unique clinical challenge. There is a strong association between raised LDL-C and risk of cardiovascular events, and robust data available show that decreasing LDL-C reduces cardiovascular events and mortality by 25%–35%.[8,9] The association between low HDL-C and increased cardiovascular events has been shown in various epidemiological studies such as the Framingham study and proven with angiographic studies.[10] Even the association of HDL-C and coronary artery disease was shown to be stronger than that of LDL-C and coronary artery disease.[11] It is associated with an increased risk of coronary heart disease, restenosis after angioplasty and death from cardiovascular causes.[12] Results from the New Delhi birth cohort study have also shown an association between raised TGs and low HDL-C with increased carotid intima media thickness.[13] An increase in baseline

HDL-C of 1 mg/dl is associated with a 6% decrease in the risk of death from coronary artery disease/myocardial infarction.[14] Increase in HDL is observed with lifestyle modification (weight control, exercise, smoking cessation and alcohol intake) and medications such as niacin, fibrates and statins. However, clinical trials on high TGs and low HDL have not shown any clinical benefit. The drug that directly increases HDL (torcetrapib, a partial cholesterol ester transfer protein inhibitor) failed to show cardiovascular benefit, rather increased mortality.[15] Whether such a drug will have a beneficial effect in the Asian population remains a moot question in the absence of large trials? Hence, the clinical evidence of benefit is not that robust compared to the benefits of lowering of LDL-C. Another important aspect of HDL-C is its efflux capacity, which has been shown to be associated with future development of cardiovascular events independent of HDL-C levels.[16] Therefore, the focus is now shifting from the quantity to quality of HDL-C, and future clinical trials improving the quality of HDL-C might show clinical benefits and may help in managing dyslipidaemia in South Asia. However, till we have evidence of its benefit, it is time to educate the population.

The focus on primary prevention with lifestyle modifications to control high TGs should be emphasized in the general population and also should be made part of the school curriculum. The diet needs to be modified by decreasing the amount of simple sugars such as refined grains, chocolates, ice creams and sugar confectionaries, with increase in the consumption of complex carbohydrates such as whole grains and vegetables. Simultaneously, the consumption of fried and packaged food has to be restricted. The current clinical practice of focusing only on reduced fat intake but not on reducing sugars is a much-needed correction during the counselling of patients. These dietary modifications have to be the focus of primary healthcare by various public health agencies. Another important measure is to decrease the body weight as the magnitude of decrease in TGs is directly related to the amount of weight lost. In addition, moderate-intensity physical activity on 5 or more days for at least 30 minutes of a day with a total of at least 150 minutes/week will help to keep TGs under control. This multipronged approach in diet and lifestyle will help in managing this unique clinical challenge—the Indian dyslipidaemia—till the exact pathogenetic mechanism is known and treatment is made available.

Conflicts of interest. None declared

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