

Impact of Dyslipidemia at Young Age

Cholesterol is present in our body in distinct particles containing both lipids and proteins, known as lipoproteins. Three major classes of lipoproteins present in our bodies (based on the size and density of these particles) are: very-low-density lipoproteins (VLDL), low-density lipoproteins (LDL) and high-density lipoproteins (HDL). Dyslipidemia is an abnormality in the levels of these various lipids and lipoproteins in the blood, and is the most important risk factor for atherosclerosis. The process of atherosclerosis starts as early as childhood with the formation of initial lesions known as fatty streaks which are deposited in the various blood vessels in the body. These lesions though clinically silent, catalyse deposition of further plaques with lipid rich cores and smooth muscle caps forming the initial stages of the mature atherosclerotic plaque. Atherosclerosis leading to Coronary artery disease (CAD) is the most common cause of morbidity and mortality in our country.¹

Indians (and south Asians) are uniquely susceptible to CAD and have the highest rates of coronary artery disease (CAD) around the globe². These rates are 50% higher than other populations across the world with an even more increased risk at younger ages². The prevalence of CAD in India has almost doubled over the past few decades and is almost four times compared to a Caucasian American. Also alarming is the fact that young adults are increasingly presenting with acute coronary syndromes with almost 50% of the first heart attacks occurring before the age of 55 years and 25% of these occurring even before the age of 40 years³. At these rates the projected death toll from CAD in Indians will be approximating the three million figure with 14% of these being younger than 30 years of age, 31% younger than 40 years of age⁴. Thus, even the young adults are no longer spared from the risk of CAD which is a cause for growing concern.

The Metabolic syndrome which is a constellation of findings which include elevated blood pressures, impaired fasting glucose, dyslipidemia and abdominal obesity is also very common amongst Indians⁵. However the health risk associated with abdominal obesity has been found to occur at a lower waist circumference amongst people living in the Indian Subcontinent, as a result of which the International Diabetes Federation (IDF) has proposed lower cut-points for this population for defining the Metabolic syndrome (men > 90 cm and women > 80 cm)⁶. Expectedly studies looking into the prevalence of metabolic syndrome in India using the National Cholesterol Education Program (NCEP) criteria underestimate the figure in comparison to when IDF cut offs are used.

The National Cholesterol Education Program - Adult Treatment Panel III (NCEP-ATP III) now recommends initiating screening of all adults for dyslipidemia at age of 20 years (and thereafter every 5 years), regardless of their cardiovascular risk profile⁷. Such an approach is

dramatically different from earlier held viewpoints that dyslipidemia screening is necessary only for those with risk factors or are >40 years. The earlier cost effective views believing that the risks could be reversed with medical interventions even later in life have now largely been contradicted. Today it is well known that if early atherogenesis is ignored, later therapies to stabilise the atherosclerotic plaques will not be able to reduce the risk of disease to a level of a person with minimal coronary lesions.

Therapy aims have thus now shifted to primary prevention strategies over secondary prevention approaches since early detection and management of dyslipidemias will arrest atherosclerosis in its early stages and at the same time promote health seeking behaviours and increase public awareness about this modifiable risk factor for atherosclerotic diseases. Early screening will also increase detection of those young adults with genetic disorders leading to hyperlipidemias, who despite being a small number are highly prone to premature CAD. Detection of such an index case will also prompt screening of their first degree relatives and make it possible to intervene at an early stage of their illness.

In the study by Sharma et al, in this issue of JIMSA, the researchers evaluated the plasma lipids across college going students from a city in Northern India. They observed a high incidence of dyslipidemias in the study group along with a strong and a positive correlation for the same with modifiable risk factors like obesity, sedentary lifestyle, smoking and alcohol consumption.

Strategies aimed at early detection and prompt lifestyle changes directed at these risk factors along with targeted medical interventions for the lipid abnormalities may help stall the epidemic of CAD that is threatening our country.

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NOBEL PRIZE IN MEDICINE

British- American scientist John O'Keefe and Norwegian couple May-Britt and Edward Moser have won the 2014 Nobel Prize in Physiology or Medicine for discovering the brain's "Inner GPS". The "Place Cells" and "Grid Cells" they discovered make it possible for our brains to figure out where we are. The discovery of the brain's positioning system has opened new avenues for understanding other cognitive processes, such as memory, thinking and planning. Knowledge about the brain's positioning system may, therefore, help us understand the mechanism underpinning the devastating spatial memory loss that affects people with this disease. Keefe concluded that the hippocampus generates numerous maps, represented by the collective activity of place cells that are activated in different environments. Therefore, the memory of an environment can be stored as a specific combination of place cell activities in hippocampus.