Role of Lipid Management in Cardiovascular Risk Assessment and Improving Prognosis

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ABSTRACT

Cardiovascular diseases (CVDs) have surged globally, particularly among younger populations, resulting in acute presentations and untimely fatalities. India, notably, grapples with CVDs as a leading cause of mortality, striking individuals earlier than in the West. Dyslipidemia, marked by abnormal lipid levels, significantly escalates CVD risk, contributing to millions of deaths annually. Timely screening for dyslipidemia, especially in high-risk groups like those with familial hyperlipidemia, is paramount for early detection and prevention of adverse cardiovascular events. Additionally, employing risk assessment tools, such as Lipid Tetrad Index (LTI) and Lipid Pentad Index (LPI), aids in pinpointing individuals at heightened risk. Furthermore, cascade screening in families with confirmed dyslipidemia cases is recommended to forestall future cardiovascular events. Early identification and intervention, guided by comprehensive lipid profiling and risk assessment, offer hope in alleviating the burden of premature coronary artery disease (CAD) and its associated mortality.

Keywords: Hyperinsulinemia; Insulin Resistance; Lipoprotein; Unhealthy Diet; Smoking

Abbreviations: CAD: Coronary Artery Disease; LPI: Lipid Pentad Index; CVDs: Cardiovascular Diseases; LTI: Lipid Tetrad Index; CAC: Coronary Artery Calcium; MI: Myocardial Infarction

Introduction

The dawn of the 21st century has seen a troubling rise in cardiovascular diseases (CVDs) across India, making them the leading cause of mortality in the country [1]. It is particularly alarming when compared to their European counterparts that Indians are experiencing CVDs a decade earlier in life. This premature onset of CVDs can be attributed to a mix of genetic predisposition and environmental factors like unhealthy diet, smoking, lack of physical activity, diabetes, and elevated cholesterol levels. Among Indians, non-traditional risk factors such as hyperinsulinemia, insulin resistance, and lipoprotein (a) (Lp(a)) further compound the issue, contributing to the earlier onset of CVDs [2]. Acute myocardial infarction (MI), a significant form of CVD, affects a considerable number of individuals annually, with a substantial mortality rate. Various lipid parameters, including total cholesterol, triglycerides, LDL cholesterol, HDL cholesterol, and Lp(a), play pivotal roles in the development of CVDs, particularly coronary artery disease (CAD). Recent advancements in lipid profile assessment have introduced novel indices such as the Lipid Tetrad Index (LTI) and Lipid Pentad Index (LPI), offering more comprehensive evaluations of lipid profiles and emerging risk factors [3].

These indices provide a more holistic approach to global risk assessment by incorporating parameters like Lp(a), apolipoprotein AI (apoA-I), and apoB, thus enabling a more accurate estimation of the total burden of dyslipidemia and aiding in the early identification of individuals at high risk for CVDs [4]. Given the escalating incidence of CVDs, especially among young populations, routine screening for dyslipidemia becomes imperative for early detection and prevention of adverse cardiovascular events. Screening protocols should encompass various risk factors, including genetic predisposition, obesity, unhealthy dietary habits, and sedentary lifestyles. Selective, universal, or clinical-based screening approaches can be adopted based on cost-effectiveness and resource availability, with a focus on identifying high-risk individuals and initiating timely interventions [5]. Additionally, cascade screening strategies targeting families with con-

firmed cases of familial hyperlipidemia can significantly contribute to early diagnosis and preventive measures [6]. Genetic screenings, coupled with advanced imaging techniques like coronary artery calcium (CAC) scoring, offer personalized risk assessments and guide therapeutic decisions, especially in low- to intermediate-risk patients [7].

Conclusion

In conclusion, the integration of novel lipid indices, along with traditional lipid parameters, holds promise in improving risk stratification and early intervention strategies for CVDs, particularly in young populations. By leveraging advancements in screening methodologies and embracing a multidisciplinary approach involving healthcare providers and patients, we can effectively combat the rising burden of CVDs and mitigate their impact on public health.

References

1. Puri R, Mehta V, Iyengar SS, Narasingan SN, Duell PB, et al. (2020) Low density lipoprotein cholesterol targets in secondary preven-tion of atherosclerotic cardiovascular disease. J Assoc Physicians India 68: 21-34.

2. Lee C, Rivera Valerio M, Bangash H, Prokop L, Kullo IJ, et al. (2019) New Case Detection by Cascade Testing in Familial Hypercholesterolemia: A Systematic Review of Literature. Circ Genom Precis Med 12: e002723

3. Bansal M, Sharma D, Kasliwal RR (2022) Diagnostic accuracy of coronary artery calcium score for excluding obstructive coronary artery disease. J Clin Prev Cardiol 11: 44-49.

4. Mohamed Yassin MS, Baharudin N, Daher AM, Abu Bakar N, Ramli AS, et al. (2021) High prevalence of dyslipidaemia subtypes and their associated personal and clinical attributes in Malaysian adults: The REDISCOVER study. BMC Cardiovasc Disord 21(1): 149.

5. Lakka HM, Laaksonen DE, Lakka TA, Niskanen LK, Kum pusalo E, et al. (2002) The metabolic syndrome and total and cardiovascular disease mortality in middle-aged men. JAMA 288: 2709-2716.

6. Yusoff R, Lin OM, Kamaruddin A (2017) Clinical Practice Guidelines on Primary & Secondary Prevention of Cardiovascular Disease Malaysia.

7. Gill H, Tiwari P, Dabadghao P (2012) Prevalence of polycystic ovary syndrome in young women from North India: a community-based study. Indian J Endocrinol 16: 89-92.

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