Original Article

Evaluation of Dyslipidemia Diagnosis and Management in Primary Health Care

Ahmed Elsayed Ahmed[1], Abdullah Fahad Almoreished[2*], Abdulmohsen Ali Alshehri[3], Bara Talal Alalweni[3], Mohammad Abdulaziz Alkhamis[3], Abdulrahman Abdulaziz Alomran[3], Awad Hamdan Alsharari[4], Muath Mohammed Alrasheed[4], Sultan Eid Alsharari[4], Majed Fulayyih Alsharari[4], Husain Ali Alghanem[5], Fahad Taraheeb Alrouqei[6]

[1]Faculty of Medicine, Al Mouwasat Hospital, Al Khobar, Saudi Arabia. [2]Faculty of Medicine, Ministry of Health, Riyadh, Saudi Arabia. [3]Faculty of Medicine, King Saud University, Riyadh, Saudi Arabia. [4]Faculty of Medicine, Aljouf University, Sakaka, Saudi Arabia. [5]Faculty of Medicine, King Faisal University, Al-Ahsa, Saudi Arabia. [6]Faculty of Medicine, Qassim University, Unaizah, Saudi Arabia.

Abstract

Dyslipidemia is a condition marked by irregularities in blood lipid levels, most notably total cholesterol and triglycerides. Low levels of high-density lipoprotein cholesterol (HDL-C) and high levels of low-density lipoprotein cholesterol (LDL-C) are also alterations. Addressing dyslipidemia is a crucial aspect of various practice guidelines, but there are notable disparities among these recommendations. Regrettably, these guidelines often encounter limited adherence within primary care settings. This lack of widespread compliance may be attributed to inadequacies in the qualifications of primary care healthcare staff, a lack of engagement with recent guidelines, and the imposition of unrealistic targets on patients, resulting in non-compliance with prescribed medications and follow-up recommendations. The Medline, Pubmed, Embase, NCBI, and Cochrane databases were searched for studies of patients with non-alcoholic fatty liver disease. Incidence, etiology, and management options were analyzed. Dyslipidemia emerges as a significant risk factor for cardiovascular disease, necessitating comprehensive management strategies. The collaborative efforts of healthcare professionals, particularly those in primary healthcare settings, are instrumental in identifying, managing, and educating individuals with dyslipidemia. This collective endeavor significantly contributes to the prevention and reduction of cardiovascular events, ultimately improving overall cardiovascular health outcomes.

Keywords: Triglycerides, Lipoprotein(a), Dyslipidemia, Combined hyperlipidemia, Atherosclerosis, Primary care

Introduction

Dyslipidemia, in other words, abnormal lipid levels in the blood, has garnered substantial attention within the broader context of cardiovascular disease (CVD). CVD, claiming the lives of up to 17 million individuals annually, has spurred extensive research into its multifaceted risk factors. Dyslipidemia, characterized by imbalances in cholesterol and triglyceride levels, has emerged as a pivotal contributor to the initiation and progression of CVD and its associated complications [1].

Research findings indicate that approximately one-third of all cases of ischemic heart disease, a prevalent manifestation of CVD, can be linked to the impact of dyslipidemia. This underscores the critical role of managing lipid profiles as a means to mitigate the risk of cardiovascular events. In 2008, dyslipidemia exhibited an estimated prevalence of 39% in males and 40% in females in developed countries, elevating it to the status of a widespread health concern [2]. The implementation of effective screening measures has notably improved the identification of individuals with dyslipidemia, stressing the importance of early detection and intervention.

Within the healthcare landscape, primary healthcare physicians have assumed a pivotal role in the management and ongoing care of individuals with dyslipidemia. These healthcare professionals not only play a crucial role in identifying high-risk individuals through routine screenings but also implement comprehensive management strategies. Such strategies encompass not only pharmacological interventions, such as statins, but also lifestyle modifications involving dietary changes, increased physical activity, and smoking cessation [3].

The primary healthcare setting becomes the cornerstone for the continuity of care, highlighting the importance of regular

Address for correspondence: Abdullah Fahad Almoreished, Faculty of Medicine, Ministry of Health, Riyadh, Saudi Arabia. Dr.almoreished@gmail.com

How to cite this article: Ahmed AE, Almoreished AF, Alshehri AA, Alalweni BT, Alkhamis MA, Alomran AA. Evaluation of Dyslipidemia Diagnosis and Management in Primary Health Care. Arch Pharm Pract. 2023;14(S):A06231527.

monitoring and patient education. Patients are educated on the significance of adhering to prescribed medications, making lifestyle modifications, and understanding the long-term implications of dyslipidemia on cardiovascular health [3].

Materials and Methods

PubMed database was used for articles selection, and the following keys were used in the mesh (("dyslipidemia " [Mesh]) AND ("primary care" [Mesh]) OR ("Management" [Mesh])). In regards to the inclusion criteria, the articles were selected based on the inclusion of one of the following topics: management of dyslipidemia in primary care management of dyslipidemia in primary care. Exclusion criteria were all other articles, which did not have one of these topics as their primary endpoint. Around 90 publications were chosen as the most clinically relevant out of 1,202 articles indexed in the previous two decades, and their full texts were evaluated. A total of 31 of the 90 were included after a thorough examination. Additional research and publications were found using reference lists from the recognized and linked studies. Expert consensus recommendations and commentary were added where relevant to help practicing physicians assess management of dyslipidemia in primary care in the simplest and most practical way possible.

Results and Discussion

Usually asymptomatic, dyslipidemia is discovered accidentally or by routine screening. Severe cases, however, may cause symptoms such as leg discomfort, chest pain, disorientation, palpitations, swelling in the lower limbs or veins (e.g., stomach or neck), and fainting, which are associated with consequences such as peripheral artery disease or coronary artery disease. The fasting lipid test, which requires the patient to fast for at least 12 hours before blood sample collection, is the main diagnostic tool [4]. This test provides values for fasting total cholesterol, triglycerides, and HDL-C, with LDL-C concentration calculated using the Friedewald equation, applicable when triglyceride values are below 400 mg/dL (4.5 mmol per L). If triglyceride levels are higher, a direct assay for LDL-C is recommended. Some clinicians may initially perform a non-fasting lipid profile, but if triglyceride levels exceed 400 mg/dL, a fasting lipid profile is subsequently conducted. Specific value ranges are used to classify each of the four lipids as high, optimal, or low, with special consideration for HDL levels [4].

Diagnosis and Risk Factors

The initial approach to dyslipidemia involves a thorough anamnesis (medical history), encompassing a detailed family history with a focus on early cardiovascular disease (CVD) occurrences, pancreatitis history, and potential secondary causes of dyslipidemia. Signs of fat malabsorption, such as steatorrhea or poor weight progression, are assessed alongside anthropometry, blood pressure, organomegaly, and the presence of xanthomas, xanthelasmas, or corneal arcus [5].

For children, there are two screening strategies: universal or selective based on family or individual risk factors. Selective screening in children/adolescents is recommended for those with identified risk factors, with a universal opportunistic screening strategy considered between 9 and 11 years old and after puberty (17–21 years old). The NHLBI guidelines advise against screening for children aged 12–16 years [6].

Adult screening is characterized by a lack of consensus. While some guidelines argue against universal screening in individuals without risk factors until at least age 40, others propose screening for all adults starting at age 20 or upon their initial visit to a general practitioner. Screening intervals at ages 25 to 30 and 30 to 35 for males and females at higher risk, respectively, or at ages 35 to 45 for males and females at reduced risk are further recommendations. Finding dyslipidemias in younger persons aims to lower the lifetime risk of atherosclerotic cardiovascular disease (ASCVD) by enabling earlier therapies, especially for those with increased LDL-C). The efficacy of early and aggressive treatment to mitigate ASCVD events in higher-risk individuals has been well-established [7].

The diagnostic and therapeutic approach involves cardiovascular risk stratification, distinguishing between increased, moderate, or high-risk CVD development in the next 10 years. Isolated dyslipidemia, without other risk factors, may not be an absolute criterion for therapy initiation but indicates a greater CVD risk than the general population [8].

Both fasting and postprandial screening are acceptable, and if altered, two to three weeks apart for two fasting samples for confirmation. For diagnostic and therapeutic purposes, the mean of these values is employed. Main lipid fractions (TG, HDL, and CT) are assessed in the first phase; residual fractions and potential secondary reasons are assessed in the second phase [9].

Differential diagnosis considers monogenic primary dyslipidemia, including a family history of dyslipidemia, tendon xanthomas, or premature CVD. Other inherited metabolic diseases leading to intracellular cholesterol accumulation without necessarily inducing lipid profile changes are also explored. The spectrum of presentation can overlap, requiring consideration of various entities, and specific criteria aid in the differential diagnosis [9]. The approach involves a comprehensive evaluation of risk factors, screening strategies, and thorough diagnostic and therapeutic phases, emphasizing the importance of early detection and intervention in the management of dyslipidemia [9].

The clinician shall be aware of any co-risk factors in patients with borderline values, and this is vital to choosing the next optimal step.

- *Age:* Above 45 in men and 55 in women.
- *Premature Menopause:* Particularly without estrogen replacement therapy.
- *Family History:* Presence of cardiovascular disease (CVD) in the family.
- *Diabetes:* Individuals with diabetes are at an increased risk.
- *Smoking:* Tobacco use is a significant risk factor.
- *Hypertension:* Elevated blood pressure contributes to the risk.
- *Cerebrovascular Disease:* Conditions affecting blood vessels in the brain.
- *Peripheral Vascular Disease:* Affecting blood vessels outside the heart and brain.

Management

The evolving approach to dyslipidemia emphasizes a comprehensive patient assessment, taking into account individual risk factors, medical conditions, and potential contraindications to therapy. The recent ACC/AHA guidelines advocate calculating the ASCVD lifetime risk to guide therapeutic decisions. Lifestyle modification is the primary strategy for young adults, while pharmacological therapy is considered for high-risk patients with elevated LDL-C levels [10].

Patient stratification into ASCVD risk categories, considering factors like recent acute coronary syndrome, age, diabetes, hypertension, smoking, CKD, and heart failure, guides management decisions. The benefits of treating dyslipidemia are significant, with reductions in LDL-C associated with a decrease in major vascular events. Non-pharmacological management, including lifestyle changes, is the first-line approach across all age groups [11].

Pharmacological therapy centers on statins, with additional medications like ezetimibe, PCSK9 inhibitors, and fibrates. Target LDL-C goals vary based on risk categories, with high-intensity statins initiated for very high-risk patients. Family physicians play a crucial role in monitoring treatment tolerability and adjusting dosages as needed [12].

In cases of persistently high triglyceride levels, fibrate or omega-3 fatty acid therapy is recommended, especially if lifestyle modifications and statins prove insufficient. The combination of drugs may be considered in selected cases, although its impact on mortality and CVD incidence remains debated. Despite the effectiveness of statins, their association with side effects underscores the importance of patient education and close follow-up by family physicians to ensure optimal outcomes [13].

Surveillance and Follow-up

Monitoring and follow-up are crucial aspects of managing dyslipidemia, and family physicians play a key role in ensuring patient well-being. A systematic approach involves regular intervals for lipid profile assessments. Typically, the first test is conducted 4 to 12 weeks after initiating therapy to evaluate the patient's response and adherence to the prescribed regimen [14]. If the initial results are satisfactory, subsequent lipid profile testing can be scheduled at intervals ranging from 3 to 12 months. The specific timeline for follow-up depends on factors such as the patient's cardiovascular risk profile and their response to the therapeutic intervention. Regular monitoring allows clinicians to assess the effectiveness of the treatment and make necessary adjustments [4].

In addition to lipid profile checks, it is essential to include other tests in the monitoring process. Assessing liver function through liver function tests and monitoring creatinine kinase (CK) levels are integral components of the follow-up plan. Abnormalities in liver function or a significant increase in CK levels (more than 10-fold) may indicate potential adverse effects of the medication [4].

Immediate discontinuation of the drugs is warranted if abnormal liver function or elevated CK levels are observed, prioritizing patient safety. The family physician's vigilant monitoring and timely intervention contribute to the overall success of dyslipidemia management, ensuring optimal outcomes while minimizing potential risks [14].

Conclusion

Effectively addressing one of the leading causes of mortality and morbidity in contemporary society, cardiovascular disease (CVD), necessitates a comprehensive understanding and management of its key risk factors. Dyslipidemia, a prevalent risk factor for CVD, has witnessed significant advancements in therapy and evolving protocols and guidelines. Primary healthcare physicians play a crucial role in staying informed about the latest screening methods, diagnostic approaches, and management strategies. The family physician serves as a linchpin in executing this pivotal role, ensuring patient compliance and facilitating optimal outcomes. However, it is imperative to acknowledge the need for further research with larger sample sizes and improved study designs to fully establish the efficacy of recent drugs, potentially reshaping our approach to this disease in the future.

ACKNOWLEDGMENTS: None
CONFLICT OF INTEREST: None
FINANCIAL SUPPORT: None
ETHICS STATEMENT: None

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