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Review Article

Comparison of the 2017 Taiwan Lipid Guidelines and the Western Lipid Guidelines for High Risk Patients

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Abstract

Dyslipidemia is a major contributor in initiation, development and progression of atherosclerotic cardiovascular disease (ASCVD). Most lipid guidelines are from Europe and America and centered on the reduction of atherogenic lipids levels through lifestyle intervention and pharmacotherapy. Recently, the 2017 Taiwan Lipid Guidelines for High Risk Patients was published to facilitate the control of dyslipidemia in patients that are highly susceptible to ASCVD, including patients with preexisting ASCVD, diabetes, chronic kidney disease and familial hypercholesterolemia. Most recommendations outlined in the 2017 Taiwan Lipid Guidelines for High Risk Patients are in concordance with those of Western guidelines. However, based on evidence from the studies originating from Asia and local expert opinions, there are some recommendations different from the other guidelines. The purpose of the current review is to compare the similarities and differences between the perspectives of the 2017 Taiwan Lipid Guidelines for High Risk Patients and other Western guidelines in individuals at high risk of ASCVD. The definitions of high risk groups and treatment goals defined to achieve ASCVD risk reduction are specifically compared.

Keywords: Dyslipidemia; Guideline; Statin; Taiwan

1. Introduction

Cardiovascular disease (CVD) was responsible for approximately 17.64 million deaths in 2016, equating to 44.6% of all global non-communicable disease deaths and more than twice that caused by cancer.[1] Atherosclerotic CVD (ASCVD), such as coronary artery disease (CAD), ischemic stroke, carotid stenosis and peripheral arterial disease (PAD), accounts for the greatest proportion of CVD-related death. One of the most important events in initiating and propagating of ASCVD is the accumulation of low-density lipoprotein cholesterol (LDL-C) within the arterial wall and development of atherosclerotic plaques. In recent years, multiple lines of evidence from epidemiological, genetic and randomized clinical studies unequivocally indicate that increased circulating level of LDL-C plays a critical role in the progression of atherosclerotic plaques and the risk of ASCVD.[2] Therefore, LDL-C becomes the major target of lipid treatment. A number of major medical societies worldwide, primarily from America and Europe, have released and continuously updated lipid management guidelines to assist healthcare professionals for the management of dyslipidemia in different populations at risk of developing ASCVD. In Asia, following these Western

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guidelines did not come without caveats. From inception, the European and American lipid guidelines were to provide recommendations to benefit individuals residing in their respective regions as opposed to being used globally. The incidence and prevalence of ASCVD are also different between Asian and Western countries. Guidelines that fit the Asian conditions based on clinical studies and treatment experiences from this region become necessary.

Recently, the Taiwan Society of Lipids and Atherosclerosis published the 2017 Taiwan Lipid Guidelines (TLG) for High Risk Patients in a move to enhance the control of dyslipidemia in this country.[3] The necessity for TLG was prompted due to the rising mortality rate of ASCVD and increasing prevalence of dyslipidemia. The CVD-related death in Taiwan increased from 121.5 in 2007 to 163.3 deaths per 100,000 people in 2017.[4] A comparison between the 1993 to 1996 and 2005 to 2008 national nutrition and health surveys in Taiwan indicated the prevalence of hypercholesterolemia, defined as total cholesterol ≥240 mg/dL, and hypertriglyceridemia, defined as triglyceride ≥200 mg/dL, in men rose to 13% and 21% from 10% and 13%, respectively.[5] Moreover, it was revealed in a hospital-based survey in 2015 that 46% patients with ASCVD still had LDL-C > 100 mg/dL.[6] Only 60% and 38% of patients in Taiwan who have acute coronary syndrome (ACS) or acute ischemic stroke, respectively, were prescribed a lipid-lowering drug at discharge.[7,8] Collectively, the evidence so far pointed toward a need for a local lipid guideline to support clinicians to make proper decisions in the management of ASCVD.

2. Purpose of the review

The 2017 TLG was developed with the intention to provide guidance on the treatment of patients at high risk of developing ASCVD events rather than a comprehensive compendium for the primary prevention of ASCVD in healthy subjects with only dyslipidemia. The patient populations at high risk defined by the 2017 TLG are those with preexisting ASCVD, diabetes mellitus (DM), chronic kidney disease (CKD) and familial hypercholesterolemia (FH). Many recommendations in the 2017 TLG are consistent with those suggested in the lipid guidelines from Western countries. The 2017 TLG regards LDL-C elevation plays the most significant role in atherosclerosis and statin should be used as a first-line therapy to reduce LDL-C and ASCVD risk. However, some divergences are also noted. The purpose of this review aims to highlight the major similarities and differences between the perspectives of the 2017 TLG and the other 4 lipid guidelines from America and Europe: (1) the 2017 American Association of Clinical Endocrinologists (AACE) guidelines for management of dyslipidemia and prevention of cardiovascular disease,[9] (2) the 2016 European Society of Cardiology (ESC) and the European Atherosclerosis Society (EAS) guidelines for the management of dyslipidemias,[10] (3) the 2015 National Lipid Association (NLA) recommendations for patient-centered management of dyslipidemia[11] and (4) the 2013 American College of Cardiology (ACC)/American Heart Association (AHA) guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults.[12]

3. Scientific evidence

A wide range of clinical evidence was examined to sculpt the recommendations in the 2017 TLG. This wide evidence encompassing approach was similarly employed in building the recommendations in 2017 AACE, 2016 ESC/EAS and 2015 NLA guidelines. In addition to randomized clinical trials (RCTs) and meta-analysis of such studies, retrospective studies, observational studies, and consecutive case studies also represent the sources of evidence in the guidelines to formulate lipid management recommendations. In contrast, a more conservative approach in evidence selection was adopted in the 2013 ACC/AHA guideline and only results from RCTs were surveyed to formulate the recommendations within the guideline. This approach exhibits limitations to statin only therapy because the vast majority of RCTs with positive results are from the investigations of using statins for lipid control. Additional evidence of non-statin therapy, including ezetimibe and proprotein convertase subtilisin/kexin 9 (PCSK9) inhibitors, in secondary prevention of ASCVD emerged from RCTs in recent years. To overcome the limitations, an ACC expert consensus decision pathway on the role of non-statin therapies was published in 2016 to add the treatment role of ezetimibe and PCSK9 inhibitors.[13] With the inclusion of multiple types of evidence by the 2017 TLG and the other three guidelines, recommendations were generated with a greater scope. Some recommendations can be generated only from the results of non-RCTs, registry studies or expert opinions. This approach provides suggestions more applicable to clinical reality because RCTs could not provide evidence covering all patient types. However, these recommendations may not carry the equivalent level of scientific evidence as those recommendations derived from RCTs.

4. High risk patients

4.1. ASCVD

It is generally agreed by all guidelines mentioned in this review that individuals with preexisting or history of ASCVD carry the highest risk of developing cardiovascular events. ASCVD is classified as high risk, very high risk or extreme risk in these guidelines. However, there are variations between the definitions of ASCVD among the guidelines. In common, the 2017 TLG along with the other guidelines classify CAD/ACS, ischemic stroke/transient ischemic attack (TIA), carotid stenosis and PAD as ASCVD. The 2017 TLG additionally points out that intracranial arterial stenosis that occurs more often in Asians carries high risk.[14,15] It suggests that patients with intracranial arterial stenosis >50% with or without symptoms should receive aggressive blood pressure and lipid control. In the 2016 ESC/EAS and 2015 NLA guidelines, aortic aneurysm is also recognized as ASCVD. The 2017

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