Fixed risk factors at baseline versus variability of risk factors in predicting cardiovascular outcome

In our daily medical practice, we try to predict the risk of cardiovascular events for our patients. We recommend lifestyle changes and, if necessary, medication, based on the anticipated risk. However, some patients remain at risk, due to factors such as inadequate implementation of guideline-based recommendations, genetic susceptibility, or other issues. The concept of residual risk is still important in cardiology.

The usual approach to predicting future risk is focused on the presence or absence of risk factors (such as smoking) or on the baseline magnitude of these factors (such as blood pressure or lipid level). The available prediction models usually ignore fluctuation or visit-to-visit variability of risk factors, probably as a result of a simplistic (and more applicable) approach, or difficulty obtaining data and defining variability.

Several studies have suggested that visit-to-visit variation in lipid levels, blood pressure, or weight is a predictor for cardiovascular events. In this issue of The Anatolian Journal of Cardiology, 2 studies focus on the risk factor of variability. Jun Gu et al. assessed the impact of visit-to-visit variation in the level of low-density lipoprotein (LDL) cholesterol on all-cause mortality, myocardial infarction, and coronary revascularization in 2012 participants with no obstructive coronary artery disease at baseline. They measured visit-to-visit variability using the standard deviation and coefficient of variation of LDL cholesterol. Both of the measurements were independent predictors of all-cause mortality and the composite endpoint. In another study, Ziad A. Taher et al. found a relationship between some standard deviation indices of ambulatory blood pressure measurements and cardiovascular events. The major drawback of this study is the very small sample size, which precludes a concrete conclusion; however, it may draw attention to the importance of the variability of risk factors.

The relationship between visit-to-visit (or measurement-to-measurement) variability and cardiovascular events has been examined in some studies, but this association may have been prone to residual confounding that may not be adjusted for in observational studies. Some of these variations may be due to poor compliance to treatment. It seems that we need more comprehensive data to create standardized definitions of variability in order to assess independent risk.

I am also honored to acknowledge an editorial written by one of the leading authors regarding hypertension, Dr. Giuseppe Mancia. I am sure that this focused update on initial combination treatment in the new hypertension guidelines will be a valuable reference for our readers.

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