MAYO CLINIC

Family History of Cardiovascular Disease: How Detailed Should It Be?

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Family history (FH) is one of the key components of a comprehensive health history of any patient because it is strongly associated with several aspects of our health. Not only a simple, readily obtainable view into our genetic heritage, FH is also a hallmark of family behaviors and shared family environment associated with health and disease. In cardiovascular disease (CVD) it has been long known that traditional risk factors, such as high low-density lipoprotein cholesterol levels and hypertension, have strong genetic determinants, but other known behavioral risk factors, such as smoking and unhealthy diet, also cluster in families.[1] Hence, one should expect an FH of CVD to be a clinically meaningful risk factor.

Nevertheless, FH has never been incorporated into traditional risk prediction tools, such as the Framingham risk score, the more recent pooled cohort equation, or the European SCORE. The reason for this is largely based on the minimal incremental prognostic information provided by the FH once all risk factors are accounted for.[2,3] Several reasons might explain this. First, most prognostic information carried by the FH is encompassed in the other traditional risk factors (eg, genetic components of hyperlipidemia and hypertension, shared familial habits such as smoking and diet). Second, the definitions of FH have historically been inconsistent across studies and in clinical practice. Although in some studies its definition was restricted to coronary heart disease or stroke, in others it included broader definitions of CVD. In addition, some studies suggested that FH was meaningful only if premature (<50 or 55 years of age),[3] whereas others suggested that any FH (premature or late) was associated with increased risk.[4] Furthermore, some authors proposed that a more extensive, detailed FH that includes number of relatives, genetic distance from patients, age, and sex could improve its predictive value, making the FH more complex and, thus, harder to acquire during regular visits.[5] Collectively, this undervaluation and increased complexity of FH of CVD has led to inadequate or incomplete documentation of its presence or absence in up to 80% of primary care medical records.[6]

In this issue of *Mayo Clinic Proceedings*, the study by Patel et al[7] sought to evaluate the prognostic value of simpler vs more detailed definitions for FH of CVD by comparing 3 definitions: (1) any first-degree relative with CVD, (2) any first-degree relative with premature CVD (age <55 years for men and <65 years for women), and (3) a validated familiar risk assessment incorporating several aspects of the FH.[5] After careful adjustment for traditional risk factors, all 3 strategies were associated with a comparable incremental prognostic value for incident CVD, particularly for coronary heart disease. In addition, the number of first-degree relatives with a history of CVD provided no additional prognostic value. Thus, at least for middle-aged to older individuals in whom cardiovascular risk factors are already apparent, as in the Multi-Ethnic Study of Atherosclerosis population included in the study by Patel et al,[7] a simple binary indication of the presence or absence of CVD in any first-degree relative, regardless of their age, was at least as good for risk assessment as more granular information on the number of relatives with CVD, age at onset, lineage, and type of CVD event.

Another important finding of this study is the relatively limited incremental value of FH for risk stratification. Regardless of the definition used, FH was associated with no more than 30% higher risk of events compared with individuals with no FH, and this led to only minimal changes in discrimination measures. Although such findings might seem disappointing to some, they are in line with those of several other cohort studies.[2,3,8] Moreover, the prognostic value of FH was limited to coronary heart disease and the combined outcomes, and no significant independent association was noted for stroke, heart failure, or peripheral artery disease.

Despite this somewhat limited role of the FH, it might still be particularly important in younger individuals, who do not yet present with traditional risk factors, and who were not included in the study by Patel et al.[7] In this scenario, the information derived from the FH of CVD is likely more valuable because there is a higher likelihood of genetic factors leading to higher risk of future CVD events. Similarly, some other higher-risk populations, such as those with familial hypercholesterolemia, might benefit from a more detailed FH assessment to guide early aggressive management. Yet, for most middle-aged and older individuals who seek medical care for CVD prevention, FH may be considered an additional risk modifier of modest incremental value that can effectively be evaluated with 1 simple yes/no question: "Have any of your parents, siblings, or children ever been diagnosed as having myocardial infarction, angina, or stroke?"

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