Favorable lifestyle reduces CVD risks in hypertensive patients

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Cardiovascular diseases (CVDs), including coronary heart disease (CHD) and stroke, remain the leading cause of death worldwide, taking an estimated 17.9 million lives each year (1). The cause of CVDs is extremely complicated and multifactorial, including genetics, certain disease status, and lifestyle factors. CVD has a substantial genetic component. It is estimated that CHD and stroke heritability ranges between 40-50% and around 40% respectively (2-4). In addition, CVD risk is considerably elevated by certain disease status. In particular, hypertension has been demonstrated as one of the strongest risk factors for CHD and stroke, and it has been found to precede the development of heart failure by an average of 14 years (5, 6).

It is a well-known observation that maintaining a favorable lifestyle (e.g., adequate physical activity, healthy diet, weight management, and none-smoking) is associated with decreased CVD risks in the general population (7, 8). However, this benefit has not been systematically evaluated in conjunction with additional risk factors, such as hypertension and genetic predispositions. In this study, Wang et al. investigated the associations of a favorable lifestyle with CHD and stroke incidence under the condition of hypertension with various genetic dispositions in 258,531 hypertensive individuals of European descent from UK Biobank (9). Genetic risks of CHD and stroke were assessed using polygenic risk scores (PRSs) computed from 300 and 87 published single nucleotide polymorphisms (SNPs) respectively. Overall, hypertensive patients with a favorable lifestyle were found to have a 37% and a 30% reduction in CHD and stroke risk respectively compared to counterparts in the unfavorable lifestyle group. Notably, lifestyle benefit generally remains consistent across various genetic risk predispositions despite a modest interaction between lifestyle adherence and stroke PRS. Taken together, hypertensive patients could significantly benefit from a favorable lifestyle, i.e. patients who have a high genetic risk and a favorable lifestyle have comparable 12-year CHD risk as to patients who have low genetic risk living an unfavorable lifestyle.
Results from this study are illuminating and instructive despite the well-recognized benefits of healthy lifestyle in CHD risk modification. It provides direct epidemiological evidence to support the strong protective effect of a favorable lifestyle in a high-risk patient group as defined by hypertension across various genetic risk groups. Numerous resources have been invested in CVD treatment, yet inadequate effort has been made in disease prevention. Thanks to the rapid development of genome-wide association studies, PRS has become an increasingly useful tool for disease risk stratifications (10). Combining PRS, certain disease status and other risk factors, healthcare professionals may be able to provide CVD risk predictions before the onset of the event. This will provide people an opportunity to action early and reduce the damage of CVD with a simple switch to a favorable lifestyle. Unfortunately, partly due to fast-paced modern life and an increasing intake of unhealthy diet, unfavorable lifestyles are common even among high-risk hypertensive patients. Perhaps it is time to focus greater attention on initiatives to raise awareness and re-emphasize the value of a favorable lifestyle. Even partial improvement in lifestyle may significantly reduce existing CVD burdens.

Taken together, this study highlights the importance and necessity of a favorable lifestyle in the combat of CVD epidemic. As only European descendants were analyzed in the study by Wang et. al., follow up research in different ethnic groups is needed to test the generalizability. Additionally, since these results were derived from an observational study, it is unclear how long it may take for patients to benefit from a lifestyle switch. To answer this question, randomized intervention studies are warranted.
Reference: