Passive smoking causes approximately 50,000 deaths annually in the United States, with the vast majority of these deaths due to heart disease. The effects of secondhand smoke on many pathophysiological mediators of coronary artery disease are nearly as large as those of active smoking, including impaired platelet function, damage to vascular endothelium and its associated repair mechanisms, a rise in inflammatory molecules, and dysfunctional lipid metabolism. The large literature on passive smoking is not limited to cardiovascular disease. Passive smoking causes lung cancer, head and neck cancers, respiratory infections, and obstructive lung disease (chronic obstructive pulmonary disease, asthma) and has been linked with breast cancer in younger women. Although as of 2008, more than half of the United States was covered by legislation that limits tobacco use in public places and workplaces, the Centers for Disease Control and Prevention found that nearly one half of US nonsmokers continue to be exposed to secondhand smoke.

In this issue of Circulation, He et al. document yet another example of the dangers associated with secondhand smoke exposure: peripheral arterial occlusive disease (PAOD). This is the first study to identify an association between exposure to secondhand smoke and the development of PAOD in any population, particularly among the nonsmoking Chinese women they studied. PAOD is a surrogate marker for coronary artery disease, resulting from similar pathophysiological mechanisms: development of atherosclerosis that leads to vascular stenosis and ischemia, which is manifested as claudication in the extremities. Given the similar underlying mechanisms, the results of the study by He et al. are not surprising, but they are important nonetheless.

The cross-sectional study by He et al. of a large population of Chinese nonsmoking women who were exposed to secondhand smoke at home and in the workplace found that their risk of developing PAOD was nearly twice that of nonexposed, nonsmoking Chinese women ([OR 1.87, 95% CI 1.30 to 2.68] defined by presence of intermittent claudication and [OR 1.67, 95% CI 1.23 to 2.16] defined by intermittent claudication and measurements of ankle-brachial index). They arrived at these results even after accounting for 13 recognized risk factors for vascular disease, including age, daily level of exercise, body mass index, alcohol consumption, hypertension, hyperlipidemia, diabetes mellitus, and a family medical history of illness.

Two of the more highly publicized risk factors for vascular disease that He et al. account for include diet and exercise habits, issues that are particularly relevant to American culture. While US citizens, including North American Chinese, struggle with obesity, which makes them more vulnerable to heart, vascular, and other disease, people in China consume less fat, have lower rates of obesity, and maintain higher exercise levels. Chinese in China consume 22% of their daily calories from fat compared with 35% for North American Chinese. Chinese in China also spend more time in vigorous physical activity and fewer hours sitting than Chinese in North America. Overall, Chinese in China weigh less and are leaner than North American Chinese. These differences are significant when considering the implications of the findings by He et al. for Americans, because Chinese in China minimize 2 known risk factors for vascular disease and yet still have an increased risk of PAOD due to high rates of active and passive smoking.

Although diet and exercise are clearly important variables in the equation for development of vascular disease, smoking must be recognized as one of the most important modifiable causes of PAOD. Current smokers have 5 times the odds of developing PAOD compared with nonsmokers (OR 4.46, 95% CI 2.25 to 8.84). Compared with other recognized risk factors for vascular conditions, cigarette smoking exceeds hypertension (OR 1.75, 95% CI 0.97 to 3.15, P > 0.05), diabetes (OR 2.71, 95% CI 1.03 to 7.12), hyperlipidemia (OR 1.68, 95% CI 1.09 to 2.57), and depressed kidney function (OR 2.00, 95% CI 1.08 to 3.70) as a risk factor for PAOD. With the present study by He et al., passive smoking is added as an important risk factor for PAOD, with effects that are as large as the other established risk factors.

He et al. further show that Chinese nonsmoking women exposed to secondhand smoke are nearly 60% more likely to have an ischemic stroke than nonexposed, nonsmoking women. This study is similar to the 2005 analysis by Zhang et al. of stroke risk among nonsmoking Chinese women exposed to spouses who smoke. They showed a clear dose-response relationship between degree of exposure and stroke risk after controlling for potential confounding variables such as age, body mass index, medical history, and level of activity. He et al. similarly showed a clear dose-response relationship.

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