

## COMMENTARY

# Smoking wears away happiness: New concept, 'Smoking creates thunderclouds'

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Smoking causes five million deaths per year worldwide and is regarded as one of the major causes of premature death. If the present trends continue, in 2025, the death rate due to smoking is projected to be 10 million individuals per year.<sup>1</sup> Smoking has a considerable negative effect on cardiovascular disease (CVD) and all-cause mortality in Japan. Data from NIPPON DATA80 showed that the population-attributable risk fraction of CVD mortality due to smoking was 27.5% for men and 5.0% for women, whereas the population-attributable risk fraction of all-cause mortality was 15.0% for men and 4.0% for women.<sup>2</sup> In fact, the life expectancy of a heavy smoker is reported to be a little more than 7 years shorter than that of a nonsmoker. Smoking also reduces the expected lifetime in self-rated good health or without longstanding illness and increases the number of remaining life-years in poor health.<sup>3</sup> Furthermore, it is well known that a smoking habit increases personal medical expenditures compared with those of individuals without a smoking habit. According to a previous report,<sup>4</sup> an estimated annual average cost of \$193 billion per year was accrued from smoking-attributable productivity losses and smoking-related health care expenditures in the United States. In the Japanese male population, hypertensive individuals with a smoking habit were reported to incur higher medical expenditures than individuals with a smoking habit alone, hypertension alone, or neither.<sup>5</sup>

Over 50 years ago, lung cancer was reported to be caused by smoking, and since then, many diseases have been reported

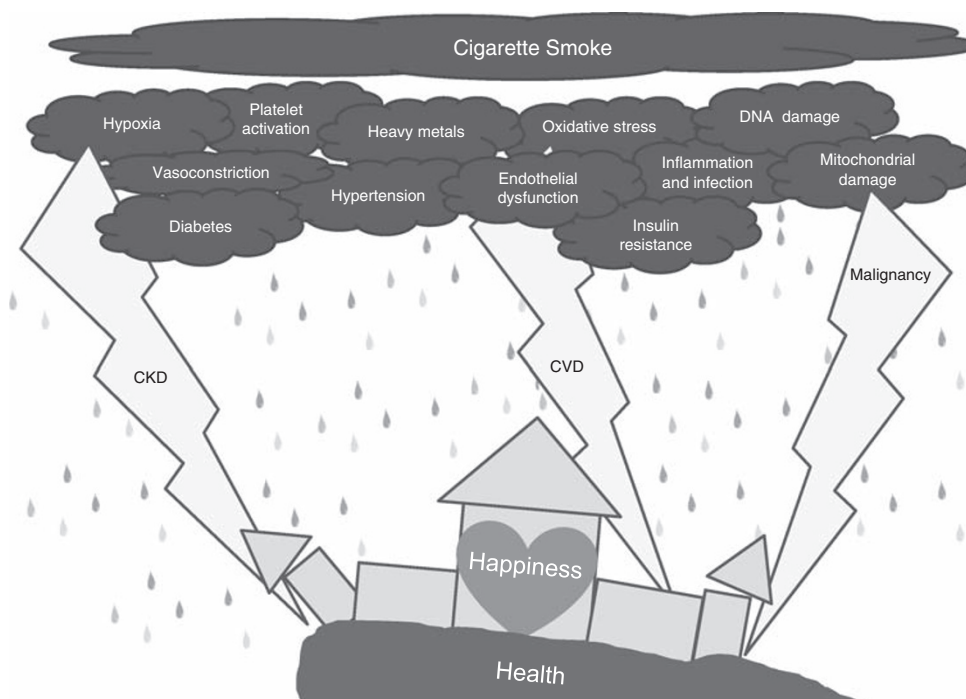
to be caused by smoking and involuntary exposure to cigarette smoke. In particular, chronic kidney disease is a growing worldwide problem that has increasingly been shown to be interwoven with CVD and smoking. A tight relationship between chronic kidney disease and smoking has become apparent. Smoking has emerged as an important modifiable renal risk factor on the basis of the following findings: (1) many studies have documented a clear association of smoking with renal damage in the general population, in patients with diabetes, and in hypertensive patients; (2) some studies have documented a beneficial effect of smoking cessation on renal outcomes; (3) several studies have documented smoking-related alterations that are proven to be harmful to the kidney; and (4) experimental evidence both *in vivo* and *in vitro* has proven that cigarette smoke affects mediator systems known to be players in the pathogenesis of progressive renal damage.<sup>6</sup>

Regarding the adverse effects of smoking on cardiovascular morbidity and mortality in patients with chronic kidney disease, many studies have provided sufficient evidence that smoking confers a cardiovascular risk similar to that in the general population.<sup>6</sup> In the present issue of *Hypertension Research*, Sauriasari *et al.* have performed an interesting study, in which they disclosed that smoking is a risk factor for renal function alteration in healthy smokers. The alteration is characterized by a high estimated glomerular filtration rate and a high urinary protein level associated with the increase of highly sensitive-C-reactive protein (hs-CRP).<sup>7</sup> This finding suggests that hs-CRP may, in part, mediate the renal function alteration process in smokers. However, these findings come from data from active smokers. Therefore, the effect of passive exposure to second-hand smoke

was not considered in this study. Recently, exposure to second-hand smoke has been shown to increase the risk of many diseases. In particular, it is capable of precipitating acute manifestations of CVD, and it may also have a negative impact on the outcome of patients with CVD. Despite the fact that the dose of smoke delivered to active smokers is 100 times or more than that of second-hand smoke delivered passively, the relative risk of coronary heart disease for active smokers is 1.78, compared with 1.31 for non-smokers exposed to second-hand smoke.<sup>8</sup> A relative risk of 1.31 is larger than one would expect on the basis of the risks associated with active smoking and the relative doses of cigarette smoke delivered to smokers and nonsmokers. Therefore, further study is needed to establish the impact of second-hand smoke on smoking-induced hyperfiltration in the kidney and high urinary protein levels in healthy populations and to determine the strength of the association between smoking and chronic kidney disease.

According to these findings, there is no merit to smoking (Figure 1). However, smokers cannot readily quit smoking because of nicotine dependence. Nicotine dependence is a life-threatening disorder, most of the complications of which can be avoided if it is overcome before the age of 40.<sup>9</sup> Now that there is strong evidence for the efficacy of several medications and the support of behavioral specialists, all clinicians should ensure that they understand these treatment options and regularly offer them to their patients. Enthusiastic and persistent efforts should be made to encourage individuals not to smoke to prevent and treat smoking-induced complications, especially before the development of serious diseases that wear away happiness and increase medical expenditures.

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**Figure 1** New concept, ‘Smoking creates thunderclouds.’ The castle is a symbol of happiness. Cigarette smoke creates thunderclouds. Thunder represents the major complications of cigarette smoking. The rain of the thunderclouds represents the gradually eroded health that was the foundation of happiness. Happiness is destroyed by the thunderclouds created by smoking. This figure demonstrates that smoking wears away happiness. Quit smoking to protect your happiness. CKD, chronic kidney disease; CVD, cardiovascular disease.

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