

Is Smokeless Tobacco Less Harmful Than Smoking?

Dumansız Tütün Sigaradan Daha mı Az Zararlı?

Cigarette smoking causes both acute and chronic cardiovascular changes. Acutely, smoking may cause myocardial ischemia by increasing oxygen demand or by reducing the blood supply. This latter change may result from smoking induced coronary artery spasm or platelet aggregation and increased adhesiveness. Furthermore, smoking can lower the threshold for dysrhythmias, especially ventricular fibrillation, leading to sudden death (1). Chronically, cigarette smoking can result in coronary atherosclerosis as a result of repetitive endothelial injury and increased low-density lipoprotein cholesterol or reduced high-density lipoprotein cholesterol.

Cigarette smoking has been the predominant form of tobacco use during the last century. In contrast, most of the use of tobacco prior to the 20th century was in the forms of chewing tobacco, snuff, pipes and cigars. The latter types of tobacco usage still may be encountered in various sites of world as a tradition. Likewise, various forms of nicotine is being used to investigate the actions of nicotine on the central nervous system in order to understand why people smoke. The possible deleterious effects of nicotine on cardiovascular system is the subject of question.

In this issue of The Anatolian Journal of Cardiology, Güven and coworkers (2) reported the effects of using a different kind of smokeless tobacco named as "Maraş Powder" on cardiac parameters. Their study is important to let us show that tobacco or nicotine consumption other than cigarette smoking, and even consumed for to quit smoking may give harm to cardiovascular system.

Epidemiological studies have conclusively shown that smokers are at greater risk for myocardial infarction, sudden death from coronary artery disease and recurrent heart attacks than are nonsmokers (1). The specific biologic mechanisms by which cigarette smoking increases the risk of cardiovascular disease have not been fully distinguished. The most possible mechanism is the increased permeability of

arterial vascular wall, allowing serum lipids to leak into the intima. Among these lipids, particularly the low-density-lipoprotein, are internalized by smooth muscle and connective tissue cells, are not metabolized enough, and thereby accumulate and develop into atheromatous plaque. The second mechanism is that cigarette smoking increases platelet aggregation possibly secondary to the release of catecholamines in response to nicotine. The third mechanism is the increased myocardial oxygen demand due to nicotine-mediated rise in blood pressure at a time when the oxygen-carrying capacity of the blood is diminished by carbon monoxide binding to hemoglobin.

The hazardous effect of nicotine largely depends on its absorption and blood concentration. Dose-response relations have been observed for smoking and coronary artery disease; the number of cigarettes, the age of smoking onset, and the number of years smoked are all predictive of coronary artery disease mortality. Tobacco smoke produced by pipes and cigars is more alkaline than that produced by cigarettes, making it less likely that pipe and cigar smokers will inhale the smoke into the lungs. The lower pH of cigarette smoke decreases the absorption of nicotine across the oral mucosa. Chewing and rectal application of tobacco products rely on gastrointestinal absorption of nicotine. Swallowed nicotine is absorbed by the small bowel and via portal venous circulation undergoes presystemic metabolism by the liver so that its bioavailability is relatively low (3). As in the case of "Maraş Powder", buccal and rectal routes of use are more efficient for nicotine dosing because they evade the liver first-pass effect. Nicotine continues to be absorbed for more than 30 minutes after tobacco is removed from the mouth, in contrast absorption is completed by the end of smoking cigarettes.

As the authors indicated, the most important limitation of this study is the lack of nicotine blood concentration measurement. However, the results

of the study, especially the similarities in the cholesterol levels and changes in cardiac parameters suggest strongly that "Maraş Powder" is at least as harmful as cigarette smoking. Their findings warrant further studies on the health effects of "Maraş Powder" on cardiac function and also the other organ systems. Their study also indicate the need to inform "Maraş Powder" users about its harmful effects.

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