Adherence to Varenicline and Abstinence Rates for Quitting Smoking in a Private Health Promotion Center-Based Smoking Cessation Clinic

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Introduction

Smoking causes cancer, cardiovascular diseases, and pulmonary diseases. It is the most important causative factor of the aforementioned diseases and can be prevented. In advanced countries, smoking has been known to account for 35% of the total death caused by cancers and for 90% of death caused by lung cancer1. In particular, the risk of lung cancer has been known to increase in proportion to the duration and amount of smoking2. According to 2008 Korea National Health and Nutrition Survey, the smoking rate of Koreans was reported to be 47.7%, 7.4%, and 27.7% for men, women, and both men and women, respectively, which is relatively higher than that of US (smoking rate of adult males 19%, smoking rate of adult females 15%, total smoking rate 17%) or France (smoking rate of adult males 28%, smoking rate of adult females 19%, total smoking rate 23%)3. The reason for high smoking rate despite the well-known harmfulness of smoking is attributable to addiction caused by nicotine contained in cigarette. Nicotine acts on the compensation circuit of the brain, causing addiction and resistance by physical and psychological dependence. Thus, it is difficult to initiate and maintain smoking cessation for oneself45.
Thus, it is necessary to perceive smoking as a disease which should be managed and treated such as drug addiction or chronic diseases rather than as a personal habit or hobby, or to rely on personal decision or will to quit smoking.

Varenicline, which is a smoking cessation aid that has been developed for smoking cessation, is a partial agonist of $\alpha_4\beta_2$ nicotine receptor. Varenicline stimulates nicotine receptors, making the receptors release a small amount of dopamine, thereby reducing smoking desire and withdrawal symptoms. In addition, as varenicline inhibits the binding of nicotine to nicotine receptors, dopamine releasing effect caused by nicotine is suppressed despite smoking, which results in no satisfaction by smoking. Varenicline is recommended to be treated for minimum 12 weeks. A randomized study, which was conducted during 12-week non-treatment period after 12-week varenicline treatment, reported that the success rate of 6-month smoking cessation was 46.8%, which was significantly better than 21.8% observed in the placebo group. However, smoking cessation aids such as varenicline are not covered by medical insurance in Korea. Thus, smokers are financially burdened, and the drug compliance of smokers is low as shown in a situation where smokers would rather quit smoking by themselves than believe the efficacy of drug even if smoking cessation aids are prescribed. Thus, in many cases, varenicline is not treated for 12 weeks. Accordingly, this study was conducted on smokers who received varenicline in the smoking cessation clinic of a general hospital health care center to analyze the characteristics of the subjects and to investigate the effect of varenicline treatment period on the success rate of 6-month smoking cessation.

Materials and Methods

This study was conducted on 87 subjects who received varenicline of 105 smokers who visited the smoking cessation clinic of Samsung Medical Center from September, 2007 to December, 2009. Among the 87 subjects, 9 subjects who failed follow-up 6 months after study initiation were excluded. At the first visit, the subjects were asked to complete a self-reported questionnaire for items such as educational background, income level, stress severity at home and at a working place, presence of underlying diseases including psychiatric diseases, number of drinking, motives for smoking cessation, age of smoking commencement, smoking duration, mean daily smoking amount, reasons for smoking, previous history of smoking cessation and methods, reasons for the failure of smoking cessation, reasons for current smoking cessation trial, presence of smokers in the family, and nicotine dependence, followed by an interview with a specialist. The subjects were educated to know that smoking is a disease caused by nicotine addiction via multimedia to provide smoking cessation motivation. Exhaled CO concentration was measured using a device measuring exhaled CO concentration, and a consultation about determining anticipated smoking cessation date, writing smoking cessation diary, measures to withdrawal symptoms, and smoking cessation methods was conducted on the subjects. The subjects were asked to visit the clinic every 2 weeks for the first month after their enrollment to the smoking cessation clinic, and thereafter once a month to undergo measurements of physical factors and exhaled CO concentration, and medical and nutritional consultations. They were asked to receive varenicline at a dose of 0.5 mg from day 1 to day 3 once a day, and at a dose of 0.5 mg from day 4 to day 7 twice a day, and at a dose of 1 mg starting from the second week twice a day according to the recommendation of drug use. Non-smoker was defined as a subject who orally reported that he/she did not smoke at all and who showed that the result of measuring exhaled CO level was within the normal range. Smoking cessation success was defined as a subject who maintained smoking cessation for 6 months or longer. This study was conducted after approved by the clinical study center of Samsung Medical Center.