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Did free drugs for smoking cessation effect treatment success?

Sertaç Arslan[1]✉

Background and Aim: **Drugs used for smoking cessation had not been paid by health insurance system in our country; however, these drugs started to be given freely by community health services in case an authorized doctor prescribe them. We evaluate the treatment success after smoking cessation drugs become free.** ***Methods:*** **Eighty-five patients (48 males, 37 females) admitted to smoking cessation clinic at a university in Çorum between July 1st 2015 – December 31st 2015 were evaluated retrospectively.** ***Results:*** **Mean age of patients was 37.9 years. Most common symptoms were exercise dyspnea (71.8%) and productive cough (61.2%). Sixty-six patients were prescribed Vareniclin (77.6%) and bupropion prescribed 19 patients (22.4%). At the end of 3 months therapy 26 patients (30.6%) quit smoking. Percentage of smoking cessation was 33.3% for males and 27% for females; moreover, 33.3% for varenicline and 21.1% for bupropion group (p=0.309). Mean duration of smoking was 22.1 years for quitters and 16.5 years for non-quitters (p=0.068). Fagerstrom smoking scale was adapted to the study as low (0-4), moderate (5-7), high (8-10) nicotine dependence. Percentage of quitters was 20.8%, 30.4% and 36.8% for low, moderate and high dependence patients respectively (p=0.411). There was no significant difference between varenicline and bupropion for treatment success according to nicotine dependence levels. For the patients who quit smoking, pre-treatment and post-treatment spirometry tests were compared. Mean PEF% were increased from 71.6% to 77.7% (p=0.062), mean MEF75% were increased from 75.2% to 81.2% (p=0.075).** ***Conclusion:*** **Free drugs for smoking cessation treatment may decrease treatment success.**

INTRODUCTION

Although the success of different methods in smoking cessation is different, their aim is to overcome the dependence of the person on smoking. Cessation of smoking causes symptoms of nicotine withdrawal (1). Although the success of different methods in smoking cessation is different, their aim is to overcome the dependence of the person on smoking. To evaluate the psychological and behavioral dimensions of cigarette smoking and to apply cognitive and behavioral therapies to these patients increase treatment success (2). It is possible to have high success rates when pharmacological treatments are added to these kind of support therapies (3, 20, 21). Nowadays, there are 3 groups of primary choice medication used for the aim of smoking cessation. These are nicotine replacement therapies, bupropion and vareniclin (4, 5). In our country, these drugs are not covered by insurance. Whether or not the drugs are paid by insurance may affect the success of smoking cessation treatment. These drugs started to be given freely by community health services in case an authorized doctor prescribe them. We aimed to evaluate the treatment success after smoking cessation drugs become free.

MATERIALS AND METHODS

The hospital records of 85 patients who applied to Çorum Hitit University Smoking Cessation Clinic between July 1st 2015 - December 31st 2015 and had pharmacological treatment to quit smoking were evaluated retrospectively. All of these patients started the smoking cessation treatment after the medication had been free of charge with the doctor's prescription. Demographic data, smoking habits, Fagerström Test values, symptoms, whether they quit smoking during follow-up, previous smoking cessation attempts, history of smoking cessation drug use and pre- and post-treatment spirometry test findings were evaluated. Data were analyzed with SPSS (Version 22.0, SPSS Inc., Chicago, IL, USA; license, University of Hitit, Turkey). Descriptive statistics with a normal distribution are presented as mean ± standard deviation and nominal variables are presented as number of cases and percentage (%). ChiSquare test was used to evaluate the significance between the mean values.

RESULTS

Eighty five patients were included in the study. Forty eight (56.5%) of the patients were male and 37 (43.5%) were female. The mean age was 37.9 years (female 36.3 years, male 39.2 years). The most common symptoms were exercise dyspnea (n = 61, 71.8%) and productive cough (61.2%). Sixty-six patients were treated with varenicline (77.6%) and 19 patients were treated with bupropion (22.4%). Twenty six patients (30.6%) quit smoking after three months of treatment. Smoking cessation rate was 33.3% in men and 27% in women (p=0.350). The average duration of smoking was 22.1 years for those who quit smoking and 16.5 years for those who did not quit smoking (p=0.068). In the

[1]Hitit University Medical Faculty Department of Pulmonary Medicine, Corum, Turkey

✉*Corresponding author:*
Dr. Sertaç Arslan, MD, Assist. Prof.; Address: Hitit Universitesi Tip Fakultesi Egitim ve Arastirma Hastanesi Gogus Hastaliklari Polikliniği, 19100, Corum - Turkey), E-mail: drsarslan@gmail.com; Phone: + 90 532 366 6955; fax: +90 364 219 3030

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Table 1 Smoking cessation according to Fagerstrom Smoking Scale

		Quit Smoking?			
		Yes	**No**	Total	p
Low dependence	n	5	19	24	0.411
	%	20,8%	79,2%	100,0%	
Moderate dependence	n	7	16	23	
	%	30,4%	69,6%	100,0%	
High dependence	n	14	24	38	
	%	36,8%	63,2%	100,0%	
Total	n	26	59	85	
	%	30,6%	69,4%	100,0%	

*low (0-4), moderate (5-7), high (8-10) nicotine dependence

Table 2 The level of dependence at former medication used non-quitters

		Formerly used medication					
		Former varenicline	**Former bupropione**	**Former nicotin**	**No drug before**	**Total**	**p**
Low dependence	n	2	3	0	13	18	0.183
	%	11,1%	16,7%	0,0%	72,2%	100,0%	
Moderate dependence	n	5	1	1	13	20	
	%	25,0%	5,0%	5,0%	65,0%	100,0%	
High dependence	n	8	8	0	13	29	
	%	27,6%	27,6%	0,0%	44,8%	100,0%	
Total	n	15	12	1	39	67	
	%	22,4%	17,9%	1,5%	58,2%	100,0%	

Table 3 Medication choice according to formerly used treatment

		Formerly used medication					
		Former varenicline	**Former bupropion**	**Former nicotine**	**No drug before**	**Total**	**p**
Varenicline	n	14	11	1	24	50	**0.037***
	%	28,0%	22,0%	2,0%	48,0%	100,0%	
Bupropion	n	1	1	0	15	17	
	%	5,9%	5,9%	0,0%	88,2%	100,0%	
Total	n	15	12	1	39	67	
	%	22,4%	17,9%	1,5%	58,2%	100,0%	

Table 4 Pre-treatment and post-treatment spirometry findings

	Pre	**Post**	**p**
FVC (% predicted)	86,9	87,1	0,886
FEV1 (% predicted)	88,1	89,0	0,385
FEV1/FVC	83,9	84,9	0,255
PEF (% predicted)	75,2	81,2	0,075
MEF 75 (% predicted)	80,7	85,8	0,154
MEF 25 (% predicted)	83,1	84,1	0,701
MEF 25-75 (% predicted)	81,0	82,9	0,425

varenicline group, the smoking cessation rate was 33.3%, while it was 21.1% in the bupropion group (p = 0.309).

Fagerstrom smoking scale was adapted to the study as low (0-4), moderate (5-7), high (8-10) nicotine dependence. The smoking cessation rate was 20.8%,30.4%,36.8% for low, moderate and high dependency levels, respectively (p = 0.411) (Table 1). There was no difference in smoking cessation between varenicline and bupropion when evaluated acoording to dependency level. While the level of dependence was similar in patients who had previously tried to quit smoking without drug use and had failed, higher dependence level was observed in patients who had used varenicline or bupropion in the past (p=0.183) (Table 2). It was found that Patients who were prescribed vareniclin had predominantly used varenicline and bupropion in previous cessation attempts, and patients who were prescribed bupropion had tried to quit smoking without medication in previous attempts. (p=0.037), (Table 3). In the Vareniclin group, 19 of the 50 patients who had previously attempted to quit but could not quit smoking, succeeded to stop smoking. In their previous smoking cessation trials, of these 19 people,

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6 (31.6%) had received vareniclin, 6 (31.6%) had bupropion, 1 (5.3%) had nicotine replacement and 6 (31.6%) tried to quit without any drug (p = 0.189). Pre-treatment and post-treatment spirometry tests of the patients who quit smoking were compared .Mean predicted peak expiratory flow (PEF %) increased from 75.2% to 81.2% (p = 0.075) (Table 4).

DISCUSSION

Nicotine replacement therapy (NRT), bupropion and varenicline are first line pharmacologic agents for smoking cessation (6-9). In our study, smoking cessation rates among patients who completed 3 months of treatment were 33.3% with vareniclin and 21.1% with bupropion. In a study conducted during the years that smoking cessation medications were paid, smoking cessation rates were found to be 50.7% and 39.3% with varenicline and bupropion respectively (10). In drug users for more than 30 days, smoking cessation rates were 71.2% and 67.9% with varenicline and bupropion respectively (10). According to our findings, the success of smoking cessation treatment was lower in the period when smoking cessation treatments were free. In our study, patients who were prescribed vareniclin were predominantly vareniclin and bupropion patients in previous quit attempts. Patients who were prescribed bupropion, attempted to quit smoking without medication in previous attempts (p=0.037). In the previous smoking cessation trials, the patients who could not quit smoking with medication were preferred to be prescribed varenicline mostly if they were to be prescribed medication at this time. Bupropion appears to be somewhat less effective than combination NRT or varenicline according to cochrane analysis (11). It can be considered that, the lower treatment success of bupropion treatment in literature effects treatment preferences. The efficacy of each first-line therapy for smoking cessation has been proven, however, several studies show differences in their relative efficacy (12-19). Each medication was effective, but varenicline produced higher quit rates than bupropion or the nicotine patch (18). Also in our study, although there was no significant difference between varenicline and bupropion treatment successes, smoking cessation rate with varenicline was higher than the bupropion. After smoking cessation therapy at the end of third month, mean PEF% values found increased at the quitters (p=0,075). Our study has some limitations. The small sample size is one of the limitations. Another limitation is the retrospective manner of our study.

CONCLUSİON

As a part of smoking cessation therapy, pharmacotherapy is effective; however, free medications for smoking cessation treatment may decrease treatment success. Further studies required with bigger sample size for accurate results.

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Author's contributions
Sertaç Arslan: study conception and design, acquisition of data, analysis and interpretation of data, drafting of manuscript, critical revision

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Conflict of Interests

There is no any funding or any conflict of interests for the study. Author declare that he contribute in every stage of the study and have no any conflicts.

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