

Smoking cessation: aspects of prevention and therapy. The activity of the Smoking Cessation Center of Parma - Italy

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Abstract. The World Health Organization states that only a reduction in tobacco use would lower the number of deaths from cancer. It is possible to decrease the number of deaths by means of prevention and/or smoking cessation. Smoking cessation therapy includes both psychological support and pharmacological treatment: Nicotine Replacement Therapy (NRT), Bupropion Sustained-Release, and Varenicline. The aim of the Smoking Cessation Center of Parma is to provide instruments, methodologies and individual therapies for achieving abstinence or a decrease in tobacco use. The program of the Smoking Cessation Center consists in eight meetings. During the first meeting the smoker undergoes a medical check up, and smoking history, exhaled single breath CO and dependence of nicotine are recorded and a personal therapy is planned. During each follow-up visit (after 15 days and then at 1,2,3,6,9 and 12-month intervals) the compliance of the patient to the treatment and abstinence symptoms are assessed. Since 2000, we achieved tobacco abstinence in 28% of patients. Combined treatment (Bupropion/ NRT) provided a higher percentage of success (39,9%). (www.actabiomedica.it)

Key words: Smoking Cessation Center, psychological support and pharmacological treatment

Introduction

The World Health Organization (WHO) considers smoking as “the single biggest preventable cause of death” in the contemporary society; the WHO also states that no other measure would lower so enormously the number of deaths from cancer as a reduction in tobacco use (1).

Tabagism is a toxic syndrome caused by an excessive and continued use of tobacco, and it is characterized by a strong addiction. It also causes both mental and behavioural symptoms (2, 3).

Smoking is the major risk factor for chronic obstructive pulmonary disease (COPD), pulmonary emphysema, cardiovascular disease and tumours, involving mainly the respiratory system (3, 4).

There are two possible ways to decrease the number of deaths from tobacco smoking by means of prevention and/or smoking cessation (5). The benefits of prevention are expected in a ten-year period after a prevention campaign has started; on the other hand, the benefits of cessation are immediate.

Prevention activity is structured as follows: spreading awareness about smoking-related damages; enforcing laws which prohibit smoking in public places and fine people who disobey the prohibition; prohibiting any form of publicity of tobacco products; increasing the price of tobacco and related taxes.

In Italy the real turning-point in the war against smoking was the issuing of a law called the “Sirchia Act”. This law is effective since January 10, 2005 and prohibits smoking in public places unless they are

equipped with appropriate air-conditioning systems (6). According to the latest data from "Istituto Superiore Sanità" (ISS), a 15% decrease in the number of smokers and an 8% decrease in cigarette sales after the enacting of the aforementioned Act occurred (7).

The aim of primary prevention is to protect the health of non smokers and to prevent young people from becoming addicted to tobacco. This could be achieved by intervening directly in schools; in fact, statistics say that 90 % of smokers begin smoking at 18 years of age (8).

The activities of secondary prevention focus on asymptomatic or lightly symptomatic smokers and on people who are prone to respiratory diseases. General physicians and pulmonary specialists play a crucial role in secondary prevention: the former by informing the patient about tobacco-related risks and the latter by treating him/her with appropriate therapy when necessary (8).

Third prevention aims at keeping the harmful effects of tobacco under control, avoiding or delaying chronic disease, invalidity and illness worsening. This is a useful way to reduce mortality and healthcare costs. Clinically, third prevention is the most important activity but, at the same time, it is the least profitable when the ratio costs/ benefits is considered (8).

Besides prevention and legislative regulation, particular attention is paid to people who understand smoke-related risks and are willing to stop smoking. Smoking cessation therapy includes both psychological support to a single patient or to a group (short therapy or counselling) and pharmacological treatment (5). Short therapy, referred to as "5 A therapy" (9), takes only a few minutes and can be given during every routine medical visit. This treatment can be provided (and should be provided) by all health operators involved in first- and second-level assistance, especially general physicians.

The short therapy includes five simple steps:

- ASK the patient if he/she smokes;
- ADVISE the patient about smoking cessation
- ASSESS his/her motivation
- ASSIST the patient during therapy
- ARRANGE follow -up in time.

On the other hand, the intensive intervention is carried out by skilled staff in appropriate structures-

"Smoking Cessation Centers"- and it requires a series of individual meetings; each meeting usually lasts more than 10 minutes (individual counselling) (3, 10).

Smoking habit depends on addiction caused by substances contained in tobacco and released during its combustion. For this reason, in smoking cessation therapy pharmacological support is sometimes useful against tobacco addiction.

First selection drugs, approved and indicated by the most important Guidelines, are the Nicotine Replacement Therapy (NRT), Bupropion Sustained-Release (SR), and recently Varenicline (3,9,10).

In *Nicotine Replacement Therapy* (NRT) the drugs used replace the nicotine released during smoking, avoiding the other substances of tobacco combustion, such as CO, benzopyrenes and other dangerous substances.

Bupropione is an oral antidepressive agent that belongs to the chemical class of aminoketones. It mainly acts as a catecholamine (noradrenaline and dopamine) neuronal reuptake inhibitor and partly as a serotonin inhibitor. Bupropione is effective in depression and decreases the stimulus to smoke, although its mechanism of action is not clear (11).

Varenicline is a partial agonist of the nicotinic acetylcholine receptor - $\alpha 4\alpha 2$ - which is considered the main mediator which causes addiction to nicotine. Varenicline stimulates a lower, slower but more lasting release of dopamine, compared to inhaled nicotine. It also reduces the bond between nicotine and its receptor in a competitive way. Imitating the effects of nicotine, it produces a lower gratification and reduces the desire to smoke when the patient is abstinent (12). Previous reports (13-16) have demonstrated the efficacy of varenicline on smoking cessation.

In Emilia Romagna, thanks to the Tabagism Regional Project (1999) Smoking Cessation Centres became part of the Units of Respiratory Diseases and Toxic dependence Service (Ser. T).

Methods

The Parma Smoking Cessation Center has been working since December 2000 (II level Outpatient Clinic of the Department of Clinical Science, Unit of

Pulmonary Function, University of Parma, Italy), and it offers the professional help of pneumologists, specialists in pathological dependence and professional nurses (17). The aim of the center is to provide instruments, methodologies and individual therapies for achieving an abstinence condition or, at least, a decrease in tobacco use. Moreover, the outpatient clinic carries out a prevention activity which is not only intended for non smokers but it is also aimed at developing a non-smoking culture, especially in schools and in work places.

The program of the Smoking Cessation Center consists in eight meetings. During the first meeting the smoker undergoes a medical check up, he/she is asked about his/her smoking habits and the exhaled single breath CO (Micro II Smokerlyzer) is measured. This test is internationally acknowledged as the best method to verify the effective smoking cessation (3). The level of dependence of nicotine and the real intention to stop smoking can be evaluated by means of the Fagerström Test and other psychological tests (18, 19). If risk factors are found, further diagnostic investigations [chest X-rays, Computerized Tomography (TC), pulmonary function tests, electrocardiogram and echocardiography] are prescribed or suggested to the patient and a personal therapy is planned. Follow-up visits are fixed after 15 days and then at 1,2,3,6,9 and 12-month intervals after the first meeting. During each follow-up visit the compliance of the patient to the treatment is assessed, as well as the possible collateral effects or abstinence symptoms are recorded. The exhaled single-breath CO is also measured. Eventually therapy is followed by a motivational reinforcement. After the treatment, the ex-smoker is considered clinically recovered and he/she is discharged from the outpatient clinic.

Results

Since December 2007, a total of 860 patients, 500 men (58%) and 360 women (42%) referred to the Center. Collected data show that the average age of the patients (median \pm SD) who underwent treatment was of 48 (\pm 11,9) years and the average number of smoked cigarettes per day was 24. The average degree of addiction to tobacco (median \pm SD), evaluated through the Fagerström Test, is higher than 6 (\pm 1,9): this means that the tested subjects showed a strong nicotine dependence. In fact, the average value of exhaled CO, checked during the first visit, was 22.2 ppm. In subsequent visits this value returned to normal parameters (2.8 ppm and 2,5 ppm after 6 and 12 months respectively), which indicates a condition of abstinence in the treated subjects.

Eighty-five per cent (731) of the smokers completed the one year follow up (91% of men and 92% of women), whereas only 9% abandoned the treatment during the evaluation period (Table 1).

Ninety per cent (740) of the patients underwent individual therapy combined with Bupropion-based treatment, Nicotine Replacement Therapy and/or Varenicline; on the other hand 13% (120) were assisted with only motivational support (counselling). After one year of therapy, the percentage of abstainers was 28%.

By analysing data in detail (Table 2), it can be verified that the percentage of success is of 39.6% in patients treated with Bupropion/NRT combined therapy, 28.3% in subjects treated with Bupropion and 2.8% in patients who underwent a Nicotine Replacement Therapy. In subjects who did not receive a pharmacological therapy but were only supported with a

Table 1. The activity of the Smoking Cessation Center of Parma from 2000 to 2007. Percentage of smokers who completed the follow-up period successfully or failed the treatment

Follow-up completed after 12 months	731/860 (85%)	Men 427/468 (91%) Women 304/33 (92%)
Abstainers after 12 months	205/731 (28%)	Men 137/427 (32%) Women 68/304 (22%)
Treatment abandoned	67/731 (9%)	Men 41/427 (10%) Women 26/304 (9%)
Still smoking	526/731 (72 %)	MEN 290/427 (68%) Women 236/304 (78%)

Table 2. Effectiveness of smoking cessation therapy according to treatment (%)

	2 nd month	3 rd month	6 th month	9 th month	12 th month
Bupropion and NRT	66	57,8	45,5	42,7	39,9
Counselling	52,9	50	40,2	35	29
Bupropion	51,3	44,3	37,1	33,2	28,3
NRT	44,1	39,7	31,4	27,4	24,8
Varenicline	63	61,5			

motivational reinforcement, the percentage of success is of 29%.

As far as tobacco dependence is concerned, patients who underwent Bupropion/NRT combined therapy showed a strong smoke addiction (7) and those who were not treated with drugs demonstrated a medium degree of dependence (4, 8). In time, the percentage of abstainers lowered homogeneously, independently from the treatment. The most critical period is the sixth month after therapy ends: in this period it is important to sustain the patient motivation and the supporting activities of the Center are fundamental. After this crucial period, the probability to restart smoking decreases.

Varenicline was introduced in the Smoking Cessation Center of Parma only in June 2007, hence the available data refer to 3 months follow-up. The abstainers resulted to be 61.5%, which is a higher percentage than that of the smokers treated with Bupropion (44.3%), nicotine substitutes (39.7%) or a Bupropion/NRT combined therapy (57.8 %) (Table 2).

Conclusions

Our data agree with clinical practice Guidelines on treatment for tobacco use and smoke dependence both in terms of abstinence and therapeutic failure (3, 9, 10, 13).

The usefulness of the Smoking Cessation Center as a landmark for those who decide to quit smoking is confirmed by the percentage of patients who contact the outpatient clinic, even after the therapy has ended (85%). Smokers probably consider extremely important the psychological and motivational support of the medical staff, especially the pulmonary specialist, even though he/she did not cope with a protracted abstinence condition.

The probability of a relapse rises when pharmacological treatment is completed; to avoid this fact both patient's will and Center's support are necessary.

Indeed, the effectiveness of the pharmacological treatment is higher when using drugs with different mechanisms of action. Smoking cessation treatment is not standardised, thus, the choice of therapy depends on the single physician.

It has to be underlined that the results of this study were obtained by analysing anamnestic and clinical data and patients did not participate to any specific therapeutic protocol. Moreover, the results are related to smokers who were strongly motivated to quit smoking and with no pathologies contra-indicating the treatment.

In conclusion, it can be said that the data confirm what is now unanimously accepted, namely that, thanks to the results achieved, supporting treatment in tobacco smoking cessation deserves a respectable clinical dignity.

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