Prevalence of tobacco use among diabetic patients

Prevalencia del hábito tabáquico en pacientes diabéticos

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Abstract

Introduction: Nicotinism is a cardiovascular risk factor that increases the risk of both macrovascular as well as microvascular complications in the diabetic population. Material and method: A total of 440 patients were studied and a survey was used to assess their tobacco use, its relationship to age and gender, the degree of nicotine dependence, the level of motivation to stop smoking and the phase of tobacco cessation. Results: the rate of nicotinism in the diabetic population was 17%, and it was highest among people with diabetes under the age of 50 (47.6%). The women had a higher rate of prevalence of nicotinism under the age of 40 (45.4%), while for men the rate was highest between the ages of 40 and 50 (57.9%). Conclusions: Although the nicotine dependence is minor, the desire among diabetic patients to stop smoking is very limited. Therefore, health professionals involved in the treatment of diabetic patients must pursue an active policy to control nicotinism with the same determination with which other cardiovascular risk factors are controlled in this population.

Keywords: diabetes mellitus, nicotinism, Fagerström test, Richmond test, cardiovascular risk.

Introduction

Smoking increases the cardiovascular risk both in the diabetic population and in the non-diabetic.1 However, considering that the persons with diabetes mellitus (DM) have already an increased cardiovascular risk due to the disease,2,3 increasing it more by the consumption of tobacco constitutes a dangerous behavior. The complications risk associated to the consumption of tobacco added to the diabetes is 4 times higher than smoking or having diabetes when it is considered separately.4

Besides this increase of cardiovascular risk, there are works that refer that some of the products that are inhaled when smoking, as nicotine, might determine a reduction of the insulin sensitivity,5 therefore the consumption of tobacco might be related both to an increase of the DM risk in the smoking population and to an increase of the micro/macro vascular complications in this population.6,7

Thus, tobacco and diabetes constitute a “dangerous company”, which is why the measures addressed to reduce the consumption of tobacco are a comprehensive part of
the treatment of the patients with DM. Notwithstanding, there are only a few programs to stop smoking that have been focused on this risk group.

The objective of this work is to register the tobacco habit of the diabetic population assisted in a specialized area consultation, and set out the withdrawal of the tobacco consumption as control objective for the cardiovascular risk factors in the diabetic patient. In order to make out this study, we count with the collaboration of the anti-tobacco unit of our center.

Material and method
440 patients have been studied who attended to the endocrinology outpatient consultation during the period comprised between May and December 2007. The following aspects have been assessed: age, type of DM, years since diagnosis, metabolic control, associated cardiovascular risk factors (central distribution obesity, hypertension and hyperlipemia), complications (micro/macro vascular), sleep apnea and chronic obstructive pulmonary disease. The data related to the patient’s tobacco habit have also been collected: if the patient was a smoker, the daily consumption of cigarettes, the level of physical dependence (simplified Fagerström test, a validated survey described in Annex 1) and the level of motivation to stop smoking (Richmond test, a validated survey described in Annex 1); if the patient was not a smoker, since when and the level of tobacco consumption previous to stop smoking.

The smoker patients were informed about the danger that entails the consumption of tobacco for them, and were invited to stop smoking, assessing the abandonment phase at that moment. If the patient had a firm purpose (preparation phase or action phase) and a high motivation (Richmond test equal or higher than 8), the patient was referred to the anti-tobacco unit of the center.

This is a descriptive study in which the absolute and relative frequencies are determined by the qualitative variables and the arithmetic mean, the mean and the standard deviation for the quantitative variables.

Results
From the 440 studied patients, 44 were diagnosed with T1D (21 women and 23 men) and 396 had T2D (231 women and 165 men). The gestational diabetes cases were excluded. The characteristics of the study diabetic population are depicted in table 1.

According to the distribution per genders, 252 were women and 188 men; 75 were smokers (17%) and 365 were not smokers (83.0%) and from these, 163 (44.6%) were ex-smokers.

According to the distribution of smokers per ages, 26 (34.7%) were over 61 years old, 18 (24%) were between 51 and 60 years old, 20 (26.7%) between 41 and 50, and only 11 (14.7%) were under 40 years old. The details are described in table 2.

Table 3 depicts the distribution per ages corresponding to the ex-smokers group.

Considering the age of the patients with DM, in the group under 40 years old, 44% are smokers and 28% are ex-smokers; in the group of 41-50 years old, 44.4% smoke and 28.9% are ex-smokers; in the group of 51-60 years old, 22.2% smoke and 45.7% are ex-smokers, and in the group over 60 years old, 9% are smokers and 36.3% are ex-smokers.
Considering the distribution per genders, 45.4% of the women smoke and 42.8% of men under 40 years old; in the group of 41-50 years old, 34.6% of the women smoke and 57.9% of the men; in the group 51-60 years old, 21.4% of the women smoke and 23.1% of the men, and in the group over 60 years old, 6.4% of the women smoke and 12.9% of the men. Table 4 depicts this analysis.

Taking into account the type of diabetes, the rate of smokers in patients with T1D is of 45.5%, while in the patients with T2D it is of 13.9%.

Among the smokers, 69 of them consume cigarettes and the other 6 consume cigars. The mean consumption of cigarettes is 24 per day and 5 cigars during a week.

In relation to the tobacco abandonment phase, the 33.3% of the diabetic subjects (25 patients) are under the pre-contemplation phase (they do not have the intention to stop smoking for the next 6 months), 28% (21 patients) under contemplation phase (are thinking of stopping smoking in the next 6 months), 24% (18 patients) under preparation phase (shall try to stop smoking during the next month) and 14.7% (11 patients) under the action phase (withdrawal of less than 6 months).

As regards to the nicotine dependence measured by the Fagerström test, a mean ± standard deviation (SD) of 3.5 ± 2.3 was obtained and in the motivation to stop smoking measured by the Richmond test the mean ± SD was of 5.5 ± 2.5.

**Discussion**

The tobacco constitutes an important modifiable cardiovascular risk factor that increases the micro/macrovascular risk in the diabetic population.4 The withdrawal of the tobacco consumption shall constitute a target in the treatment of this population, as the different treatment guidelines include for the diabetic patients.8,9

In this work, the tobacco habit prevalence between our diabetic population is of 17%, similar to the one referred by other authors,10,11 and lower to the tobacco habit rate in the Spanish population according to the last health national survey, placed at 27%.12

Considering the distribution per ages, we find that, this is in relation with the distribution of the diabetes in our population, whose mean age is of approximately 65 years old though the group with higher number of smokers is the one of >50 years old. However, we find the higher rate of tobacco habit in the youngest diabetic subjects; thus, 44.3% smoke among those under 50 years old and 11.9% of the diabetic population among those over such age; similar percentages than those of the general population and of other diabetic series, where the youngsters have higher rates of tobacco habit.10-12

Besides the smokers rate, the exposure to tobacco in diabetic patients in some stage of their life is very high in our population; thus, in the non-smoker population the 44.4% has been in some stage of their life, and this percentage is higher than 80% in men.
It seems that the higher tobacco habit takes place in subjects aged 50 and from that moment the rate of ex-smokers increases, what makes us think that from this age the diabetic patient starts to stop smoking.

We can think that the diabetes diagnosis is a motivation to stop smoking in our population and, therefore, the patients stop smoking as from 50 years old. However, this is unlikely, as we observe that the nicotinism rate in patients with T1D is much higher than in patients with T2D and this is in relation with the mean lower age of the first ones; in other words, the diabetic subjects, as the general population, smoke at early ages.

Considering the gender, a 50% of the women less than 40 years old smoke, while the men smoke more frequently between 40 and 50 years, with a rate of 57.9%. This distribution per gender is also similar than the one reflected in the National Health Survey of 2006, issued by the National Institute of Statistics.12

Transversal and prospective studies show a higher risk of macro/micro vascular disease in the diabetic population, with an increase of the early mortality in the smoker diabetic population,3,4,13 moreover, there are evidences that the nicotine reduces the insulin sensitivity and increases the diabetes risk.4,5 In spite of all these data, the number of diabetic persons is high, and in some series it does not differ from the non diabetic population.14 In our series, the percentage of smokers is lower than the one of the National Health Survey of 2006, but suggests a percentage of 17% with an increase in the younger groups and in women. Moreover, the exposition to the tobacco consumption is very high, with more than 44% of ex-smokers, with the repercussion that it might have on the possible diabetic complications.

The abandonment of tobacco habit implies an evident reduction in the risk of vascular events, with a reduction of the risk in 36% of all the causes of mortality related with diabetes.15 In spite of these evidences, a few strategies performed in order to reduce the consumption of tobacco have been focused in this population and notwithstanding, the tests indicate that the active planning addressed specifically to the diabetic patients resulted in a reduction of the smoker population of this group.10

The nicotinism is a cardiovascular risk factor that has to be controlled in the diabetic population; therefore the record on the tobacco consumption is a datum that cannot be missed in the revisions of these patients. In each revision, the patients have to be reminded about the additional vascular risk that supposes tobacco consumption, recommending them the abandonment of such habit and facilitating them the treatments available in order to get abandon of tobacco habit.

From the 75 smokers of the study, 69 (92%) consume cigarettes, with a mean of 24 per day. The 6 remaining consume cigars in a mean quantity of 5 per week. Moreover, more than 33% of these smokers has not set out the possibility of stop smoking, though all of them refer knowing the risk that this supposes for them, in spite of the fact that the nicotine dependence is light, with a score in the Fagerström test of 3.5 (scores ≤4 indicate a light dependence).18 All this states the need of a procedure addressed to reduce the tobacco consumption in the diabetic population, consistent in motivating the patient who is not predisposed (in this population the motivation is scarce: Richmond test of 5.5; it is considered that in order to include a smoker in a program to get abandon to nicotinism it is necessary that this test shows values between 9 and 10 points),18 to help the motivated patient to perform an attempt to stop smoking and to achieve that those who have tried can keep it and become an ex-smoker.

For this objective, we count with the collaboration of the anti-tobacco unit at our center, where we refer the patients under preparation or action phase with a Richmond test of ≥8. The patients with an abandonment expectation higher than a month, they are offered a customized anti-tobacco advice, proposing them the reduction of 50% in the current consumption of cigarettes and leaving all our help open for the moment in which the patient decides to face the total abandonment of tobacco.

These data allow concluding that the prevalence of tobacco habit in our diabetic population (17%), lower than the general population, is higher in patients less than 50 years old and in patients with T1D. The women smoke more in early ages (<40 years old) and the men between 40 and 50 years old.

The nicotine dependence is not high, but the motivation to stop smoking is scarce, therefore it is necessary to carry out an active strategy by the professionals in charge
### Annex 1. Fagerström test and Richmond test

#### SIMPLIFIED FAGERSTRÖM TEST

Physical dependence measurement

Assesses the nicotine dependence level in a scale from 0 to 10 points.

**How much time passes since you wake up and smoke your first cigarette?**

- Within 5 minutes .............................................................................................................................. 3 points
- 6 to 30 minutes ............................................................................................................................. 2 points
- 31-60 minutes ............................................................................................................................... 1 point
- After 60 minutes ............................................................................................................................ 0 points

**Do you find it difficult not to smoke in places where it is forbidden?**

- Yes ............................................................................................................................................. 1 point
- No ............................................................................................................................................. 0 points

**Which cigarette would difficult to give up?**

- The first one in the morning ........................................................................................................ 1 point
- Any other ....................................................................................................................................... 0 points

**How many cigarettes do you smoke per day?**

- Less than 10 cigarettes .................................................................................................................. 0 points
- Between 11 and 20 cigarettes ........................................................................................................ 1 point
- Between 21 and 30 cigarettes ........................................................................................................ 2 points
- More than 30 cigarettes ................................................................................................................. 3 points

**Do you smoke more during the first hours after waking up?**

- Yes ............................................................................................................................................. 1 point
- No ............................................................................................................................................. 0 points

**Do you smoke if you are so ill that you have to be in bed?**

- Yes ............................................................................................................................................. 1 point
- No ............................................................................................................................................. 0 points

**TOTAL.................................................. POINTS**

- Score lower or equal than 4: low nicotine dependence
- Score with values between 5 and 6: mean dependence
- Score equal or higher than 7: high nicotine dependence

#### RICHMOND TEST

Motivation level measurement to stop smoking

Assesses the motivation to stop smoking in a scale from 0 to 10 points.

**Would you like to quit smoking if you could do it easily?**

- No ............................................................................................................................................. 0 points
- Yes .............................................................................................................................................. 1 point

**How interested are you to quit smoking?**

- Not at all .................................................................................................................................... 0 points
- A little ........................................................................................................................................ 1 point
- A lot .......................................................................................................................................... 2 points
- Very interested ............................................................................................................................ 3 points

**Will you try to stop smoking in the following two weeks?**

- Definitely not ............................................................................................................................. 0 points
- Perhaps ................................................................................................................................... 1 point
- Yes .......................................................................................................................................... 2 points
- Definitely yes ............................................................................................................................. 3 points

**How likely are you to be a non-smoker in the following six months?**

- Definitely not ............................................................................................................................. 0 points
- Perhaps ................................................................................................................................... 1 point
- Yes .......................................................................................................................................... 2 points
- Definitely yes ............................................................................................................................. 3 points

**TOTAL.................................................. POINTS**
of the treatment of the diabetic population, rendering the same attention to the treatment that to other cardiovascular risk factors that are present in these patients. The objective is to achieve the withdrawal of such consumption. The anti-tobacco advice and the therapeutics available to abandon the consumption are a usual practice in the handling and treatment of the patient with diabetes.

Declaration of potential conflict of interest
M.A. Saavedra Blanco, R. Garrido Martínez, E. León Carralafuente, P. Vaquero Lozano and S. Solano Reina state that there are no conflicts of interest as regards to the content of this article.

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