

Heavy smoking is an important risk factor for erectile dysfunction in young men

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Clinical and basic science studies provide strong indirect evidence that smoking may affect penile erection. The objective of this retrospective research was to investigate the role of smoking for erectile dysfunction (ED) in order to obtain some insight into the prevention of ED. We reviewed the data from 860 male patients aged between 18 and 44 visited during the period January 1999 to December 2002. The patients were divided into three groups: smokers, never smokers and former smokers. All patients were submitted of medical history, such as, IIEF 5 Questionnaire, physical examination, serum levels of glucose, cholesterol, prolactin and free testosterone. Our data were compared with ISTAT (Italian Institute of Statistics) and data on the Italian population of smokers. We have stratified the data by age and area of residence. The 860 patients, mean age 32.4 y old (range 18–44), are distributed into three groups: smokers 460 (53.5%), never smokers 320 (37.2%) and former smokers 80 (9.3%). Current smokers in our series are 460 (53.5%) in comparison to 34.7% of male current smokers in Italy, in the same range (18–44). Out of 860, 337 are patients who smoked more than 20 cigarettes per/day (39.2%) and these data are extremely interesting; while comparing the same aged men through ISTAT, it is found that only 4% are heavy smokers. On analysing the incidence of heavy smoking in middle-aged patients affected by ED with the whole Italian population by means of ISTAT, taking into account males with the same age range and area of residence, it was shown that the data of our population (sample) compared all Italian middle-aged patients are 39.2 vs 4%; this explains the need for education within a comprehensive smoking cessation programme, and should be reserved especially for young smokers, in order to be aware and informed of the effect of tobacco on erectile function.

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Introduction

In the 1960s, medical research began to show that cigarette smoking was bad for people's health; in fact, tobacco is the cause of the following conditions: chronic bronchitis, coronary artery disease, heart disease, high blood pressure and circulation problems, emphysema, gastroesophageal reflux disease, lung cancer and erectile dysfunction (ED). Smoking damages the blood vessels that a man needs to get and keep an erection.¹ Extensive literature documents that smoking may increase the likelihood of moderate or complete ED by at

least two-fold and heavy smokers are more likely to be impotent.^{2–3} The underlying pathophysiology of ED in smoking remains poorly understood as in diabetes; it may involve impairment of endothelium mediated smooth muscle relaxation.³ We determined whether cigarette smoking was associated with impotence among patients up to age 44, so as to reduce the influence of aging on male sexual dysfunction. In fact, the prevalence of ED in Italian healthy men triples from 5% at the age of 40 to 15% at the age of 70.⁴ The objective of this retrospective research was to investigate the role of smoking for ED in order to obtain some insight into the prevention of ED.

Materials and methods

We reviewed the data from 860 consecutive male patients aged from 18 to 44, observed in our clinic

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during the period of January 1999 to December 2002. The patients were divided into three groups: smokers, never smokers and former smokers. The three groups were divided into six subgroups: in subgroup one, smoking was the only risk factor for organic ED; in subgroup two, we included patients with at least two risk factors, including smoking; in subgroup three, patients were nonsmokers (had never smoked) without any risk factors; in subgroup four, patients were nonsmokers with one or more risk factors; and in subgroup five, patients were former smokers, of at least 1 y; in subgroup six, patients with the presence of at least another risk factor. All patients underwent a multidisciplinary approach: medical history in order to determine the presence of any factors that may be related to ED, such as medications (ie antihypertensive agents, diuretics, cardiac agents, antiandrogen, psychodrugs, gastrodrugs, anticholinergics, hypolipid drugs, anti-inflammatory drugs), smoking, coronary and cerebrovascular disease, diabetes, hypertension, previous pelvic, perineal or penile trauma, prior surgery, history of multiple sclerosis, brain or spinal cord injury. Physical examination consisted of penile palpation for Peyronie's disease, assessment of penile and perianal sensation, anal sphincter tone and response of the bulbocavernous reflex. Serum levels of glucose, cholesterol, prolactin and free testosterone were obtained. All patients responded to the International Index of Erectile Function (IIEF 5) Questionnaire in order to identify the degree of ED (SEVERE, MODERATE, LOW). Our data were compared with ISTAT data on the Italian population

and smoking. We have stratified the data by age and area of residence.⁴ In order to evaluate the impact of smoke (heavy smokers) on DE, official ISTAT data for the year 2000 have been analysed. Such data have been elaborated in such a way so as to obtain uniformity among the age groups found in the documents. In particular, population distribution for the age group 18–19-y-old has been deduced from data pertaining to the age group 15–19-y-old, which is supposed to be a uniform and coherent group. Distribution for other age groups has been found among available ISTAT data,⁵ and have therefore been directly aggregated. The data were also stratified for area of residency (Toscany).

Results

The distribution of the 860 patients (Figure 1), mean age 32.4-y-old (range 18–44), in the three groups is: smokers 460 (53.5%), never smokers 320 (37.2%), former smokers 80 (9.3%). The distribution in the six subgroups is as follows: in subgroup one, with smoking as the only risk factor for organic ED, we included 360 (41.9%) patients who had smoked for at least 1 y, of whom 60 patients were light smokers, and 300 heavy smokers (more than 20 cigarettes a day for 3 y). In subgroup two (Table 1), we included 100 (11.6%) patients with at least two risk factors, including smoking, of whom 63 were light smokers and 37 heavy smokers. In subgroup three (Table 2), 140 (16.3%) patients were nonsmokers (had never

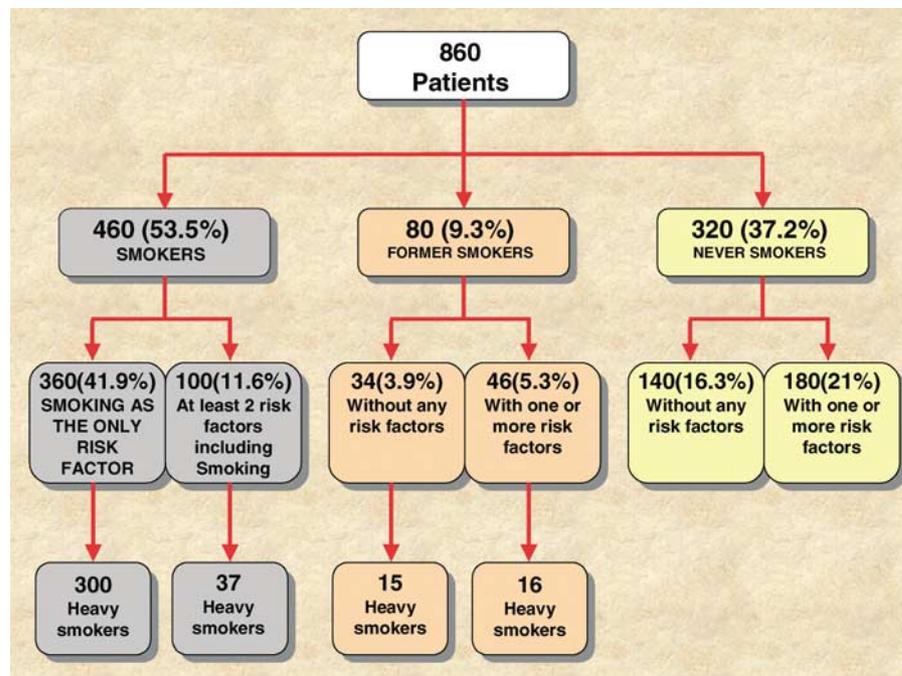


Figure 1 Distribution of the 860 patients mean age 32.4 (range 18–44) into the three principal groups and six subgroups.

Table 1 Risk factors in groups: 2-4-6

	Group of patients with smoking plus one or more risk factors (100)	Group of patients never smokers with one or more risk factors (180)	Group of patients former smokers with one or more risk factors (46)
Cardiovascular disease, hypertension	49	77	27
Diabetics	27	30	9
Ejaculatory problems	9	21	
Induratio plastica penis	4	2	1
Dyslipidaemia	9	11	4
Pelvic trauma	2	6	
Low dosage free testosterone	2	8	
Congenital penile curvature	1	1	
Multiple sclerosis	1		
Medications	72	123	31

Table 2 Group 3

<i>Analysis of patients without any risk factor</i>	
Presence and persistent of nocturnal erection	95
Full erection with masturbation	90
Impotence associated with ejaculatory problems	25
Performance anxiety	45
Unsuccessful intercourse erection since puberty, despite the absence of any trauma	6
Mental status findings suggestive of depression psychosis or anxiety disorder	35
Life stressor	40
Ambivalence about sexual orientation	8

smoked) without any risk factors. In subgroup four (Table 1), 180 (21%) were nonsmokers with one or more risk factors. In subgroup five, 34 (3.9%) were former smokers, of at least 1 y, 19 only former light smokers, and 15 only former heavy smokers and in subgroup six (Table 1), 46 (5.3%) patients presented at least another risk factor.

Out of 860 patients (41.9%), 360 showed smoking as the only risk factor, while smoking with another risk factor for ED was present in 100 out of 860 patients (11.6%), not to mention former smokers 80/860 (9.3) in whom smoking surely had a role in the genesis of ED; however, it is rather difficult to quantify, If we considered only the current number of smokers in our series is 460 (53.5%) in comparison to 34.7% of male current smokers in Italy of the same age range (18–44).

Considering patients with smoking as the only risk factor, 300 out of 360 patients were heavy smokers; and considering the patients with another

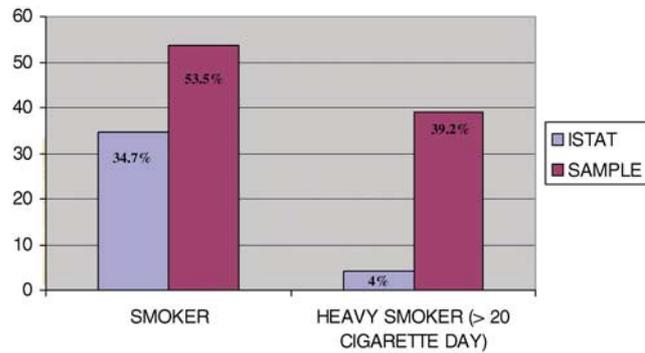


Figure 2 Current smokers and heavy smokers in comparison to current and heavy smokers in Italy.

risk factor, 37/100 were heavy smokers; so 337/860 are the patients who smoked more than 20 cigarettes/day (39.2%) and these data are extremely interesting because while comparing the same aged men through ISTAT, it was found that only 4% are heavy smokers (Figure 2).

These comparisons (men attending an andrology clinic and ISTAT data) must be considered with the limitation of the utility of two different groups, although the results are made out of a percentage that is extremely significant.

Considering current smokers with or without risk factors (460 patients), the results of IIEF 5 Questionnaire showed the presence of the highest percentage of severe impotence in heavy smokers with or without other risk factors (43%), while light smokers with or without any risk factors showed mild (48%) and low ED (35%) (Figure 3).

Conclusions

This study shows that the risk of ED is influenced by heavy smoking; in fact, smoking represented the risk factor with the most frequent, sole association with ED.^{6,7} In this retrospective study, smokers with ED are 53.5% in our sample vs 34.7% of smokers in the Italian population. Already, these data are important to understand the role of smoking, but we prefer not to stop at these data, which can be influenced by the fact that these patients are those who arrived at an andrological clinic with all the limitations of a such sample. On the other hand, the data about heavy smokers who emerged as the most represented group and consequently with a higher risk of ED is important. We did not have clear data on how the duration of the habit increases the risk, but considering the mean age of heavy smokers to be 33.2 we have established the duration of smoking for heavy smokers to be 3y; we may deem that this period is quite sufficient to generate ED. Analysing the incidence of heavy smoking, in middle-aged

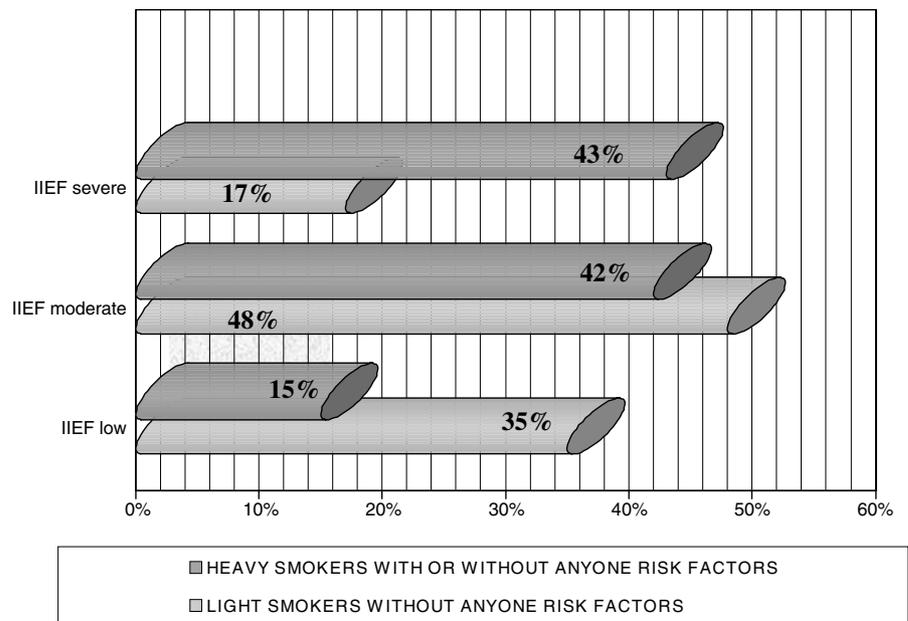


Figure 3 Current smokers with or without risk factors (460 patients) and IIEF 5 Questionnaire.

patients affected by ED, with the whole Italian population by means of ISTAT, taking into account males, with the same age range and area of residence, we showed that data of our population (sample), all the Italian middle-aged patients, are 39.2 vs 4%. This explains the need for an education within a comprehensive smoking cessation programme should be reserved especially for young smokers, in order to be aware of the effect of tobacco on erectile function. Recently, Guay *et al*⁸ reported that cessation of smoking rapidly decreases erectile dysfunction in the group of smoking for organic ED. We have noticed that heavy smokers presented ED severe 43% about 2.5 times more than light smokers (17%) (Figure 3), confirming how the heavy smokers risks an irreversible DE. In conclusion, our data suggest the impressive prevalence of heavy smoking in young impotent men.

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