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Smoking as a Risk Factor for Erectile Dysfunction: Data from the Andrology Prevention Weeks 2001–2002 A Study of the Italian Society of Andrology (S.I.A.)

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on behalf of the Andrology Prevention Week centres[1]

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Abstract

Objective: To analyse the relationship between smoking and erectile dysfunction (ED).

Methods: To provide further data on this issue, we analysed information gathered from men attending a free andrologic consultation in 234 Italian medical centres, in the setting of a project focused on andrologic prevention. Men were asked about ''their ability to achieve and maintain an erection sufficient for satisfactory sexual performance''. If they were dissatisfied, they were defined as having ED.

Results: Out of 16724 subjects, ED was diagnosed in 4081 men (24.4%). After adjustment for age, marital status, education, alcohol consumption, physical activity and concomitant pathologies, in comparison with never smokers, men who currently smoked more than 10 cigarettes/day and former smokers showed significantly higher odds ratio (ORs 1.4 and 1.3, respectively) for ED. These results were confirmed performing analysis in strata of diabetes, hypertension, cardiovascular disease and hypercolesterolemia.

Comments: This transversal observational study shows that the risk of ED is influenced by smoking. A dose- and duration-response effect is present; changes in smoking habits do not seem to significantly affect the risk to develop ED.

Keywords: Smoking; Risk factor; Erectile dysfunction

1. Introduction

In 1993, the NIH Consensus Conference suggested the term ''erectile dysfunction'' (ED) to define the inability to achieve and maintain an erection sufficient for satisfactory sexual performance [1]. ED affects millions of men throughout the world, with a strong

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[1] See Appendix A for participating centres and responsible clinicians involved in the Andrology Prevention Weeks 2001–2002.

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negative effect on the quality of life and well-being of men and couples [1–3]. The etiology is often multifactorial, with psychological, neurological, endocrine, vascular, traumatic or iatrogenic causes [4].

ED is considered a natural consequence of aging, but several factors are contributing to increase its severity: concomitant illnesses, lifestyle, medical treatments [5]. Among lifestyle habits, alcohol consumption, smoking and physical activity are considered as related to ED [6–8].

A meta-analysis including 3819 subjects from 19 studies, conducted in the United States, showed that impotent men were significantly more likely to be current smokers than men in the general population [9]. Most of studies included were however conducted in North America or North Europe.

Smoking may be an independent risk factor for vascular impotence, and is perhaps involved in other forms of ED [10–12].

In order to offer further data on the relation between smoking and ED risk in a southern European population, we analysed information on 4081 men with and 12643 without ED, who attended a free andrologic consultation in the setting of a project focused on andrologic prevention in Italy.

2. Methods

This was an observationa transversal study, aimed to examine the association between several risk factors and ED. During the 1st (November 19th–24th, 2001) and 2nd (October 21th–26th, 2002) Andrology Prevention Weeks, males of any age were offered to attend a free of charge visit for counselling about urologic or andrologic conditions in 234 Italian medical centres, affiliated to the Italian Society of Andrology (Società Italiana di Andrologia – S.I.A.); see list of participating centres and responsible clinicians in Appendix A). A pamphlet inviting men for a free check-up and listing the participating andrology centres was made available in pharmacies and general practitioners' waiting rooms, besides being enclosed in two national weekly magazines; an advertising campaign was run by press and broadcast media. Data were collected through a simple questionnaire, in two sections. The first section, to be completed by the patient in the office waiting room, included questions about age, weight, height, marital, educational and professional status, life habits (smoking, drinking, drug use, physical activity, frequency of sexual intercourse). The second section, to be completed by the physician during the visit, included questions on possible history of hypertension, diabetes, cardiovascular diseases (CVD) and other medical conditions, besides findings of the physical examination.

Erectile function was assessed by asking men about their sexual performance: ED was diagnosed according to the definition of the NIH Consensus Development Panel [1]: whenever a consistent inability to attain or maintain a penile erection sufficient for satisfactory sexual performance was present. Occurrence of premature ejaculation was self-reported. Regular physical activity was defined as two or more hours of physical activity per week [13]. Men reporting any current pharmacological treatment for high blood pressure were considered hypertensive. Men with a history of CVD were those who reported any medical treatment for cardiovascular conditions. A man was defined as having diabetes or hypercholesterolemia if he was currently taking drugs for the condition. A man was considered a smoker if he had smoked more than one cigarette/day for at least one year; an ex-smoker if he had smoked more than one cigarette/day for at least one year, but had stopped more than one year before the interview, and a non-smoker if he had never smoked more than one cigarette/day. Information on duration of smoking was collected only during the 2nd Andrology Prevention Week.

Data were collected in 234 centres, 93 in North-, 75 in Centre- and 12 in South-Italy; 12802 and 5618 men completed the patient questionnaire during the 1st and the 2nd Prevention Week, respectively. Since we could not identify men who were observed in both Weeks, we excluded from the sample of 2nd Week 1276 men who had previous andrologic examinations, in order to avoid duplicated observations. We also excluded from analysis men who refused to answer the demographic questionnaire and subjects aged less than 16. Finally, we analysed data from 16724 men. Among them: ED was diagnosed in 4081 subjects (24.4%), and premature ejaculation in 3554 (21.2%); these conditions were concomitant in 1604 men (9.6%). Prevention was the only reason for consultation in the remaining subjects. For the purpose of the present paper we compared the characteristics of subjects with and without ED.

The mean number of attending men per centre was 71 (range 7–355) in the 1st Week, and 32 (range 6–158) in the 2nd.

Odds ratios (OR) for ED, and the corresponding 95% confidence intervals (CI), were derived using unconditional multiple logistic regression, fitted by the method of maximum likelihood, in which the dependent variable was the presence (case) or absence (control) of ED and the independent ones were the exposures considered in the analysis. We included in the model potential co-variates considered as categorical variables [14]. The terms included in the model are indicated in the footnotes of the tables.

3. Results

The distribution of study subjects is shown in Table 1. Men with ED were older than those without, were more frequently married, and less educated. The frequency of ED rose with age, ranging from 7.4% in men under 30 years, to 42.3% in men over 70: the corresponding OR was 10.9. In comparison with men with primary education, the OR of ED was 0.8 in men with secondary education, and 0.7 in those with a university degree. A slight increase of risk (OR 1.2, 95% CI 1.1–1.4) emerged in obese men (BMI >30). Men with at least two hours per week of physical activity had a lower risk of ED.

After adjusting for age, the risk of ED was significantly higher in men smoking 10 or more cigarettes/day, and in former smokers. The risk increased with duration of smoking, both in current and former smokers (Table 2). With regard to concomitant diseases, we