Smoking Cessation after Bladder Cancer Diagnosis

Cessação Tabágica após o Diagnóstico de Cancro da Bexiga

Paulo MOTA✉[1,2], Pedro Miguel SOUSA[1], Francisco BOTELHO[2], Emanuel CARVALHO-DIAS[1,2], Agostinho CORDEIRO[2], João Pimentel TORRES[1,2], Nuno MORAIS[2], Sara ANACLETO[2], Estevão LIMA[1,2]

Acta Med Port 2018 Feb;31(2):101-108 ▪ https://doi.org/10.20344/amp.9106

ABSTRACT

Introduction: Smoking is an important risk factor for the development, recurrence and progression of bladder cancer. Our aim was to analyze smoking habits after diagnosis in bladder cancer patients. Additionally, we evaluated patient knowledge about smoking as a risk factor and the urologist role in promoting abstinence.

Material and Methods: A cross-sectional, observational and descriptive study was performed in bladder cancer patients, diagnosed between January 2013 and September 2015 (n = 160) in Braga Hospital, in Portugal.

Results: Smoking history was present in 71.9% of the sample, with 21.9% current smokers, (40.7% of abstinence after diagnosis). Smoking was acknowledged as a risk factor by 74.4% of the sample, with only 51.3% of ever smokers and 24.4% of non-smokers recognizing smoking as the leading risk factor (p = 0.008). The presence of other household smokers were significantly higher in patients who continued smoking (40%) than in ex-smokers after diagnosis (4.2%) (p = 0.005). The majority of smokers at diagnosis (83.1%) were advised to quit by their urologist, but only one smoker (1.7%) was offered any specific intervention to aid in cessation.

Discussion: Smoking is not recognized as the leading risk factor for bladder cancer. This limited awareness, associated with the known difficulties in quitting smoking and the observed lack of smoking cessation interventions, may account for the high current smoking prevalence, albeit in line with other studies.

Conclusion: This study highlights the need for efficient smoking cessation programs directed to bladder cancer patients.

Keywords: Smoking; Smoking Cessation; Urinary Bladder Neoplasms

RESUMO

Introdução: O tabagismo é um importante fator de risco para o desenvolvimento, recorrência e progressão do cancro da bexiga. Este estudo pretendia analisar os hábitos tabágicos após o diagnóstico em doentes com cancro da bexiga. Adicionalmente, foi avaliado o reconhecimento do tabagismo como fator de risco e a atuação médica na promoção da cessação tabágica.

Material e Métodos: Estudo transversal, observacional e descritivo realizado em doentes com cancro da bexiga, diagnosticados entre janeiro de 2013 e setembro de 2015 (n = 160) no Hospital de Braga.

Resultados: História tabágica estava presente em 71,9% da amostra, com 21,9% de tabagismo atual (40,7% de abstinência após o diagnóstico). O tabagismo foi reconhecido como fator de risco por 74,4% dos doentes, mas apenas 51,3% dos doentes com história tabágica e 24,4% dos não fumadores referem o tabagismo como a principal causa etiológica (p = 0,008). A presença de outros fumadores em casa foi significativamente maior em doentes que mantiveram tabagismo (40%) do que em ex-fumadores após o diagnóstico (4,2%) (p = 0,005). A maioria dos fumadores (83,1%) refere ter sido aconselhada a deixar de fumar, mas apenas um (1,7%) recebeu apoio específico para a cessação.

Discussão: O tabagismo não é adequadamente reconhecido como a principal etiologia de cancro da bexiga. Este desconhecimento, aliado à reconhecida dificuldade na abstinência tabágica e ao défice de estratégias promotoras de cessação tabágica observados, poderá justificar a elevada prevalência de fumadores atuais, todavia, em linha com outros estudos.

Conclusão: Este estudo evidencia a necessidade de programas de cessação tabágica eficientes dirigidos a doentes com cancro da bexiga.

Palavras-chave: Cessação Tabágica; Neoplasias da Bexiga; Tabagismo

INTRODUCTION

Bladder cancer (BC) is one of the leading urinary system cancers, with an incidence 3 - 4 times higher in male *vs.* female patients.[1-3] It is the seventh leading cancer worldwide, with approximately 336,000 new cases per year, particularly in developed countries,[2,4] with the eighth-highest incidence rate in Portugal, according to the national report on cancer diseases and related to the death of 940 patients in 2014, showing an increasing trend when compared to the previous years.[5]

BC is also one of the leading smoking-related cancers; epidemiologic studies have shown a consistent relationship between smoking and the risk of BC, which is involved in more than 50% of the cases in developed countries.[1,6-9] The risk of BC is two and four-times higher in former and in current smokers, respectively, with an increasing risk according to smoking intensity and duration.[7,9]

Smoking is not only relevant in cancer due to its carcinogenic potential. Poorer outcome, higher recurrence and relapse rate in continuing smokers has also been found, in line with what has been found in patients with lung and head/neck cancer.[6,9-11] In addition, smoking cessation has been associated with a reduction in mortality and morbidity,

1. Surgical Sciences Research Domain. Life and Health Sciences Research Institute, ICVS/3B's. PT Government Associate Laboratory. The Clinic Academic Center – Braga. Association (2CA-Braga). School of Medicine. University of Minho. Braga. Portugal.
2. Department of CUF Urology. Service of Urology. Hospital de Braga. Braga. Portugal.
✉ Autor correspondente: Paulo Mota. mota.paulo@med.uminho.pt

Recebido: 22 de abril de 2017 - Aceite: 19 de janeiro de 2018 | Copyright © Ordem dos Médicos 2018

particularly in non-muscle-invasive BC (NMIBC).[10,11] A lower efficacy of chemotherapy in smokers has also been shown, with higher incidence of adverse effects and poorer quality of life.[9,14,15] The additional risk for secondary tumours and cardiovascular diseases is also worth mentioning in smokers with cancer.[12,13]

Unfortunately, the benefits of smoking cessation have been poorly widespread and the efforts aimed at smoking cessation in the presence of BC are unknown or disappointing. A recent study involving survivors from 10 types of cancer showed that patients with BC presented with the highest smoking prevalence rate (17.2%), similar to the prevalence in general population.[16]

This study is aimed at the analysis of smoking characteristics in patients with BC and the level of awareness of smoking as a risk factor in patients with BC, as well as the action of urologists by using the opportunity represented by a diagnosis of cancer.

MATERIAL AND METHODS

This was a cross-sectional, observational and descriptive study involving all the adult patients diagnosed with BC having attended the Urology Outpatient Clinic at the *Hospital de Braga* between Jan 2013 and Sep 2015. Non-autonomous patients, diagnosed at less than six months, with cognitive impairments, unaware of the diagnosis or having refused to participate were excluded from the study.

A total of 264 patients were identified on a first analysis. From these, 47 patients had died and 21 patients presented with exclusion criteria, leaving 196 eligible patients.

In-person interviews took place at the Department of Urology of the *Hospital de Braga* or were obtained by phone, from Sep 2015 to March 2016. Patients were divided into the following groups, according with their smoking status (Fig. 1):

1. **Smokers**: when having smoked ≥ 100 cigarettes in lifetime and smoking at the time of diagnosis. These patients were subdivided into current smokers (remaining as smokers at the time of the interview) and ex-smokers (having managed to quit smoking at the time of the interview);
2. **Former smokers**: when having smoked ≥ 100 cigarettes in lifetime and having managed to quit smoking before diagnosis;
3. **Never smokers**: when having smoked < 100 cigarettes in lifetime.

All the patients having smoked at least 100 cigarettes in lifetime were considered as patients with a 'smoking history'.

The following information was collected from all the patients: age, gender, marital status, level of education.

Two multiple choice questions aimed at the assessment of the patient's awareness of smoking as a risk factor for BC and nine questions aimed at the definition of patient's smoking status were submitted.

Clinical data and additional instruments were used for the analysis of patient's smoking status at diagnosis. As all the quitters have described this status throughout the first six months upon diagnosis, only clinical variables regarding this period of time were included: staging, histological grade, therapy approach according with the initial diagnosis; number of surgeries over that period of time.

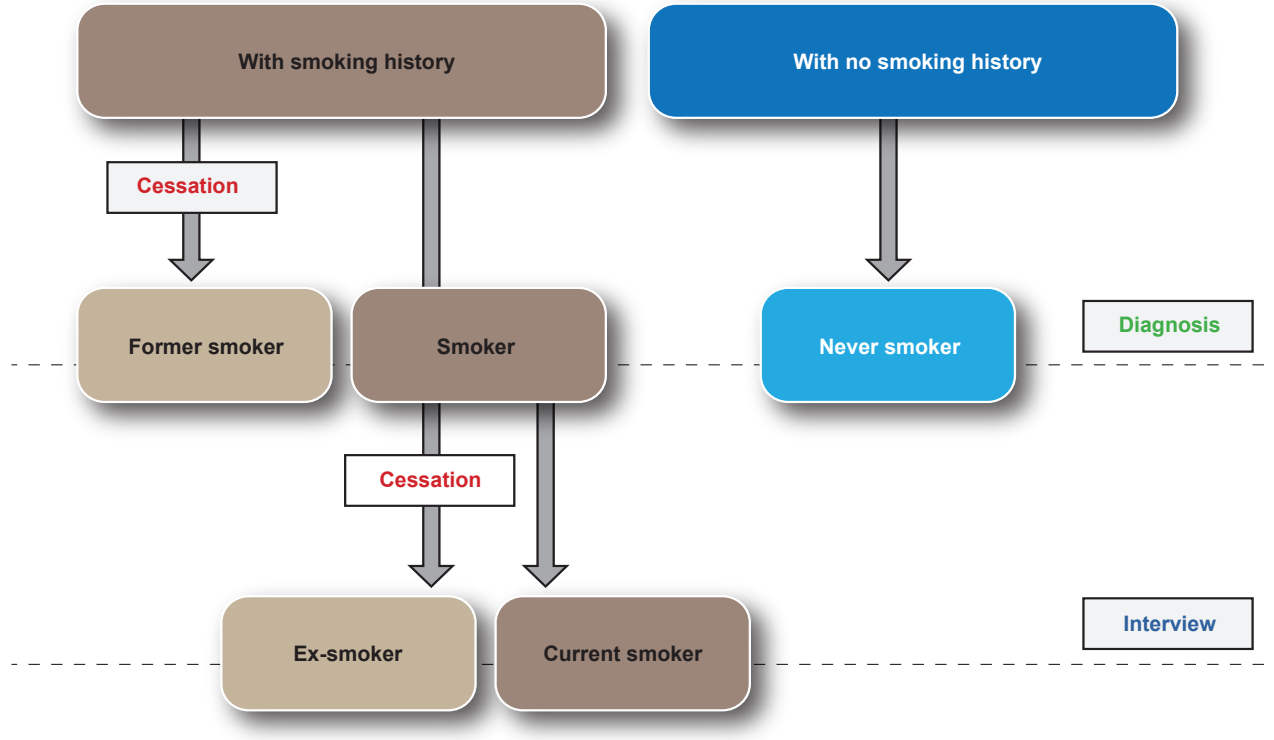

Figure 1 – Smoking status

The following instruments were also applied [(Appendix 1) https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/9106/5345]:

1. Validated version of the Fagerström Test for Nicotine Dependence (FTND) for the Portuguese language: higher scores corresponded to higher nicotine dependence. The '*Tempo até o primeiro cigarro*' ('Time to first cigarette') item, which has been described by some studies as predictive of a successful outcome regarding smoking cessation, has been removed from the responses to the FTND.[17-19]
2. Qualitative questionnaire (two-item: True / False) regarding the medical approach to the promotion of smoking cessation.
3. Portuguese translation of the Brief-Illness Perception Questionnaire (BIPQ): 'Consequences' (BIPQ-C) and 'Concern' (BIPQ-P) subscale items regarding the disease were applied. Both subscale items were scored on a 0-10 Likert scale and higher scores corresponded to a higher impact of the disease.
4. Portuguese version of the Hospital Anxiety and Depression Scale (HADS)[20] allowing for the screening of inpatient anxiety and depression.

Collected data were analysed by using the Statistical Package for the Social Sciences (SPSSv23) software for a 5% level of significance.

Chi-square or Fisher's exact test have been used whenever adequate. A post hoc analysis for Chi-square test has been carried out for the comparison of standardised residuals (SR) in each cell of the contingency table, with $z > \pm 2$ considered as significant.

Mann-Whitney, Kruskal-Wallis and Wilcoxon Signed-Rank tests were used for the identification of statistical differences between continuous variables. Post hoc analysis after the Kruskal-Wallis test has been used with Mann-Whitney test and Bonferroni correction for multiple comparisons.

RESULTS

A total of 160 patients were interviewed; 36 patients refused to participate or were unreachable, corresponding to an 81.6% participation rate.

Patient characteristics are shown in Table 1, divided by different groups according to the presence of smoking habit at diagnosis. A standard patient would be described as male (83.8%), elderly [median (Mdn) age = 67 years], basic education (52.5%), with a partner (77.5%) and initially diagnosed with non-invasive BC (83.8%). A percentage of 71.9% of our patients had a smoking history; from these, 51.3% were current smokers at diagnosis.

A significant female predominance (SR: $z = +5.4$; $p < 0.001$), older age at diagnosis (Mdn = 75 years; $p < 0.001$) and lower incidence of invasive carcinoma (SR: $z = -2.3$; $p < 0.05$) has been found in never smokers. An intermediate result between current and never smokers in all these

Table 1 – Social, demographic and clinical characteristics of the patients according with the smoking status at diagnosis

	Total no. of patients (n = 160)	Smokers (n = 59)	Former smokers (n = 56)	Never smokers (n = 45)	*p*
Gender, n (%)					**< 0.001***
Male	134 (83.8%)	56 (94.9%)	55 (98.2%)	23 (51.1%)	
Female	26 (16.2%)	3 (5.1%)	1 (1.8%)	22 (48.9%)	
Age, years, Mdn (IQR)	67 (17)	61 (12)	68.5 (14)	75 (15)	**< 0.001¥**
Level of education, n (%)					**0.036***
Illiteracy/Incomplete BE	27 (16.9%)	5 (8.5%)	11 (19.6%)	11 (24.4%)	
Basic education (BE)	84 (52.5%)	30 (50.8%)	27 (48.2%)	27 (60.0%)	
Higher education	49 (30.6%)	24 (40.7%)	18 (32.1%)	7 (15.6%)	
Marital Status, n (%)					0.115*
With partner	124 (77.5%)	49 (83.1%)	45 (80.4%)	30 (66.7%)	
With no partner	36 (22.5%)	10 (16.9%)	11 (19.6%)	15 (33.3%)	
Staging, n (%)					**0.003***
NMIBC	134 (83.8%)	43 (72.9%)	47 (83.9%)	44 (97.8%)	
MIBC	26 (16.2%)	16 (27.1%)	9 (16.1%)	1 (2.2%)	
Grade, n (%)					0.247*
Low	77 (48.1%)	32 (54.2%)	22 (39.3%)	23 (51.1%)	
High	83 (51.9%)	27 (45.8%)	34 (60.7%)	22 (48.9%)	

* Chi-square test; ¥ Kruskal-Wallis test; Mdn: median; IQR: interquartile range; BE: basic education; NMIBC: non-muscle-invasive bladder cancer; MIBC: muscle-invasive bladder cancer.

Gender: χ^2 (2) = 49.238; p = < 0.001; Cramer's V = 0.555. Age: χ^2 (2) = 24.824. p = <0.001; $\eta 2$ = 0.156. Level of education: χ^2 (4) = 10.284; p = 0.036; Cramer's V = 0.179. Staging: χ^2 (2) = 11.629; p = < 0.003; Cramer´s V = 0.270. Post hoc (Kruskal-Wallis): Current *vs.* Former smoker: U = 1082.50; $p < 0.001$; r = -0.297. Smoker *vs.* Never smoker: U = 605.50; $p < 0.001$; r = -0.465. Significant post hoc (χ^2) standardised residuals: Never smoker / Male (z = -2.4). Never smoker / Female (z = 5.4). Smoker / Female (z = -2.1). Former smoker / Female (z = -2.7). Never smoker / MIBC (z = -2.3). Smoker / MIBC (z = 2.1).

variables has been found in former smokers. No significant differences between the different smoking statuses were found as regards the histological grade.

Awareness of smoking as a risk factor for bladder cancer

Smoking was mainly linked by patients to lung cancer (99.4%), cardiovascular diseases (95.6%), stroke (86.9%) and BC (74.4%), in descending order. Conversely, most patients rejected smoking as a risk factor for skin cancer (81.9%), diabetes (80.6%) and colorectal cancer (69.4%).

Namely, when considering the link between smoking and BC and the patients by smoking categories, current smokers were in fact those who more frequently have linked smoking as a risk factor ($p < 0.001$; Table 2).

Smoking and alcohol were the most frequently described risk factors (43.8 and 21.3%, respectively) by patients, when questioned on which is the most relevant risk factor for BC. Smoking was described by 51.3% of the patients with a smoking history and by approximately 25% of never smokers as BC's main aetiology ($p = 0.008$; Table 3). A wider response distribution was found in never smokers, with a similar relevance assigned to smoking, alcohol and genetics.

No significant differences in awareness were found between current and ex-smokers, regarding both the identification of smoking as a risk factor ($p = 0.679$) and the identification of smoking as the most relevant risk factor for BC ($p = 0.637$).

Characteristics of the smoking context before and upon bladder cancer diagnosis

At diagnosis, most patients with a smoking history were male (96.5%) with early smoking onset (Mdn = 15 years), long smoking duration (90.4% with ≥ 20 years) and the median number of cigarettes smoked was one pack/day.

At the interview, 24 current smokers at diagnosis (n = 59) had quitted (40.7%) and 35 continued smoking (59.3%), corresponding to a current smoking prevalence rate of 21.9% (35/160 patients) at the interview.

A total of 26 from all the current smokers (n = 35) had reduced their consumption (74.3%) upon diagnosis, 8 continued (22.9%) and 1 had increased (2.9%). Current smokers who had reduced their consumption had more frequently described smoking as the major risk factor than those who did not reduce (57.7% *vs.* 22.2%), even though no statistical significance has been found ($p = 0.121$; Table 4).

Current *versus* ex-smokers: univariate analysis

A similar smoking context has been found in current smokers when compared to ex-smokers, with higher nicotine dependence and anxiety, even though with no significant differences (Table 5).

Slightly poorer medical contexts were found in ex-smokers, with a higher percentage of invasive tumours (33.3% *vs.* 22.9%; $p = 0.554$), higher histological grade (50.0% *vs.* 42.9%; $p = 0.783$) and the subsequent need for cystectomy (33.3% *vs.* 22.9%; $p = 0.797$), even though none of these clinical variables had reached significance, nor regarding any of the socio-demographic variables.

The presence of smoker in the household (second-hand smoke) was the only variable showing statistically significant differences (found in 40% of current smokers *vs.* 4.2% in ex-smokers ($p = 0.005$; $\Phi = 0.404$).

Medical action for the promotion of smoking cessation

Most smokers at diagnosis have described having received medical advice from urologists (83.1%) regarding smoking cessation. However, only one patient (1.7%) had received a more comprehensive support, specifically the referral to a smoking cessation medical unit. No significant differences were found in terms of action between current and ex-smokers ($p = 0.506$).

Table 2 – Smoking as risk factor for bladder cancer according to smoking classes

	Yes	No	*p* < 0.001*
Smoker, n (%)	53 (89.8%)	6 (10.2%)	
Former smoker, n (%)	41 (73.2%)	15 (26.8%)	
Never smoker, n (%)	25 (55.6%)	20 (44.4%)	
Total	119 (74.4%)	41 (25.6%)	

* Chi-square, χ^2 (2) = 15.797; $p = < 0.001$; Cramer's $V = 0.314$.

Table 3 – Main risk factor for BC according to smoking classes

	Smoking	Other risk factor	*p* 0.008*
Smoker, n (%)	31 (52. 5 %)	28 (47.5 %)	
Former smoker, n (%)	28 (50.0 %)	28 (50.0 %)	
Never smoker, n (%)	11 (24. 4 %)	34 (75. 6 %)	
Total	70 (43.8%)	90 (56.2%)	

* Chi-square test. χ^2 (2) = 9.557; $p = 0.008$; Cramer's $V = 0.224$. Significant post hoc (χ^2) standardised residuals: Never smoker/Smoking ($z = - 2.0$)

Table 4 – Relationship between smoking and the awareness of smoking as main risk factor for bladder cancer in current smokers

	With smoking reduction (n = 26)	With no smoking reduction (n = 9)	*p* 0.121#
Correct identification of the main risk factor, n (%)	15 (57.7%)	2 (22.2%)	
Incorrect identification of the main risk factor, n (%)	11 (42.3%)	7 (77.8%)	

Fisher's exact test. p = 0.121; OR – 4.773 (95%CI 0.826 – 27.562).

Table 5 – Univariate analysis between current and ex-smokers

	Current smoker (n = 35)	Ex-smoker (n = 24)	*p*
Gender, n (%)			1#
Male	33 (94.3%)	23 (95.8%)	
Female	2 (5.7%)	1 (4.2%)	
Age, years, Mdn (IQR)	60 (12)	62.5 (13)	0.665¤
Level of education, n (%)			0.531#
Illiteracy/Incomplete BE	4 (11.4%)	1 (4.1%)	
Basic education (BE)	16 (45.7%)	14 (58.3%)	
Higher education	15 (42.9%)	9 (37.5%)	
Marital status, n (%)			0.506#
No partner	7 (20.0%)	3 (12.5%)	
With a partner	28 (80.0%)	21 (87.5%)	
Other smoker in household, n (%)			**0.005***
Yes	**14 (40.0%)**	**1 (4.2%)**	
No	**21 (60.0%)**	**23 (95.8%)**	
No. Cigarettes/day, Mdn (IQR)	20 (10)	20 (14)	0.821¤
Pack-years, Mdn (IQR)	49 (34.5)	48.5 (27.75)	0.763¤
Smoking duration, Mdn (IQR)	45 (16)	48 (16)	0.865¤
Age at smoking onset, Mdn (IQR)	15 (5)	15.5 (4)	0.190¤
Nicotine Dependence (FTDN), Mdn (IQR)	5 (3)	4 (2)	0.177
Time to first cigarette, n (%)			0.113*
< 5 min	12 (34.3%)	3 (12.5%)	
> 5 min	23 (65.7%)	21 (87.5%)	
BIPQ-Consequences, Mdn (IQR)	2 (4)	3 (3)	0.313¤
BIPQ-Concern, Mdn (IQR)	5 (5)	5 (4)	0.524¤
HADS – Anxiety, n (%)			0.140*
Normal (< 8 points)	20 (57.1%)	19 (79.2%)	
Abnormal (≥ 8 points)	15 (42.9%)	5 (20.8%)	
HADS - Depression, n (%)			1*
Normal (< 8 points)	27 (77.1%)	18 (75.0%)	
Abnormal (≥ 8 points)	8 (22.9%)	6 (25.0%)	
Staging, n (%)			0.554*
NMIBC	27 (77.1%)	16 (66.7%)	
MIBC	8 (22.9%)	8 (33.3%)	
Grade, n (%)			0.783*
Low	20 (57.1%)	12 (50.0%)	
High	15 (42.9%)	12 (50.0%)	
Treatment (upon diagnostic TURBT), n (%)			0.797#
Monitoring	15 (42.9%)	8 (33.3%)	
Instillation therapy	11 (31.4%)	7 (29.2%)	
Radical cystectomy	8 (22.9%)	8 (33.3%)	
Neoadjuvant chemotherapy	1 (2.9%)	1 (4.2%)	
No. of TURBTs, n (%)			0.856*
One	21 (60.0%)	13 (54.2%)	
Second-look	14 (40.0%)	11 (45.8%)	

* Chi-square test; # Fisher's exact test; ¤ Mann-Whitney test. TURBT: transurethral resection of bladder tumour. Other smoker in household: χ^2 (1) = 9.642; p = 0.005; Φ = 0.404.

DISCUSSION

Despite the well-known benefits of smoking cessation, a significant part of the patients with BC continued smoking, with the risk of a poorer outcome, poorer quality of life and the presence of secondary cancers.

Our study population is in line with previous studies, mostly involving male, elderly patients with a long smoking history and non-invasive carcinoma.[7,21,22] Female patients were mostly never smokers, reflecting the former smoking patterns in which women were usually never smokers. The fact that smoking at diagnosis seems as having an influence on earlier onset and more invasive BC is worth mentioning, in support to the association found in epidemiologic studies between smoking and muscle-invasive tumours.[23,24]

The awareness of the association between smoking and its consequences is crucial to change behaviour, as it enhances patient's motivation towards its correction.[13] The awareness of smoking as a risk factor for BC ranged between 58.4 and 86% in the different groups of patients involved in previous studies.[25-27] In this study, 74.4% of the patients have described an association between smoking and BC, with a significant difference regarding awareness in smokers *vs.* never smokers (89.8% *vs.* 55.6%). The recommendations and alerts made by urologists, who usually are the major source of information for smokers, probably have had an impact on this difference.[7,25] Previous studies have found that patients established a more straightforward relationship between smoking and other pathologies, namely with lung cancer and cardiovascular diseases, when compared to their own pathology.[7,25,27] This is possibly due to the low dissemination of the relationship between smoking and BC in general population.[7,25,26]

A relationship between cancer and smoking is frequently established by the population, even regarding non-smoking-related cancers. Therefore, the question on which is the major risk factor for this cancer was used for the assessment of the real relevance assigned by patients to smoking in BC aetiology. Smoking was described as the main aetiology by only 51.3% of the patients with a smoking history and by around 25% of never smokers, below what has been found in literature.[27] These low values may explain the fact that many patients continued smoking. No association has been shown in our study between the awareness of the risk factors and smoking cessation upon diagnosis.

A current 21.9% smoking prevalence rate has been found in this study, higher when compared to the general population,[28] even though in line with previous studies both on BC,[16,22,27] as on other smoking-related cancers.[29-31] Different explanations for this result were advanced by Ostroff *et al.*[21] namely including: history of heavy smoking load; patients mostly diagnosed with non-invasive BC, with significant cure and survival potential; suboptimal awareness of the importance of smoking in BC development and progression; suboptimal education and promotion of cessation made by urologists. According to McBride *et al.*,[13] a diagnosis of cancer, particularly when smoking-related, provides for an opportunity for the promotion of smoking cessation, considering the increased perception of risk by patients. Nevertheless, different studies have found that less than half of the smokers with cancer remain as quitters at diagnosis.[32-35] Vilensku *et al.*[22] and Bassett *et al.*[7] found post-diagnosis smoking cessation rates of 42 and 48%, respectively. In our study and in line with these, a 40.7% smoking cessation rate in smokers with cancer was found at diagnosis, a low rate that seems that such teachable moment has not been adequately used by patients regarding smoking cessation as by physicians regarding a more comprehensive action.

The psychological impact of diagnosis is mostly initial and while treatment takes place, with a propensity to fade as the acute sense of risk is decreasing. In this study, most patients were on monitoring, which may explain for the high percentage of active smoking. Most smoking relapses have occurred over the peri-diagnostic period and a quitter at six months may be considered as having a lower chance of a future relapse.[33,36,37] Therefore, the relevance of the context and the initial action seemed crucial as in this study all ex-smokers have described having quitted smoking up to six months post-diagnosis.

Different variables were assessed in this study, given the relevance of studying the smoking patterns and the scarce number of studies involving patients with BC, aimed at making the difference between patients who continued smoking from those having quitted upon diagnosis. Only one variable significantly different among the results has been found: the presence of other smoker in the household (second-hand smoke). This showed the influence of the family cluster into patient's smoking behaviour. In fact, the presence of other smoker in the household has been consistently considered as a strong cross-sectional predictor of smoking, both in patients with cancer[33,34,38-40] or with cardiovascular diseases,[41] as in general population.[39,42] This smoking habit linking family members makes any efforts of physicians into the promotion of smoking cessation even more crucial, which is usually focused on the patient and should be also aimed at the patient's family context.

Smoking cessation was not associated with the severity of cancer presentation nor with therapy aggressiveness, which is worth mentioning in this study as potentially relevant for the clinical practice. This is possibly due to the fact that more severe patients usually hold fatalistic beliefs about cancer leading to an inevitable death ('harm has already been done') or a false sense of safety ('we feel that once the bladder is removed, the source of cancer goes away') that may explain for continuing smoking.[43,44] This is in line with studies involving patients with lung and head/neck cancer having undergone comprehensive surgical approaches in which a significant part of the patients had a smoking relapse one year postoperatively.[36] Conversely, Ostroff *et al.*[21] have found that patients diagnosed with a more advanced BC had 2.8 times more chance of becoming abstinent. However, patients with invasive tumours or having undergone cystectomy were not included in this study, which may have explained for the discrepancy with

the present study.

Cessation advice has been made available to most smokers at diagnosis and, nevertheless, only one of these (1.7%) has received supplementary support (pharmacologic, nicotine replacement or behavioural therapy). These results were in line with those found in previous studies in which a suboptimal assistance to smokers by urologists has been found, based only on medical advice regarding BC.[27,45-47] Time-constrained urologists and general practitioners considered that promotion of smoking cessation is suboptimal and disappointing, which may explain for their low investment into clinical daily practice.[46-49]

Some limitations are worth mentioning, apart from those previously described, which should be considered when conclusions are analysed: i) the assignment of data causality is usually impaired by the cross-sectional design, ii) patients who did not participate in the study were older and female, two characteristics that were associated to never smokers – this fact may have overestimated smoker's rate, iii) data regarding patient's smoking history were based on interviews, with no biochemical confirmation of smoking cessation, with a potential risk of underestimation of the number of current smokers[50,51] and (iv) an heterogeneous period of time between diagnosis and the interview has occurred, involving a risk of memory bias.

CONCLUSION

A significant issue related to the approach to the patient with BC has remained from this first study with Portuguese patients. Smoking is still not adequately recognised as the main aetiology of BC which, together with the recognised difficulty regarding smoking cessation and with the deficit of strategies for the promotion of smoking cessation may have had a contribution to the high prevalence of current smokers.

In conclusion, urologists should have a more active role in the promotion of smoking cessation and therefore the inclusion of protocols of action into the clinical practice may be an advisable recommendation, considering the family smoking context for the maximization of smoking cessation.

As a future perspective, a post-diagnosis assessment of patient's smoking behaviour in Portuguese patients with other cancer pathologies seems advisable, considering the scarce information available.

HUMAN AND ANIMAL PROTECTION

The authors declare that the followed procedures were according to regulations established by the Ethics and Clinical Research Committee and according to the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

FINANCIAL SUPPORT

The authors declare that there was no financial support in writing this manuscript.

REFERENCES

1. Miyazaki J, Nishiyama H. Epidemiology of urothelial carcinoma. Int J Urol. 2017;24:730-4.
2. Eble JN, Sauter G, Epstein JI, Sesterhenn IA, editores. World Health Organization pathology and genetics of tumours of the urinary system and male genital organs 2004. Lyon: IARC Press; 2004. [Consultado 2016 jun 07]. Disponível em: http://www.iarc.fr/en/publications/pdfs-online/pat-gen/bb7/BB7.pdf.
3. Cheung G, Sahai A, Billia M, Dasgupta P, Khan MS. Recent advances in the diagnosis and treatment of bladder cancer. BMC Med. 2013;11:13.
4. Ploeg M, Aben KK, Kiemeney LA. The present and future burden of urinary bladder cancer in the world. World J Urol. 2009;27:289-93.
5. Miranda N, Portugal C, Nogueira P, Farinha C, Oliveira A, Soares A, et al. Portugal- doenças oncológicas em números 2015. Lisboa; 2016. Direção Geral de Saúde. [Consultado 2016 Mar 02]. Disponível em: www.dgs.pt/estatisticas-de-saude/estatisticas-de-saude/publicacoes/portugal-doencas-oncologicas-em-numeros-2015.aspx.
6. Burger M, Catto JW, Dalbagni G, Grossman HB, Herr H, Karakiewicz P, et al. Epidemiology and risk factors of urothelial bladder cancer. Eur Urol. 2013;63:234-41.
7. Bassett JC, Gore JL, Chi AC, Kwan L, McCarthy W, Chamie K, et al. Impact of a bladder cancer diagnosis on smoking behavior. J Clin Oncol. 2012;30:1871-8.
8. Sylvester RJ. Natural history, recurrence, and progression in superficial bladder cancer. Scientific World Journal. 2006;6:2617-25.
9. Rink M, Crivelli JJ, Shariat SF, Chun FK, Messing EM, Soloway MS. Smoking and bladder cancer: a systematic review of risk and outcomes. Eur Urol Focus. 2015;1:17-27.
10. Rink M, Furberg H, Zabor EC, Xylinas E, Babjuk M, Pycha A, et al. Impact of smoking and smoking cessation on oncologic outcomes in primary non-muscle-invasive bladder cancer. Eur Urol. 2013;63:724-32.
11. Parsons A, Daley A, Begh R, Aveyard P. Influence of smoking cessation after diagnosis of early stage lung cancer on prognosis: systematic review of observational studies with meta-analysis. BMJ. 2010;340:b5569.
12. Gritz ER, Fingeret MC, Vidrine DJ, Lazev AB, Mehta NV, Reece GP. Successes and failures of the teachable moment: smoking cessation in cancer patients. Cancer. 2006;106:17-27.
13. McBride CM, Ostroff JS. Teachable moments for promoting smoking cessation: the context of cancer care and survivorship. Cancer Control. 2003;10:325-33.
14. Ostroff J, Dhingra L. Smoking cessation and cancer survivors. In: Feuerstein M, editor. Handbook of Cancer Survivorship. Washington: Springer; 2007. p. 303-22.
15. Rink M, Xylinas E, Babjuk M, Pycha A, Karakiewicz PI, Novara G, et al. Smoking reduces the efficacy of intravesical bacillus Calmette-Guerin immunotherapy in non-muscle-invasive bladder cancer. Eur Urol. 2012;62:1204-6.
16. Westmaas JL, Alcaraz KI, Berg CJ, Stein KD. Prevalence and correlates of smoking and cessation-related behavior among survivors of ten cancers: findings from a nationwide survey nine years after diagnosis. Cancer Epidemiol Biomarkers Prev. 2014;23:1783-92.
17. Castaldelli-Maia JM, Carvalho CF, Armentano F, Frallonardo FP, Alves TC, Andrade AG, et al. Outcome predictors of smoking cessation treatment provided by an addiction care unit between 2007 and 2010. Rev Bras Psiquiatr. 2013;35:338-46.
18. Ferreira PL, Quintal C, Lopes I, Taveira N. Teste de dependência à nicotina: validação linguística e psicométrica do teste de Fagerström. Rev Port Saúde Pública. 2009;27:37-56.
19. Baker TB, Piper ME, McCarthy DE, Bolt DM, Smith SS, Kim SY, et al.

Time to first cigarette in the morning as an index of ability to quit smoking: implications for nicotine dependence. Nicotine Tob Res. 2007;9:S555-70.
20. Pais-Ribeiro J, Silva I, Ferreira T, Martins A, Meneses R, Baltar M. Validation study of a Portuguese version of the Hospital Anxiety and Depression Scale. Psychol Health Med. 2007;12:225-35.
21. Ostroff J, Garland J, Moadel A, Fleshner N, Hay J, Cramer L, et al. Cigarette smoking patterns in patients after treatment of bladder cancer. J Cancer Educ. 2000;15:86-90.
22. Vilensky D, Lawrentschuk N, Hersey K, Fleshner NE. A smoking cessation program as a resource for bladder cancer patients. Can Urol Assoc J. 2012;6:E167-73.
23. Sturgeon SR, Hartge P, Silverman DT, Kantor AF, Linehan WM, Lynch C, et al. Associations between bladder cancer risk factors and tumor stage and grade at diagnosis. Epidemiology. 1994;5:218-25.
24. Jiang X, Castelao JE, Yuan JM, Stern MC, Conti DV, Cortessis VK, et al. Cigarette smoking and subtypes of bladder cancer. Int J Cancer. 2012;130:896-901.
25. Bassett JC, Gore JL, Kwan L, Ritch CR, Barocas DA, Penson DF, et al. Knowledge of the harms of tobacco use among patients with bladder cancer. Cancer. 2014;120:3914-22.
26. Anastasiou I, Mygdalis V, Mihalakis A, Adamakis I, Constantinides C, Mitropoulos D. Patient awareness of smoking as a risk factor for bladder cancer. Int Urol Nephrol. 2010;42:309-14.
27. Guzzo TJ, Hockenberry MS, Mucksavage P, Bivalacqua TJ, Schoenberg MP. Smoking knowledge assessment and cessation trends in patients with bladder cancer presenting to a tertiary referral center. Urology. 2012;79:166-71.
28. Nunes E, Narigão M, Nogueira PJ, Farinha C, Somsen E, Soares A, et al. Portugal - Prevenção e controlo do tabagismo em números – 2014. Lisboa: DGS; 2014.
29. Underwood JM, Townsend JS, Tai E, White A, Davis SP, Fairley TL. Persistent cigarette smoking and other tobacco use after a tobacco-related cancer diagnosis. J Cancer Surviv. 2012;6:333-44.
30. Ostroff JS, Jacobsen PB, Moadel AB, Spiro RH, Shah JP, Strong EW, et al. Prevalence and predictors of continued tobacco use after treatment of patients with head and neck cancer. Cancer. 1995;75:569-76.
31. Burris JL, Studts JL, DeRosa AP, Ostroff JS. Systematic review of tobacco use after lung or head/neck cancer diagnosis: results and recommendations for future research. Cancer Epidemiol Biomarkers Prev. 2015;24:1450-61.
32. Aveyard P, Adab P, Cheng KK, Wallace DM, Hey K, Murphy MF. Does smoking status influence the prognosis of bladder cancer? A systematic review. BJU Int. 2002;90:228-39.
33. Hopenhayn C, Christian WJ, Christian A, Studts J, Mullet T. Factors associated with smoking abstinence after diagnosis of early stage lung cancer. Lung Cancer. 2013;80:55-61.
34. Kim H, Kim MH, Park YS, Shin JY, Song YM. Factors that predict persistent smoking of cancer survivors. J Korean Med Sci. 2015;30:853-9.
35. Tseng TS, Lin HY, Moody-Thomas S, Martin M, Chen T. Who tended to continue smoking after cancer diagnosis: the national health and nutrition examination survey 1999-2008. BMC Public Health. 2012;12:784.
36. Simmons VN, Litvin EB, Jacobsen PB, Patel RD, McCaffrey JC, Oliver JA, et al. Predictors of smoking relapse in patients with thoracic cancer or head and neck cancer. Cancer. 2013;119:1420-7.
37. Walker MS, Vidrine DJ, Gritz ER, Larsen RJ, Yan Y, Govindan R, et al. Smoking relapse during the first year after treatment for early-stage non-small-cell lung cancer. Cancer Epidemiol Biomarkers Prev. 2006;15:2370-7.
38. Berg CJ, Thomas AN, Mertens AC, Schauer GL, Pinsker EA, Ahluwalia JS, et al. Correlates of continued smoking versus cessation among survivors of smoking-related cancers. Psychooncology. 2013;22:799-806.
39. Chandola T, Head J, Bartley M. Socio-demographic predictors of quitting smoking: how important are household factors? Addiction. 2004;99:770-7.
40. Kashigar A, Habbous S, Eng L, Irish B, Bissada E, Irish J, et al. Social environment, secondary smoking exposure, and smoking cessation among head and neck cancer patients. Cancer. 2013;119:2701-9.
41. Kim HE, Song YM, Kim BK, Park YS, Kim MH. Factors associated with persistent smoking after the diagnosis of cardiovascular disease. Korean J Fam Med. 2013;34:160-8.
42. Caponnetto P, Polosa R. Common predictors of smoking cessation in clinical practice. Respir Med. 2008;102:1182-92.
43. Quaife SL, McEwen A, Janes SM, Wardle J. Smoking is associated with pessimistic and avoidant beliefs about cancer: results from the International Cancer Benchmarking Partnership. Br J Cancer. 2015;112:1799-804.
44. Schnoll RA, Malstrom M, James C, Rothman RL, Miller SM, Ridge JA, et al. Correlates of tobacco use among smokers and recent quitters diagnosed with cancer. Patient Educ Couns. 2002;46:137-45.
45. Coleman T. ABC of smoking cessation. Use of simple advice and behavioural support. BMJ. 2004;328:397-9.
46. Sosnowski R, Przewozniak K. The role of the urologist in smoking cessation: why is it important? Urol Oncol. 2015;33:30-9.
47. Bjurlin MA, Goble SM, Hollowell CM. Smoking cessation assistance for patients with bladder cancer: a national survey of American urologists. J Urol. 2010;184:1901-6.
48. Strope SA, Montie JE. The causal role of cigarette smoking in bladder cancer initiation and progression, and the role of urologists in smoking cessation. J Urol. 2008;180:31-7.
49. Farley A, Koshiaris C, Oke J, Ryan R, Szatkowski L, Stevens R, et al. Physician support of smoking cessation after diagnosis of lung, bladder, or upper aerodigestive tract cancer. Ann Fam Med. 2017;15:443-50.
50. Thong AE, Petruzella S, Orlow I, Zabor EC, Ehdaie B, Ostroff JS, et al. Accuracy of self-reported smoking exposure among bladder cancer patients undergoing surveillance at a tertiary referral center. Eur Urol Focus. 2016;2:441-4.
51. Connor Gorber S, Schofield-Hurwitz S, Hardt J, Levasseur G, Tremblay M. The accuracy of self-reported smoking: a systematic review of the relationship between self-reported and cotinine-assessed smoking status. Nicotine Tob Res. 2009;11:12-24.