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Feature Articles

Black (Air-cured) and Blond (Flue-cured) Tobacco and Cancer Risk II: Pharynx and Larynx Cancer

H. Sancho-Garnier and S. Theobald

Two case–control studies have examined the relationship between black or blond tobacco smoking and the occurrence of pharynx or larynx cancer. The first study was carried out in several European countries. Tobacco smoking was found to be associated with higher risks for supraglottic and epilarynx cancer localisations than for pharynx, glottic and subglottic localisation. In all localisations, risk was twice as high again in users of black tobacco after adjusting for alcohol and for lifetime average daily dose of tobacco. The other study was carried out in Uruguay. After taking into account age, age at start of smoking, duration of smoking, years since stopping smoking and filter use, risks were found to be higher in black tobacco smokers than in blond tobacco smokers. All known studies which have been performed in countries where blond tobacco is generally smoked showed lower risks even when adjusted for alcohol. Use of black tobacco appears to be associated with higher risks of cancer of the pharynx and larynx than blond tobacco use.
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THE FREQUENCY of larynx and pharynx cancer throughout the world is characterised by great variability. Table 1 presents countries associated with the highest and lowest incidence rates of these cancer localisations. The incidence of pharynx (oropharynx and hypopharynx) and larynx cancers is very high in the southern part of Europe: France, Spain, Italy, Switzerland (see Table 2). In these countries (except Italy) up until the present time, black tobacco has been more frequently consumed than blond tobacco. The consumption of black tobacco varies from 65% in Geneva (Switzerland) to 90% in Calvados (France) [1]. Inversely, low rates of the above cancer localisations are observed in the UK and Denmark where blond tobacco is widely smoked. However, another important risk factor is alcohol consumption which is very different between northern and southern European countries. It has been estimated that in males the attributable risks (AR) for lips, oral cavity and pharynx are respectively equal to 0.69 for tobacco and 0.44 for alcohol consumption and 0.83 when tobacco and alcohol are both consumed. For the larynx, male AR are respectively equal to 0.71 and 0.64 for tobacco and alcohol consumption and 0.91 when tobacco and alcohol are both consumed (estimated from European countries data) [2].

Medline was used to review the literature between 1971 and 1991. We found only two case–control studies where the risk estimation of pharyngeal and laryngeal cancers took into account the type (blond or black) of tobacco consumption.

The first case–control study [3] was carried out between 1979 and 1982, simultaneously in six European regions each covered by a cancer registry. These regions were: the city of Turin and the province of Varese in Italy, the provinces of Navarra and Zaragoza in Spain, the canton of Geneva in Switzerland and the administrative area of Calvados in France. A French cancer centre (Institut Gustave Roussy) also participated. Included in this study were 1311 male and 63 female cases, plus 3064 male and 2370 female controls. The controls were randomly selected within each resident population of the six regions according to a sampling design varying between regions. Cases and controls were interviewed on their smoking, drinking and dietary habits and on their occupational status. A complete smoking history was obtained, noting, for each main period of life, type of smoking, amount smoked and brand.

The cases were epidermoid carcinomas, histologically verified. Special attention was given to the study of the risk at various sites of larynx and hypopharynx. Pharynx and larynx were studied according to three sites: hypopharynx, epilarynx and endolarynx. Endolarynx was divided into two subsites: supra glottic, and glottic and subglottic together. In males, tobacco-related risks adjusted for alcohol show clear-cut dose responses for all sites. The effect is somewhat different for the three sites, with risks higher for supraglottic and hypopharynx tumours in each consumption category (see Table 3). The differences in risk are just below the level of significance ($\chi^2 = 12.3$ for 6 degrees of freedom, $P < 0.06$). Risks related to the type of tobacco (black or blond) are examined in Table 4. They were all adjusted for alcohol and for lifetime average daily dose of tobacco. The risk is twice as high in users of black tobacco cigarettes compared with smokers of blond tobacco only. For people using alternatively one or the other kind, risks are increased by about 50%.

The second investigation [4] was carried out in the University Hospital of Montevideo, Uruguay from June 1985 to May 1986; 108 in-patients with cancer of the oral cavity and pharynx and 286 in-patient controls with diseases considered not related to tobacco and/or alcohol exposures were enrolled in this study. All cases and controls were males. Information about tobacco and alcohol consumption (type of tobacco, age at start, duration of smoking, amount of cigarettes/day, years since stopping and filter use) were collected. Type of tobacco was discriminated by brand. Amount of tobacco exposure was significantly different between cases and controls. Table 4 shows the odds ratio (OR) associated with different levels of black and blond tobacco consumption.

Higher risks for black tobacco were evident, especially between 11 and 20 cigarettes/day. Multivariate models were also fitted. After adjusting for age, age at start of smoking, duration of smoking, years since stopping smoking and filter use, black tobacco smokers displayed a relative risk (RR) 3.4 times higher than that of blond tobacco users (95% confidence interval = 1.8–6.5). Tests for linear trends were significant ($P < 0.001$) for both kinds of tobacco.

Table 5 shows RR for joint exposure to tobacco and wine, and to tobacco and hard liquor. The magnitude of the effect for black tobacco and alcohol was greater than that observed for blond tobacco and alcohol. The OR values show a multiplicative effect between tobacco and alcohol. This effect is more important with black tobacco than blond tobacco.

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Table 1. Age-standardised incidence rates of oral cavity, pharynx and larynx cancer in highest and lowest risk areas in the world

Site	Highest risk areas	ASIR (/100 000)	Lowest risk areas	ASIR (/100 000)
Pharynx and oral cavity	Calvados (France)	13.9	Iceland	0.4
	Connecticut (USA)*	5.6	Israel	0.2
Hypopharynx	Calvados (France)	16.5	Shanghai (China)	0.2
	Bas-Rhin (France)	11.9	Eindhoven (Netherlands)	0.1
Larynx	Sao-Paulo (Brazil)	17.8	Denmark	5.3
	Varese (Italy)	16.2	Kuwait†	3.4

ASIR: Age-standardised incidence rate. The reference population is the world population.
*Black American population.
†Kuwaiti population.

Table 2. Age-standardised incidence rates of pharynx and larynx cancer (males) and black tobacco consumption in some European countries

Site	Risk area	ASIR (/100 000)	Black tobacco consumption (%)*
Oropharynx and oral cavity	Calvados (France)	13.9	90
	Geneva (Switzerland)	5.4	64
Hypopharynx	Calvados (France)	16.5	90
	Bas-Rhin (France)	11.9	?
	Scotland (UK)	0.6	?
	Varese (Italy)	16.2	28
	Saragoza (Spain)	15.5	80
	Denmark	5.3	?
Larynx	Scotland (UK)	4.6	?

ASIR: Age-standardised incidence rate. The reference population is the world population.
*Percentage of male smokers who throughout their lives have smoked exclusively black tobacco cigarettes.

Table 3. Relative risk adjusted for alcohol in tobacco users, by site (95% confidence interval in brackets) [3]

Number of cigarettes/day	Endolarynx: Supraglottic	Endolarynx: Glottic and subglottic	Epilarynx	Hypopharynx
0	1	1	1	1
1–7	2.8	1.9	2.2	5.5
	(1.2–6.8)	(0.9–4.2)	(0.6–8.6)	(2–15.1)
8–15	9.6	4.4	6.7	13.7
	(4.7–19.5)	(2.3–8.2)	(2.3–19.4)	(5.4–34.5)
16–25	21.0	7.6	11.0	18.0
	(10.6–41.6)	(4.2–13.8)	(3.9–31.0)	(7.2–44.8)
26+	24.0	10.2	9.4	20.0
	(11.8–48.7)	(5.4–19.2)	(3.2–28.0)	(7.8–51.0)

Table 4. Risk from cigarette smoking according to the type of tobacco [3]

Type of tobacco	Endolarynx RR	95% CI	No. of cases	Hypopharynx Epilarynx RR	95% CI	No. of cases
Blond only	1	—	32	1	—	12
Blond > black	1.58	0.9–2.7	79	1.31	0.5–3.2	15
Black > blond	1.66	1.0–2.7	149	1.71	0.8–3.6	45
Black only	1.98	1.2–3.2	417	2.16	1.1–4.2	316
Unclassified	1.06	0.6–2.0	28	0.79	0.3–2.0	12

As summarised in Table 6, both studies have shown that smoking black tobacco is associated with a higher risk of developing cancers of the larynx and pharynx than smoking blond tobacco. The RR from cigarette smoking according to the type of tobacco was higher in the Uruguayan study than in the European study, but in Uruguay the RR was adjusted for age, age at start of smoking, duration, years since stopping and filter use, whereas in Europe the RR was adjusted for alcohol and for lifetime average daily dose of tobacco.

We did not find other studies in the literature comparing the effect of black and blond tobacco in relation to larynx and pharynx cancers.

Several case–control studies carried out in North America and in the UK dealt with pharyngo-laryngeal cancers and tobacco consumption [5–10]. We looked for the relationships between

Table 5. OR for joint exposure to tobacco and wine, and to tobacco and hard liquor

Type of tobacco	No. of cigarettes/day	Wine (cc/day) ≤50	51–150	151+	Spirits (cc/day) ≤50	51–150	151+
Blond	0–10	1.0	3.0	14.3	1.0	4.4	5.4
	11–20	4.2	12.5	60.4	4.2	18.6	22.6
	21+	16.7	49.4	238.4	15.4	69.0	83.7
Black	0–10	1.0	3.4	18.3	1.0	4.1	5.7
	11–20	24.7	84.1	454.0	19.7	82.3	112.2
	21+	26.4	89.8	484.9	23.3	97.5	132.8

Table 6. Risks from cigarette smoking according to the type of tobacco

Study	RR Blond	RR Black
Tuyns *et al.* [3]		
Larynx	1	1.98* [1.2–3.2]
Hypopharynx		2.16* [1.1–4.2]
de Stefani *et al.* [4]	1	
Oropharynx		3.4 [1.8–6.5]

*Adjusted for alcohol, tobacco consumption behaviours.
†Adjusted for tobacco consumption behaviours.

these studies and those reviewed in this paper assuming that studies conducted in areas like North America or the UK concern predominantly blond tobacco consumption.

The calculated risks were adjusted for alcohol consumption in the studies carried out by Tuyns *et al.* [3] in Europe and by Elwood *et al.* [5] in Canada. When looking at extreme consumption levels, risks were always higher in the first study [3] than in the second study [5].

In Winder's study [6], where the risks for tobacco, whatever the type, were not adjusted for alcohol, their levels were nearly equivalent to the risks in the Uruguayan study [4] and clearly higher than those calculated in the studies conducted by Stell in Liverpool (UK) [7] or Zeller in the city of New York [8] which were not adjusted for alcohol.

In several of these studies the authors have computed the risks for the combined effect of alcohol and tobacco [3–6, 9, 10]. The risks range from 1.6 to 135 in the European study [3] and from 3 to 485 in de Stefani's study [4]. We must point out that the product called maté (a frequently used herbal infusion), a factor independent from alcohol and tobacco which was also studied by the Uruguayan authors, could explain the higher levels of these risks. However, the risks calculated in the North American studies [5, 6, 9, 10] always remained lower than the risks in the European study [3].

In any case, the comparisons of the various calculated risks must be viewed with caution because many factors were different in these studies: sites of primary tumours, units or categories and levels of alcohol and tobacco consumption, reference categories (RR = 1), adjusting variables and other confounding factors (maté). However, the studies conducted in areas where people consume predominantly blond tobacco [5, 7–10] always produced lower risk estimates than those carried out in countries where black tobacco use is not a rare habit, despite adjustment of the calculation to incorporate alcohol consumption.

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The Assessment of Body Image in Cancer Patients

Penelope Hopwood

It is well recognised that cancer treatment can have a negative impact on body image, and this has proved to be an important outcome variable in treatment comparisons, such as surgery for breast cancer. However, there has been a good deal of variation in the way in which dissatisfaction with body image has been assessed, making comparison of results difficult. Some scales or subscales appear promising but lack the rigorous testing required to confirm their accuracy and reliability. This paper reviews the techniques and questionnaires that have been used for the evaluation of body image and highlights their strengths and weaknesses with respect to their use with cancer patients. At the present time, no single scale stands out as the ideal measure, but a pool of items can be generated from recent research, which merit future evaluation.
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INTRODUCTION

In the last decade, a body of knowledge has evolved concerning the psychological effects of cancer and its treatment. In parallel there has been considerable innovation in the design and development of instruments to measure the quality of life of patients both during and following cancer treatment. The need to measure specific effects, such as the impact on body image and sexuality, has become increasingly apparent as the sequelae of cancer treatments have been researched [1–6]. This is particularly important when body integrity is breached or body function altered as a result of medical intervention. In the field of breast cancer surgery, for example, the negative impact of breast loss from mastectomy has contributed to the adoption of a more conservative surgical approach, in order to maintain body integrity and the patient's satisfaction with her appearance. A series of research studies comparing the two surgical approaches has endorsed the view that conservative surgery is associated with the preservation of body image in comparison with mastectomy. However, the evaluation of body image in these studies varied considerably, making accurate comparison difficult [7].

EORTC quality of life study group

The impetus to review the assessment of body image has come from this group, where there is an initiative to develop disease and treatment-related modules to use with the group's core questionnaire. This scale has been designed and developed to measure quality of life in clinical trials [8, 9]. Field testing and data analysis to establish the psychometric properties of a modified version (QLQC30) of the original core questionnaire has been completed and the scale will shortly be published and made more widely available. Body image items were not included in the core questionnaire but will be developed as a separate module of questions.

Factors to consider in assessment

Conceptually and methodologically there are difficulties in measurement, because body image is not a distinct dimension, but overlaps with sexuality on the one hand (for instance, "I feel sexually attractive" pertains to both domains) and with the broader construct of "self image" on the other. Overall attractiveness, femininity/masculinity, self-confidence, and having a sense of body integrity may all be important to the concepts of body image, self-image or self-esteem. Whilst the disturbance in body image may be severe and at times seemingly out of proportion to the observed disfigurement, this usually reflects a measure of the distress and not an irrational appraisal of body image as may occur in dysmorphobia. Moreover, there is usually no distortion of body size, or misperception of body weight as is found typically in the body image disturbance of anorexia nervosa or bulimia. However, research is needed in this area, to determine whether a subgroup of patients have an underlying psychopathology to explain the degree of body image disturbance experienced.

Body image has been evaluated mainly with respect to breast cancer surgery, but there are many other treatment situations where it merits assessment, such as following the provision of a

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