Smoking, Carcinophobia and Voice Handicap Index

Katharina Glas Ulrich Hoppe Ulrich Eysholdt Frank Rosanowski

Department of Phoniatics and Pedaudiology, Erlangen University Hospital, Erlangen, Germany

Key Words

Smoking · Carcinophobia · Voice Handicap Index

Abstract

Objective: This study focuses on the relation of smoking, carcinophobia and voice handicap in dysphonic patients.

Patients and Methods: Fifty-four German-speaking outpatient voice clinic attendees suffering from dysphonia of benign origin took part in this study. All patients completed the German version of the Voice Handicap Index (VHI) and were asked about their fear of suffering from laryngeal cancer without prior information about their diagnosis. **Results:** Smokers did not fear to suffer from laryngeal cancer more than nonsmokers. However, former smokers were slightly more often found to be carcinophobic than nonsmokers. There was neither a significant difference in VHI scores comparing smokers to non- and former smokers nor when comparing carcinophobic to noncarcinophobic patients. **Conclusion:** Smoking may cause laryngeal cancer and influence the voice but does not affect patients' handicap due to dysphonia as measured by the VHI. Smoking habits do not influence the development of carcinophobia and carcinophobic dysphonic patients do not experience their voice problem differently than dysphonic patients without cancerophobia as measured by the VHI.

Copyright © 2008 S. Karger AG, Basel

Introduction

Not only since cigarette packs in the European Union (EU) have to be labeled 'Tobacco seriously damages health' [1] do we know that smoking is injurious to health. Every year, half a million of people in the European Union die from the effects of smoking, thus making tobacco use one of the most frequent causes of death and the most important single avoidable cause of death overall [2]. Tobacco use also remains the single most preventable cause of death in the USA. Every year, more than 440,000 Americans die from tobacco-related diseases, with heart disease, stroke and other cardiovascular diseases accounting for more than one third of these deaths [3]. However, smoking is not only a risk factor for cardiovascular diseases. It is also one of the major risk factors for the development of different kinds of cancer of the upper and lower respiratory tracts [4, 5], laryngeal cancer being the secondary most frequent tumor of the respiratory tract worldwide [5] and accounting for approximately 1,500 deaths in Germany every year [6].

A US-wide survey by the American Cancer Society recently showed that for the majority of smokers the fear of cancer is the major reason to quit smoking [7]. However, the fear of cancer, i.e. carcinophobia or cancerophobia [8, 9], is not something only smokers have. Dysphonic patients often only consult a physician because they are afraid that this might be the first symptom of laryngeal cancer.

This study examines whether or not dysphonic smokers are more likely to develop carcinophobia than dysphonic nonsmokers. It also investigates whether or not carcinophobia influences the patients' score on a self-report questionnaire, i.e. the Voice Handicap Index (VHI).

Participants and Methods

Fifty-four German-speaking dysphonic patients consecutively presenting to the reporting department between 08/10/2004 and 09/16/2004 took part in this study after informed consent. Complete data sets were obtained from 30 women and 24 men aged 48.5 ± 15.8 years with no significant age differences between the female and the male subgroups. Patients with malignancies of any kind were excluded from the study.

All patients underwent structural assessment at rigid laryngoscopy and stroboscopy carried out by an experienced otolaryngologist and phoniatician. A functional voice disorder was found in 13 women and 10 men, whereas 17 women and 14 men suffered from an organic voice disorder (unilateral vocal cord paralysis, $n = 12$; benign neoplasms, $n = 10$; chronic laryngitis, $n = 6$; others, $n = 3$).

The patients were asked to complete the German version of the VHI [10–12] before the examination. All of them returned fully completed questionnaires. The patients were also asked about their smoking habits and whether one major reason for them coming to see a laryngologist was their fear of having cancer.

The patients were divided into 2 groups, i.e. into carcinophobic and noncarcinophobic subjects and the following subgroups: current smokers, nonsmokers who had smoked in the past but not within the previous 6 months ('former smokers') and nonsmokers who had never smoked ('nonsmokers'). The subgroups were compared using MatLab® software.

Results

Of the 54 examined patients, 30 had never smoked, 12 were current smokers and 12 were former smokers.

Carcinophobia was found in 8 nonsmokers (27%), 5 current smokers (42%) and 8 former smokers (67%). Concerning carcinophobia, there was no significant difference between nonsmokers and current smokers [$p > 0.05$; 2-sided χ^2 test with Yates' adjustment; odds ratio (OR) = 1.96, confidence interval (CI) = 0.39–9.99] nor between nonsmokers and current plus former smokers ($p > 0.05$; 2-sided χ^2 test with Yates' adjustment; OR = 3.25, CI = 0.91–12.02). The prevalence of carcinophobia did not differ significantly when comparing former with current smokers ($p > 0.05$; 2-sided χ^2 test with Yates' adjustment; OR = 0.36, CI = 0.05–2.48). Former smokers were significantly more often found carcinophobic than nonsmokers ($p = 0.04$; 2-sided χ^2 test with Yates' adjustment; OR = 5.50, CI = 1.07–30.68).

Table 1 shows the VHI scores for the carcinophobic and noncarcinophobic patients. The noncarcinophobic patients scored worse (!) than the carcinophobic ones in both the VHI total score and the VHI subscales, but not on a significant level ($p > 0.05$; 2-sided χ^2 test with Yates' adjustment).

Table 2 shows the VHI scores for the nonsmokers, current smokers, former smokers and current plus former

Table 1. VHI scores for carcinophobic and noncarcinophobic patients

	Noncarcinophobic (33 of 54 patients)	Carcinophobic (21 of 54 patients)
Total	51.8 ± 27.8	37.2 ± 24.6
Emotional	16.2 ± 10.8	11.4 ± 8.9
Physical	19.7 ± 8.8	15.3 ± 7.6
Functional	15.9 ± 10.8	10.4 ± 9.5

Values are means $\pm$ SD. A higher score indicates a greater voice handicap.

Table 2. VHI scores for different patient groups based on smoking habits

	Nonsmokers (30 patients)	Smokers in general (24 patients)	Current smokers (12 patients)	Former smokers (12 patients)
Total	47.3 ± 28.4	44.6 ± 26.4	49.7 ± 22.8	39.5 ± 29.6
Emotional	14.4 ± 10.9	14.2 ± 9.8	16.2 ± 10.0	12.3 ± 9.5
Physical	18.2 ± 8.6	17.8 ± 8.6	20.3 ± 7.1	15.3 ± 9.6
Functional	14.7 ± 11.2	12.6 ± 9.8	13.3 ± 8.6	11.9 ± 11.3

Values are means $\pm$ SD. A higher score indicates a greater voice handicap.

smokers. The current smokers scored slightly worse than any of the other groups in the total and all VHI subscales except for the functional one. There was no significant difference in any of the VHI scores comparing nonsmokers to smokers in general, nonsmokers to current or former smokers and current to former smokers ($p > 0.05$; 2-sided χ^2 test with Yates' adjustment).

Discussion

The participants in this study match the characteristics (age, gender, diagnosis) of the long-term average of the patients presenting at the reporting department. Therefore, the study results may be deemed representative of all patients of the reporting department and of similar highly specialized institutions [10–15]. In many other international studies patients are enrolled similarly, resulting in a good comparability of study findings [12, 13, 16, 17].

Considering that there is no standard measure for the assessment of carcinophobia in ENT patients, the participants were simply asked about their fear of suffering from laryngeal cancer. All patients completed the German version of the VHI, which has proven to be a valid, reliable and sensitive tool for the assessment of patients' perception of their voice problem [10–12, 14, 17–22], and it is also recommended for clinical routine by the European Laryngeal Society [23]. The participants in this study achieved VHI scores 'typical' of dysphonic patients [10–12].

Roughly one fourth of all Germans (23.2%) smoke, most of them regularly [24]. Likewise, in this study, 22.2% of all patients were smokers and were assumed to be worried that their voice problem might be associated with laryngeal cancer. Still, only comparing nonsmokers and former smokers revealed a significantly different number of carcinophobic patients. Maybe the other subgroups were too small to reach significant differences. In order to reach significantly different results in all subgroups, however, the study population would have to be increased at least 6-fold. So, if only a number of more than 300 patients had to be recruited to answer a 'simple' question like the one of this study, the clinical relevance of the data would have to be questioned and considered as only of minor interest.

The fear of developing cancer may be the number one reason why people try to quit smoking [7], but it does not account for all patients, maybe due to personality factors. A thorough exploration of personality factors, however,

is far beyond the focus of this study; and these factors cannot be assessed in clinical routine, at least in the ENT field.

Nevertheless, psychological factors do not only influence the course and development of different diseases but also the way people experience themselves and their state of health [9, 25–28]. So, the possibility of having cancer and subsequent carcinophobia were expected to influence the VHI results. However, carcinophobic patients did not score worse on the VHI than noncarcinophobic ones. They even had (insignificantly) lower scores on the total scale and all subscales, indicating a lesser handicap. This is in accordance with a study by Billante et al. [21], which showed that even patients with cancer-related unilateral vocal fold paralysis did not score significantly worse on the VHI than patients with paralysis of benign etiology. Also, patients who are later diagnosed as having cancer of the larynx have been found to play down their symptoms and deny any fear of cancer [29]. Further work will focus on whether strong fears like carcinophobia and other states of mental distress influence the scores on more general health measures such as the Short Version of the Giessen Subjective Complaints List [30] or the Short Form 36 Health Survey Questionnaire [31].

The effects of smoking on the larynx and thus on the voice are well known and include changes in fundamental frequency [32, 33], frequency perturbation parameters and vocal tremor parameters when comparing healthy smokers to nonsmokers [34]. However, voice disorder itself and voice handicap focus on different aspects. So, as could be expected, smokers did not score significantly differently on any of the VHI scales than nonsmokers, indicating that smoking does not influence voice handicap. Although smokers might have a poorer quality of life due to smoking-associated disease, this cannot be reflected in a voice-specific handicap measure such as the VHI. Like the Voice-Related Quality of Life measure, the VHI is a disease-specific questionnaire and cannot replace a general health survey [31, 35].

References

- 1 Council of the European Communities: Council Directive 89/622/EEC of 13 November 1989 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the labeling of tobacco products. Official Journal L 359. 0001–0004 (Dec 08, 1989). <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0622:EN:HTML>.
- 2 Endres A: Bericht der Europäischen Kommission: mit verstärkter Kraft gegen den Tabakkonsum. Dtsch Ärztebl 1999;96:A-3228.
- 3 American Heart Association Inc: Tobacco, Federal Regulation of. Dallas, American Heart Association, 2007. <http://www.americanheart.org/presenter.jhtml?identifier=11223> (updated Jan 18, 2007; cited Jan 18, 2007).
- 4 Mackay J, Ericksen M, Shafey O: The Tobacco Atlas Online (interactive online version). 2006. <http://62.193.232.43:8080/statmap/> (cited Jan 19, 2007).
- 5 Ramroth H, Dietz A, Becher H: Rauchen und Alkohol sind Hauptrisikofaktoren für Kehlkopfkrebs: Ergebnisse einer deutschen Fall-Kontroll-Studie im europäischen Vergleich. Dtsch Ärztebl 2006;103:A-1078–A-1083.
- 6 Statistisches Bundesamt Deutschland: Todesursachen in Deutschland. Gestorbene in Deutschland an ausgewählten Todesursachen 2005. Wiesbaden, Statistisches Bundesamt, 2006, division 12, series 4.
- 7 American Cancer Society Inc: New Survey Reveals Concerns about Risks to Health, Children as Key Motivators to Quit Smoking. Georgia, American Cancer Society Inc, 2007. http://www.cancer.org/docroot/MED/content/MED_2_1x_New_Survey_Reveals_Concerns_about_Risks_to_Health_Children_as_Key_Motivators_to_Quit_Smoking.asp (cited Jan 18, 2007).
- 8 Cancerophobia. Webster's New Millennium™ Dictionary of English, preview edition (v 0.9.6). <http://dictionary.reference.com/browse/cancerophobia> (accessed December 30, 2006).
- 9 Deary IJ, Wilson JA, Carding PN, Mackenzie K: The dysphonic voice heard by you, me and it: differential associations with personality and psychological distress. Clin Otolaryngol 2003;28:374–378.
- 10 Weigelt S, Krischke S, Klotz M, Hoppe U, Köllner V, Eysholdt U, Rosanowski F: Voice Handicap Index: Instrument zur Bestimmung der subjektiven Beeinträchtigung durch organische und funktionelle Dysphonien. HNO 2004;52:751–756.
- 11 Nawka T, Wiesmann U, Gonnermann: Validierung des Voice Handicap Index (VHI) in der deutschen Fassung. HNO 2003;51:921–929.
- 12 Jacobson BH, Johnson A, Grywalski C, Silbergleit A, Jacobson G, Benninger MS, Newman CW: The Voice Handicap Index (VHI): development and validation. Am J Speech Lang Pathol 1997;6:66–70.
- 13 Krischke S, Weigelt S, Hoppe U, Köllner V, Klotz M, Eysholdt U, Rosanowski F: Quality of life in dysphonic patients. J Voice 2005;19:132–137.
- 14 Deary IJ, Webb A, Mackenzie K, Wilson JA, Carding PN: Short, self-report voice symptom scales: psychometric characteristics of the Voice Handicap Index-10 and the Vocal Performance Questionnaire. Otolaryngol Head Neck Surg 2004;131:232–235.
- 15 Wilson JA, Webb A, Carding PN, Steen IN, Mackenzie K, Deary IJ: The Voice Symptom Scale (VoiSS) and the Vocal Handicap Index (VHI): a comparison of structure and content. Clin Otolaryngol 2004;29:169–174.
- 16 Scott S, Robinson K, Wilson JA, Mackenzie K: Patient-reported problems associated with dysphonia. Clin Otolaryngol 1997;22:37–40.
- 17 Rosen CA, Murry T, Zinn A, Zullo T, Sonbolian M: Voice Handicap Index change following treatment of voice disorders. J Voice 2000;14:619–623.
- 18 Rosen CA, Murry T: Voice handicap index in singers. J Voice 2000;14:370–377.
- 19 Benninger MS, Gardner G, Grywalski C: Outcomes of botulinum toxin treatment for patients with spasmodic dysphonia. Arch Otolaryngol Head Neck Surg 2001;127:1083–1085.
- 20 Benninger MS, Ahuja AS, Gardner G, Grywalski C: Assessing outcomes for dysphonic patients. J Voice 1998;12:540–550.
- 21 Billante CR, Spector B, Hudson M, Burkard K, Netterville JL: Voice outcome following thyroplasty in patients with cancer-related vocal fold paralysis. Auris Nasus Larynx 2001;28:315–321.
- 22 Courey MS, Garrett CG, Billante CR, Stone RE, Portell MD, Smith TL, Netterville JL: Outcomes assessment following treatment of spasmodic dysphonia with botulinum toxin. Ann Otol Rhinol Laryngol 2000;109:819–822.
- 23 Dejonckere PH, Bradley P, Clemente P, Cornut G, Crevier-Buchman L, Friedrich G, Van De Heyning P, Remacle M, Woisard V: A basic protocol for functional assessment of voice pathology, especially for investigating the efficacy of (phonosurgical) treatments and evaluating new assessment techniques. Eur Arch Otolaryngol 2001;258:77–82.
- 24 Statistisches Bundesamt Deutschland: Rauchverhalten nach Altersgruppen: Ergebnisse der Mikrozensus-Befragung im Jahr 2005. Wiesbaden, Statistisches Bundesamt, 2007. <http://destatis.de/basis/d/gesu/gesutab7.php> (updated Jun 6, 2006; cited Jan 18, 2007).
- 25 Henningsen P, Zimmermann T, Sattel H: Medically unexplained physical symptoms, anxiety, and depression: a meta-analytic review. Psychosom Med 2003;65:528–533.
- 26 Roy N, Bless DM, Heisey D: Personality and voice disorders: a multitrait-multidimension analysis. J Voice 2000;14:521–548.
- 27 Kinzl J, Biehl W, Rauegger H, Weissbacher S, Hinterhuber H: Funktionelle Aphonie – Ein Konversionssymptom zur Angstabwehr. Psychother Med Psychol 1988;38:347–351.
- 28 Chapple A, Zieband S, McPherson A: Stigma, shame, and blame experienced by patients with lung cancer: qualitative study. BMJ 2004;328:1470.
- 29 Vračko-Tuševljak M, Kambič V: Die Bedeutung psychologischer Faktoren für die Frühdiagnose der Larynx- und Hypopharynx Geschwülste. Laryngorhinootologie 1989;68:118–121.
- 30 Brähler E, Schumacher J, Brähler C: Erste gesamtdeutsche Normierung der Kurzform des Giessener Beschwerdebogens GBB-24. Psychother Psychosom Med Psychol 2000;50:14–21.
- 31 Brazier JE, Harper R, Jones NMB, O'Cathain A, Thomas KJ, Usherwood T, Westlake L: Validating the SF-36 health survey questionnaire: new outcome measure for primary care. BMJ 1992;305:160–164.
- 32 Sorensen D, Horii Y: Cigarette smoking and voice fundamental frequency. J Commun Disord 1982;15:135–144.
- 33 Murphy CH, Doyle PC: The effects of cigarette smoking on voice-fundamental frequency. Otolaryngol Head Neck Surg 1987;97:376–380.
- 34 Gonzalez J, Carpi A: Early effects of smoking on the voice: a multidimensional study. Med Sci Monit 2004;10:CR649–CR656.
- 35 Hogikyan ND, Sethuraman G: Validation of an instrument to measure voice-related quality of life (V-RQOL). J Voice 1999;13:557–569.