Short Communication

Cessation of smoking and drinking and the risk of laryngeal cancer

A Altieri*,1, C Bosetti1, R Talamini2, S Gallus1, S Franceschi3, F Levi4, L Dal Maso2, E Negri1 and C La Vecchia1,5

1Istituto di Ricerche Farmacologiche ‘Mario Negri’, Milan, Italy; 2Servizio di Epidemiologia, Centro di Riferimento Oncologico, Aviano, Italy; 3International Agency for Research on Cancer, Lyon, France; 4Registre Vaudois des Tumeurs, Institut Universitaire de Médecine Sociale et Préventive, Lausanne, Switzerland; 5Istituto di Statistica Medica e Biometria, Università degli Studi di Milano, Milan, Italy

A case–control study was conducted in Italy and Switzerland between 1992 and 2000 on 527 cases of laryngeal cancer and 1297 hospital controls. The risk of laryngeal cancer steadily decreased from 3 years after stopping smoking. Some decline in risk was observed only 20 years or more after stopping drinking.

To elucidate the separate and combined effect on laryngeal cancer risk of time after smoking and drinking cessation, we analysed data from a multicentric case–control study conducted in Italy and Switzerland (Talamini et al, 2002). In this study a 20-fold higher risk was found for current smokers, and the risk was approximately 40-fold higher for heavy smokers (i.e. ≥25 cigarettes/day). With reference to alcohol consumption, the risk increased in relation to number of drinks, with a six-fold increase for ≥8 drinks/day.

*Correspondence: Dr A Altieri; Istituto di Ricerche Farmacologiche ‘Mario Negri’, Via Eritrea 62 - 20157 Milan, Italy; E-mail: altieri@marionegri.it

Received 7 August 2002; revised 12 October 2002; accepted 13 October 2002

PATIENTS AND METHODS

A case–control study of cancer of the larynx was conducted between 1992 and 2000 in two areas of northern Italy (the provinces of Pordenone and the greater Milan area), and in the Swiss Canton of Vaud (Talamini et al, 2002). Cases were 527 patients (478 men and 49 women, median age 61 years, range 30–79) admitted to the major teaching and general hospitals in the areas under study with histologically confirmed squamous-cell carcinoma of the larynx, diagnosed no longer than 1 year before the interview. Laryngeal cancer cases included 271 glottis, 117 supraglottis, and 139 other or unspecified laryngeal cancers. Controls were 1297 subjects (1052 men and 245 women, median age 61 years, range 30–79) frequency-matched with cases by 5-year age groups, sex and study centre, selected among patients admitted to the same hospitals as cases for a wide spectrum of acute, non-neoplastic conditions, not related to smoking, alcohol consumption or long-term modifications of diet. To compensate for the rarity of laryngeal cancer in women, a control-to-case ratio of about five was chosen for females, as opposed to two for males. Twenty-seven per cent of the controls were admitted for traumas, 22% for other orthopaedic disorders, 29% for acute surgical conditions and 23% for miscellaneous other illnesses, including eye, ear, nose and throat, skin or dental disorders.

Cases and controls were interviewed by ad hoc trained interviewers during their hospital stay using a structured questionnaire. Information was collected on socio-demographic characteristics, anthropometric measures, lifestyle habits, including tobacco smoking and alcohol drinking, dietary habits, personal and family medical history. The section on smoking included questions on smoking status (never, current, or ex-smokers), daily number of cigarettes/cigars smoked in different life periods, age at starting, duration of the habit and, for ex-smokers, age at smoking cessation. Information on alcohol consumption included the average number of days per week for each type of alcoholic beverage consumed (wine, beer and spirits), the average number of drinks per day and, for ex-drinkers, age at drinking cessation. Ex-drinkers and ex-smokers were subjects who had abstained from any type of drinking or smoking for at least 12 months.

Odds ratios (OR) and the corresponding 95% confidence intervals (CI) were estimated using unconditional multiple logistic
RESULTS

Table 1 gives the distribution of the 527 cases of laryngeal cancer and the 1297 control subjects, according to smoking and drinking status, and time since cessation. A total of 159 cases were ex-smokers and 60 were ex-drinkers. Compared to current smokers, the OR was slightly above unity in the 2 years after smoking cessation, declined to 0.60 up to 9 years, to around 0.25 for 10 to 19 years, and to 0.17 for 20 or more years after cessation. Despite the decline, the risk 20 years after stopping smoking was still greater than that for never smokers (OR=0.05). The inverse trend in risk with time since smoking cessation was significant (P<0.001).

In relation to time since stopping alcohol drinking, no consistent pattern of risk was observed up to 20 years, and some risk reduction was evident only 20 years since stopping the habit. The ORs for ex-drinkers, as compared to current drinkers, were 1.24 for 1–5 years since drinking cessation, 1.29 for 6–19 years. The OR was 0.53 among the few subjects who had stopped drinking for 20 or more years, i.e., similar to that of never drinkers (OR=0.56). None of these estimates, nor the trend in risk, was significant.

Table 2 shows the combined effect of stopping tobacco smoking and alcohol drinking, in relation to time since cessation of each habit. Compared to subjects who currently smoked and drank, the risk of laryngeal cancer decreased with time since smoking cessation across all drinking strata. Conversely, no decline in risk was found for drinking cessation among current smokers or ex-smokers. The OR for laryngeal cancer among those who had quit smoking was similar to that of subjects who had quit smoking but remained current drinkers (OR=0.28).

DISCUSSION

Our study, based on a large dataset on laryngeal cancer, is one of the few to examine the effect on risk of stopping both smoking and drinking. It confirms that the favourable impact of stopping smoking is already evident in the few years after cessation, and that laryngeal cancer risk is reduced by over 70% ten or more years after stopping smoking. Such a risk reduction has been observed also for oesophageal cancer (Castellsagué et al, 1999; Bosetti et al, 2000), and is similar, or if anything stronger, to that recognised for lung cancer (Peto et al, 2000; Stellman et al, 2001).

Some favourable impact of stopping drinking may become apparent in the long term, but it is difficult to estimate on account of the small number of subjects who had stopped drinking for 20 years or more. The persistence of an excess risk up to several years after stopping drinking indicates that alcohol is probably not only a late stage carcinogen (Day and Brown, 1980), as previously observed for oral, pharyngeal (Franceschì et al, 2000), and oesophageal (Bosetti et al, 2000) cancers. Furthermore, the persistence of exposure to tobacco among ex-drinkers may play an important role in limiting the benefits of drinking cessation.

This pattern of risk after drinking cessation may be also due to certain characteristics of the selected group of people who had stopped drinking (8% of control subjects). Most former drinkers had, in fact, higher alcohol consumption than current drinkers (median number of drinks per week was 42 in ex- and 28 in current drinkers), and it is possible that health related conditions had affected the decision to stop alcohol consumption, though this aspect was not investigated. In any case, it is unlikely that early symptoms of cancer of the larynx had accounted for drinking cessation, since the excess risk persisted up to 20 years prior to cancer diagnosis.

In this study information on smoking and alcohol was satisfactorily reproducible and valid (Ferraroni et al, 1996), although no information was available on the reliability of data on time-related aspects of the two habits. The hospital setting should, however, ensure a reasonable comparability of information collected (D’Avanzo et al, 1996), and careful allowance was made for tobacco and alcohol, as well as education.

In the present study, 90% of laryngeal cancer was attributable to tobacco, while alcohol explained 58% of cases. Together, these two factors were responsible for 96% of laryngeal cancers (Bruzzi et al, 1985; Talamini et al, 2002). Stopping tobacco smoking, and possibly alcohol drinking, could therefore have a substantial impact in reducing laryngeal cancer risk. At public health level, however, stopping smoking remains the key measure to control laryngeal cancer.

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**Table 1**  Odds ratios (OR) and corresponding 95% confidence intervals (CI) of laryngeal cancer according to smoking and drinking status and time since cessation, among 527 cases and 1297 controls. Italy and Switzerland, 1992–2000

| Tobacco Smoking | Cases | Controls | OR (95% CI) |
|-----------------|-------|----------|-------------|
| Current smokers | 349   | 352      | 1            |
| Ex-smokers      | 159   | 460      |              |
| Time since cessationa (years) |       |          |             |
| 1–2             | 29    | 23       | 1.30 (0.70–2.40) |
| 3–5             | 22    | 38       | 0.65 (0.36–1.17) |
| 6–9             | 33    | 59       | 0.60 (0.37–0.98) |
| 10–14           | 25    | 89       | 0.82 (0.47–1.35) |
| 14–19           | 18    | 76       | 0.23 (0.13–0.40) |
| >20             | 32    | 175      | 0.17 (0.11–0.27) |
| χ², for trend    |       |          | 62.49 (P<0.001) |
| Never smokers   | 19    | 485      | 0.05 (0.03–0.08) |

| Alcohol drinking | Cases | Controls | OR (95% CI) |
|------------------|-------|----------|-------------|
| Current drinkers | 448   | 1075     | 1            |
| Ex-drinkers      | 60    | 87       |              |
| Time since cessationb (years) |       |          |             |
| 1–5              | 30    | 39       | 1.24 (0.69–2.24) |
| 6–19             | 24    | 33       | 1.29 (0.68–2.47) |
| >20              | 5     | 15       | 0.53 (0.15–1.94) |
| χ², for trend    |       |          | 0.05 (P=0.82) |
| Never drinkers   | 19    | 135      | 0.56 (0.31–0.99) |

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*Estimates from unconditional logistic regression models, including terms for age, sex, study centre, education, and, when appropriate, alcohol and tobacco consumption. bReference category. cThe sum does not add up to the total because of one missing value.
ACKNOWLEDGEMENTS

This work was conducted with the contribution of the Italian Association for Cancer Research, Milan, Italy, the Italian and Swiss Leagues Against Cancer, and the Swiss Foundation for Research Against Cancer. Dr S Gallus was supported by a Monzino Foundation fellowship. The authors thank Mrs I Garimoldi for editorial assistance.

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