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REVIEW ARTICLE

Potential Threats of Oral Cancer among Young Adults: Etiology and Incidence

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ABSTRACT

Oral cancer is increasing day by day, particularly in young adults. It has been thought to be the result of an increased exposure to known risk factors of cancer. Prior to conducting large expensive population-based studies, it seems appropriate to conduct initial smaller-scale surveys to assess evidence for the risk factors. This survey of young persons with oral cancer suggest that most are exposed to traditional risk factors of tobacco, smoking, drinking alcohol and a low consumption of fruits and green leafy vegetables.

Keywords: Oral cancer, Etiology, Alcohol, Tobacco, Diet.

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INTRODUCTION

Many studies have shown that oral cancers are becoming more common throughout the world, at least among males. Some studies have also shown that males who born more recently carry increased risks of developing and dying from oral cancer throughout their life.[1] Countries in Western Europe have experienced increases in incidence of approximately three-fold within a generation,[2] while some countries in Eastern Europe, have recorded even larger, eight-fold increases.[3] Since these cancers are relatively uncommon at younger ages, the actual increase in the number of cases is relatively modest so far but since they are 'programmed in' to also occur at older ages at which oral and pharyngeal cancers are more common, the increase in numbers of cases will, in the future, be proportionately greater. Why are these increases occurring?

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Alcohol consumption and tobacco smoking together are estimated to account for ~75% of all oral cancer cases. Both smoking[4,5] and alcohol consumption[4,6,7] are known to be important independent risk factors for intraoral carcinoma. An interaction between tobacco and alcohol has also been reported with evidence that their combined effect is greater than the sum of the two independent effects.[7,8] The use of alcohol is often associated with the habit of tobacco smoking and, in investigating the etiology of oral cancer, it is important to separate and isolate the independent effect of each risk factor as well as considering their combined impact. A lower intake of fruits and green leafy vegetables, a further risk factor, seems unlikely. This reveals that other factors may also be responsible, such as smokeless tobacco, tobacco quid, although the evidence relating to any particular factor is limited. Analytical studies in young males should be large, covering a wide geographical area and, therefore, would be expensive. We considered it prudent, therefore, first to conduct a descriptive survey of young patients with oral cancer to seek information on exposure to known and hypothesized risk factors.

MATERIALS AND METHODS

Patients of age less than 40 years and diagnosed with oral and pharyngeal cancer in Institute of Dental Sciences, Bareilly, between January and December 2014, were included in the study. This includes cancers of the lip, oral cavity and pharynx but excluded cancers of the salivary gland and nasopharynx because both are uncommon and do not exhibit that pattern of increasing incidence and mortality which was noted for the tumors elsewhere in the oral cavity and pharynx. All patients were explained well about the procedure in their own language (mother tongue) and due written consent were obtained before the commencement of the study. Information was obtained by self-complete questionnaire on demographic factors, lifestyle (including tobacco use, alcohol consumption, smokeless tobacco and consumption of fruit and vegetables), medical and family history of disease.

RESULTS

There were 100 patients less than 40 years of age with oral cancer (excluding salivary glands and nasopharynx) confirmed from their biopsy records, contacted. Out of 100, 31

refused to participate in the study and 11 did not return the questionnaire. Of those remaining, 13 questionnaires were completed by a proxy respondent (close relative). Overall, therefore, 58 completed questionnaires were received. In the participating subjects majority were male (79.3%). The site of tumor was most often the tongue (45%) or elsewhere within the mouth (29%). Regular tobacco smoking (one cigarette per day for 1 year, ever) was reported by 39 (67.24%) and among the smokers most had started at or before age 25 (78%). Twenty-six of the ever regular smokers were smoking 1 year before diagnosis, and few reported smoking 10 or more cigarettes per day. The vast majority of subjects (n = 43; 74.13%) reported regular consumption of alcohol (at least once/month for 1 year), and 29 subjects (67.44%) were drinking regularly 1 year before diagnosis: beer, spirits and wine were all commonly reported as being drunk regularly. An estimate of the number of glasses of alcohol per week over this period showed 26 of the 43 alcohol drinkers consuming on average more than one glass per day (Table 1). An estimate of the number of servings of fruits and vegetables consumed in a week by subjects showed that the majority consumed less than one serving per day of both fruits (64%) and vegetables (57%). Twelve subjects (20.68%) reported regular tobacco chewing.

The 'traditional risk factors' for oral and pharyngeal cancer were defined as follows: (1) smoking ≥ 10 cigarettes/day 1 year before diagnosis, (2) drinking > 2 glasses of alcohol per day, and (3) consuming < 1 serving of fruits or vegetables per day. The number of traditional risk factors to which individual subjects reported was calculated. This showed that 15.5% (n = 9) reported no risk factors, 37.9% (n = 22) had one risk factor, and 58.6% (n = 34) had two risk factors, with no difference in the distribution of risk factors noted by sex nor patient/proxy response status.

DISCUSSION

The aim of this survey was to determine whether or not the increasing incidence of oral cancer is concomitant with risk factors (smoking, tobacco, alcohol consumption and low intake of fruits and vegetables) in young adults. Although, majority of the patients in this survey had been regular smokers and 68% are exposed to one or more of the traditional risk factors, but occurrence of oral cancer at such young age could not be explained clearly, and it may require further investigations at a large scale. In addition, the inter-relationship with other risk factors for intraoral cancer; in particular, the greatly increased risk from cigarette smoking in combination with alcohol consumption may be involved. The underlying goal of an epidemiological study is to make biologic (or bio-behavioral) inferences about effects on individual risks or to make ecologic inferences about effects on group rates. It may be due to high cumulative exposures or genetic predisposing factors.[9] In subjects with any high-risk exposure, this can be due to functional genetic polymorphisms of carcinogen activating (phase I) and/or detoxifying (phase II) enzymes. In subjects without any apparent high-risk exposure, there may be a more direct genetic predisposition to oral cancer.[10] Hence, the results suggest that rising alcohol consumption probably superimposed on continued tobacco usage could account for the increases in oral cancer among young adults.

Table 1: Risk factors among oral cancer patients

Tobacco smoking (1 year before diagnosis)		*n*	*%*
Never		13	22.4
Ex-smoker		6	15.38
Current	< 10 cigarettes/day	7	17.9
	10 ± 19	26	66.6
	20 ± 39	5	12.8
	≥40	1	0.25
Number of glasses of alcohol drunk (on average per day)			
Nondrinker		12	20.68
Current drinker	≤1 glass	5	11.62
	> 1 glass and ≤ 2 glasses	4	9.3
	> 2 glasses and ≤ 4 glasses	31	72.09
	> 4 glasses	3	6.9

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