

EVALUATION OF RISK FACTORS FOR GASTRIC CANCER

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ABSTRACT: Gastric cancer is one of the most commonly diagnosed malignancies and remains an important cause of mortality. Several factors are suspected to play a role in gastric carcinogenesis which include diet, genetic factors, and infectious agents. In this study we evaluated the association between few epidemiological factors and gastric cancer risk. We have included 94 gastric cancer patients and 100 healthy age and sex matched controls in the study. Methods: Evaluation of association was based on frequency distribution of epidemiological variables in control and cancer groups. Results: Among the various factors analysed smoking (15.136; $p < 0.01$) and alcohol consumption were found to be significantly associated (5.966 ; $p < 0.05$) with gastric cancer. Conclusions: We conclude that smoking and alcohol consumption increase the risk of gastric cancer among the Indian population.

Keywords: gastric cancer, smoking, alcohol consumption

INTRODUCTION

Worldwide, stomach cancer is the fourth most frequent cancer and the second leading cause of death from cancer, causing nearly one million deaths worldwide per year (WHO, 2006). It is found more common in China, [Korea](#), and [Japan](#). Annual incidence rate of gastric cancer in India, is 10.6 per 100 000 population, in China and Japan it is 32-59 and 80-115 per 100 000 population respectively (Singh et al, 2006).

The etiology of gastric cancer is multifactorial . Marked differences in gastric cancer incidence among different ethnic groups living in the same geographical area have been observed, pointing to host genetic factors or socioenvironmental factors peculiar to a particular racial group.(Miller BA et al;1996) Environmental factors, including dietary habits, are important in its development. (Lee JK et al;1995, Ahn YO;1997). Consumption of salted, smoked, pickled and preserved foods rich in salt, nitrite and N-nitro's compounds have been reported to be associated with an increased risk of gastric cancer. Smoking and alcohol consumption have been proposed as risk factors for gastric cancer in some epidemiological studies, but their role has been inconsistent. (Rao DN et al, 2002; Gajalakshmi V, et al,2001) Similarly, dietary factors have been studied in some epidemiological studies from India, but their role has not been consistently proven.(Rao DN et al; 2002)

The present case-control study attempted to investigate the effects of dietary factors and social habits on the development of gastric cancer in Southern India.

MATERIALS AND METHODS

98 patients with gastric cancer and 100 age and sex matched controls were included in this hospital-based case-control study. Cases were all histologically confirmed from January 2002 to January 2006 at Osmania and Gandhi general hospitals, Hyderabad, India. GCA patients who had coexisting chronic diseases affecting dietary patterns were excluded. Control subjects were selected from an identical population who had normal upper endoscopy. Ethical committee approval was obtained from the institution and every subject provided their written informed consent for the study.

Patients and controls were interviewed using an appropriate questionnaire including sex ,age at onset, addictions to alcohol and smoking ,dietary habits ,history of diabetes or hypertension, parental consanguinity, history of other cancers, and Helicobacter pylori infection . Chi square analysis was done to evaluate the association between the different epidemiological factors and risk of gastric cancer and the results were presented at 95% confidence intervals (CI).

RESULTS

Affected males were found to be 1.87 times more compared to females. Chi square analysis showed smoking (OR=15.136 ; $p<0.01$) and alcohol intake as risk factors (OR=5.966; $p<0.05$).

Table 1: Frequency distribution of epidemiological variables in control and cancer groups

		Gastric Cancer		Control		Chi-Square
		N	%	n	%	
Gender	Male	62	47	72	53	0.668
	Female	32	53.3	28	46.7	
Smoking	Yes	55	64.7	32	35.3	15.136**
	No	39	36.4	69	63.6	
Alcohol	Yes	53	58.2	38	41.8	5.966*
	No	41	40.6	62	59.4	
Diet	Non-veg	91	49.2	94	50.8	0.864
	Veg	3	42.9	6	57.1	
Diabetes	Yes	26	52	26	48	0.25
	No	68	47.9	74	52.1	
Consanguinity	Yes	25	54.3	21	45.7	0.703
	No	69	47.3	79	52.7	
Other Cancers	Yes	11	64.7	6	35.3	1.851
	No	83	47.4	94	52.6	

DISCUSSION

In our study we found that affected males were 1.87 times more compared to females .Also we have identified alcohol consumption as an independent risk factor. Studies of the relation between alcohol consumption and the risk of gastric cancer have been largely inconclusive and case-control studies from India have not identified alcohol intake as an independent risk factor for gastric cancer in India (Rao DN et al, 2002; Gajalakshmi CK, et al 1996).

Heavy alcohol intake can induce chronic gastritis, which is known to be a predisposing factor for stomach cancer. Alcohol might also increase stomach cancer risk by inducing alterations in gastric juice acidity, and some alcoholic beverages may be contaminated with carcinogenic substances like N-nitrosodimethylamine in large amounts,(Prasad MP ,et al,1994) and this may be an important factor for the high risk of gastric cancer associated with alcohol consumption. Smoking is found to be a variable risk factor for gastric cancer as been reported from India.(Rao DN et al, 2002; Gajalakshmi CK, et al 1996) and our study also identified smoking as a potent risk factor for gastric cancer. Cigarette smoke contains 19 known chemical carcinogens and 2 radioactive carcinogens along with nicotine which are ample for developing gastric cancer.

CONCLUSION: In conclusion, our study provides further evidence that alcohol consumption and smoking are risk factors for the development of gastric cancer. Efforts to detect cancer early in developing countries would go a long way in reducing the disease burden and improving the outcome.

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