ORIGINAL ARTICLE

History of upper gastrointestinal cancers in relatives: a community-based estimate

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ABSTRACT

Aim: The present study aimed to evaluate the prevalence of positive family history of these cancers in a large population-based sample of Tehran province, capital of Iran.

Background: Upper gastrointestinal (UGI) cancers (gastric and esophagus cancer) constitute a major health problem worldwide. A family history of cancer can increase the risk for developing cancer and recognized as one of the most important risk factors in predicting personal cancer risk.

Patients and methods: This study designed as a cross-sectional survey in general population (2006-2007) of Tehran province. Totally 7,300 persons (age>= 20 years) sampled by random sampling on the basis of the list of postal, of whom 6,700 persons agreed to participate (response rate 92%). Respondents were asked if any first-degree (FDR) or second-degree (SDR) relatives had gastric or esophageal cancer.

Results: Totally, 6,453 respondents (48% male) entered to the study. The mean age of responders with positive FH was significantly higher than those with negative FH (P<0.05). In total, 341 respondents (5.3%) reporting a history of UGI cancers in their relatives, 134(2.1%) in FDRs, and 207(3.2%) in SDRs.

Conclusion: Our findings showed that the reported prevalence of FH of UGI cancers was relatively low and varied by specific respondent characteristics such as age and sex. However, the estimates of prevalence presented here are likely to be conservative compared with actual prevalence because of self-reported data gathering.

Keywords: Upper gastrointestinal cancer, Gastric cancer, Esophagus cancer, Family history, Community-based study.

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Introduction

Upper gastrointestinal (UGI) cancers (gastric and esophagus cancer) constitute a major health problem worldwide (1). Although a decreasing incidence of gastric cancer has been observed

during the last decades, it remains the fourth most common cancer worldwide and the second leading cause of cancer-related death (2, 3). Esophageal cancer is among the 10 most common malignancies worldwide, and ranks as the 6th leading cause of death from cancer (2). It constitutes 7% of all gastrointestinal (GI) cancers and is one of the most lethal of all cancers (4-7).

UGI cancers cause 55% of all cancer-related deaths in Iran, with gastric cancer being the most common and accounts for nearly 50% of all GI cancers (8).

Cancer has long been recognized to have a familial component (9). A family history of cancer can increase the risk for developing cancer (10) and recognized as one of the most important risk factors in predicting personal cancer risk (11). It is suggested that esophageal cancer was more common in both the parents and siblings of the patients with the disease (4). The familial aggregation of gastric cancer observed in many studies (12-14). Bernini et al. (15) found that, 1 of 3 patients diagnosed with gastric cancer had a family history of stomach cancer in first- or second-degree relatives. It is also known that the risk of development of gastric carcinoma among first-degree relatives of patients with stomach cancer appears to be 2-3 times higher than in the general population (16).

While a few studies have been conducted on evaluation of family history of UGI cancers in Iranian cancer patients, there is no data of family history of gastric and esophageal cancer in the general population. Therefore, we aimed to evaluate the prevalence of positive family history of these cancers in a large population-based sample of Tehran province, capital of Iran.

Patients and Methods

This study designed as a cross-sectional survey in general population (2006-2007) of Tehran province (including Tehran metropolitan, and five other cities and their rural areas in Tehran province). A total of 7,300 persons (older than 20 years) were sampled by random sampling on the basis of the list of postal codes (registered in Tehran central post office), of whom 6,700 persons agreed to participate (response rate 92%). The research group were referred to each selected postal code and interviewed with all members of selected house according to questionnaire. The participants were informed that attending the interview was not compulsory and patient's anonymity was preserved. Ethics Committee of Shahid Beheshti University of Medical Science approved research protocol.

Respondents were asked if any first-degree (father, mother, sister, brother, daughter, or son) or second-degree (grandparents, aunts or uncles) relatives had gastric or esophageal cancer. The participants completed a question specifying the age of diagnosis for each relative with a history of cancer. The study samples were asked about their age and sex.

The independent t-test was used to test for a difference between two independent groups on the means of a continuous variable. Pearson's chi-square was performed to test for independence between categorical variables. Numeric variables are presented as mean ± standard deviation other parameters as frequency and percentage.

Results

We exclude 247 persons from further analyses because they reported unknown family history of cancer. Totally, 6,453 respondents (48% male with mean (±SD) age of 41.2± 19.6 years and 52% female with mean (±SD) age of 39.6± 17.9 years, P<0.05) entered to the study. The mean (±SD) age of responders with positive FH was 37.1±17.1 years; it is significantly higher than the mean age (±SD) of those with negative FH (40.5±18.8) (P<0.05). In total, 341 respondents (5.3%) reported a history of UGI cancers in their relatives, 134 (2.1%) in FDRs, and 207(3.2%) in SDRs (Table 1). The mean (±SD) age at diagnosis of relatives affected with UGI cancers was 47.8±16.8 and 60.1±20 years in FDR and SDR, respectively (P<0.05). Also, 749 (11.6%) people reported a FH of any cancer (except UGI) in FDRs, and 1091 (16.9%) reported a FH of any cancer (except UGI) in SDRs. The mean (±SD) age at diagnosis of

Table 1. Prevalence of first and second degree relative family history of cancer according to sex of responders

	Male(n=3117)			Female (n=3336)			Total (n=6453)		
	n	%	95%CI	n	P	95%CI	n	%	95%CI
FH of UGI									
First degree relative history									
1	68	2.2	1.7-2.7	47	1.4	1.0-1.8	115	1.8	1.5-2.1
2 or more	10	0.3	0.1-0.5	9	0.3	0.1-0.5	19	0.3	0.2-0.4
Total	78	2.5	2-3	56	1.7	1.3-2.1	134	2.1	1.8-2.4
Second degree relative history									
1	77	2.5	2-3	85	2.5	2-3	162	2.5	2.1-2.9
2 or more	22	0.7	0.4-1	23	0.7	0.4-1	45	0.7	0.5-0.9
Total	99	3.2	2.6-3.8	108	3.2	2.6-3.8	207	3.2	2.8-3.6
First or second degree relative diagnosed with UGI cancers	177	5.7	4.9-6.5	164	4.9	4.2-5.6	341	5.3	4.8-5.8
FH of any cancer (except UGI)									
First degree relative history									
1	385	12.4	11.2-13.6	287	8.6	7.6-9.6	672	10.4	9.7-11.1
2 or more	46	1.5	1.1-1.9	31	0.9	0.6-1.2	77	1.2	0.9-1.5
Total	431	13.8	12.6-15	318	9.5	8.5-10.5	749	11.6	10.8-12.4
Second degree relative history									
1	452	14.5	13.3-15.7	372	11.2	10.1-12.3	824	12.8	12-13.6
2 or more	97	3.1	2.5-3.7	70	2.1	1.6-2.6	167	2.6	2.2-3
Total	549	17.6	16.3-18.9	442	13.3	12.1-14.5	1091	16.9	16-17.8
First or second degree relative diagnosed with UGI cancers	980	31.4	29.8-33	760	22.8	21.4-24.2	1840	28.5	27.4-29.6

Table 2. Distribution of responders with first or second degree relatives according to diagnostic age of affected person (<50, >50 and both ages <50 and >50 years)

Family history	FDR(n=134)			SDR(n=207)		
	n	%	95%CI	n	P	95%CI
FH of UGI						
≥1 affected relatives at age <50 years	27	20.1	13.3-26.9	13	6.3	3-9.6
≥1 affected relatives at age >50 years	86	64.2	56.1-72.3	150	72.5	66.4-78.6
≥1 affected relatives at both ages, <50 and >50 years	8	6.0	2-10	12	5.8	2.6-9
Unknown diagnostic age	13	9.7	4.7-14.7	32	15.4	10.5-20.3

relatives affected with any cancer (except UGI) was 57.1±13.1 and 55.3±12.3 years in FDR and SDR, respectively (P<0.05).

The prevalence of first and second degree relative FH of UGI cancers vs. all cancer (except UGI cancers) according to sex of responders is shown in table 1.

In our sample, female with FH of UGI cancers, 56 (1.7%) reported having a FDR history and 164(4.9%) reported having only a SDR history. Regarding to male responders, 78(2.5%) reported having a FDR and 99 (3.2%) having a SDR affected with UGI cancers. Observed difference

between male and female reporting FDR with UGI cancers was significant (P<0.05).

Table 2 shows the distribution of FH in FDRs and SDRs according to age of affected relatives (<50, >50 and both age groups). Of those responders with positive FH, 27 (20.1%) and 13 (6.3%) have at least one affected person diagnosed at age <50 years in FDRs or SDRs, respectively.

Discussion

Family history assessment is gaining importance as a research tool, a clinical marker of

increased risk for disease, and a potential tool for initiating aggressive cancer screening and prevention (10, 17). Population-based data on the prevalence of having FH of UGI cancers are still scant. This study is the first manuscript on the prevalence of positive FH of cancer among general population of Iran. In this study we estimated the prevalence of having FH of UGI cancers in Iranian general population. Overall, approximately 5.3% of respondents reported at least one first or second relative with UGI cancers. The mean age of responders with positive FH was significantly higher than the mean age of those with negative FH. A male preponderance was seen for FH report.

Data on the prevalence of a positive FH of healthy subjects (not affected with cancer) may be derived from control groups in case-control studies. The reported FH for gastric or esophagus cancer in the control groups varied in these studies from 4.9 to 12.3 % (12, 13, 18-22). Our findings are consistent with the lowest reported prevalence of FH in other countries.

Information on family history was self reported, and it is possible that some of subjects may tend to recall a family history of gastric or esophageal cancers more accurately than others. A review of studies evaluating the accuracy and completeness of reporting family history in relatives of cancer patients and controls found satisfactory results for family history in FDRs of breast, colon and prostate cancer, and less so for endometrial and ovarian cancer (23). A study found that respondents those aged greater than 75 years were significantly more likely to give a false-negative report of their cancer history than those aged 45–64 years (24). Another study found the overall sensitivity and specificity of self-reported breast cancer to be quite high (25). Females who were older, less educated, or of nonwhite race/ethnicity had the lowest sensitivities (24, 26-28). Goldberg (29) showed that a number of participants may have felt that

cancers diagnosed years and decades ago were unimportant and not worth reporting, since they had survived and moved on. Alternatively, the observed association between time since diagnosis and self-reported cancer history may reflect a period effect with respect to patient-physician communication and disclosure of cancer diagnosis; evidence suggests that, in many instances, cancer diagnoses were not communicated clearly, if at all, in the past, but over time, patient-physician communication has improved (30). However, most validations have not examined underreporting, and reported confirmation rates from previous studies. Murff et al. found that positive predictive values tended to be better in studies concerning FDRs compared to second-degree relatives (23).

Our study is subject to a number of limitations. First, our study is that we did not verify independently the accuracy of the self-reports of a family history. Another limitation is that population-based and cross-sectional data gathering has own problems. The most important is selection bias and low quality of data. We used random sampling in order to reduce bias in selection. It is also reported that prevalence of FH depends on of family size, and unfortunately we didn't have any information of size of family for participants.

Our study has also some strength. Because of randomization in sample selection, our study population is representative of total population of Iran. These samples were drown-up from urban and rural areas of Tehran province, capital of Iran. Most of the previous researches conducted on evaluation of the prevalence of a FH among FDR. In this study, we also considered the prevalence of a FH of cancer in SDR. In this research work participants were asked to complete a question on age at diagnosis of cancer in their relatives. This may be help us to estimate the 'at risk' groups for cancer development in total population and

encourage them to participate in early diagnosis and screening program for cancers.

In conclusion, our findings showed that the reported prevalence of FH of UGI cancers was relatively low and varied by specific respondent characteristics such as age and sex. However, the estimates of prevalence presented here are likely to be conservative compared with actual prevalence because of self-reported data gathering. Since suggested that those with FH in their FDRs at young age and those with two or more affected relatives are at high risk to develop cancer (10, 30), family history taking in clinical settings is useful for evaluation of the risk for healthy individuals.

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