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S. Semnani
Golestan University of Medical Sciences,
Gorgan, Golestan Province, Iran
Tel: 098 171 4424540,5529996

Esophageal Cancer in Iranian Turkmens: An Ethnic Disparity Concern

S. Semnani, S. Besharat, N. Abdolahi, A. Keshtkar,
M. Sakhavi, A. Danesh and Kh. Kalavi

The association between ethnic diversity in Turkmen population with esophageal cancer incidence in Iranian Turkmens (Golestan province) was trying to explore in the present study. This is a cross sectional study in Turkmen patients with confirmed diagnosis of esophageal cancer between 2002 through 2003 at a referral clinic in Gonbad .One hundred and six Turkmen patients, diagnosed with esophageal cancer by endoscopy and biopsy, were included. Demographic factors (sex and age), cancer histology (SCC and adenocarcinoma), tumor origin (upper 3rd, middle 3rd and lower 3rd of esophagus) and patients' contact numbers were retrieved and the patients were categorized into five different groups based on their ethnicity: Ahtahbai, Jafarbai, Googlan, others and unidentified ethnic group. Incidence rate was estimated based on the number of patients and population of each ethnic group. Descriptive statistics was performed and data were analyzed by Kruskal-Wallis Test for continuous variables and Chi-square Test for categorical variables. A total of 106 Turkmen patients with mean age of 64.22 ± 12.12 (61 male and 45 female) were included in this study. Frequency for each ethnic group was identified as: Ahtahbai (n = 31, 29.2%), Googlan (n = 30, 28.3%), Jafarbai (n = 27, 25.5%), others (n = 7, 6.6%) and unidentified ethnic group (n = 11, 10.4%). The mean age and gender were not significantly different between these ethnic groups. Heterogeneity was found within Turkmen population, Ahtahbai having least and Googlan highest esophageal cancer incidence rate. As esophageal cancer is very common in Turkmen population and with the high incidence rate in Googlan, this ethnic group needs to be more targeted for the esophageal cancer-screening programme. Further population-based studies can better explore possible factors in different Turkmen ethnic groups.

Key words: Esophageal cancer, Turkmen population, Ahtahbai, Jafarbai, Googlan, ethnicity

INTRODUCTION

Northeastern of Iran (Caspian littoral) has been recognized as one of the regions with high esophageal cancer incidence rates in the world (Kemet and Mahboubi, 1972; Aramesh and Salmasizadeh, 1975; Ghadirian, 1985). Although, different incidence rates have been reported from this region, Turkmens had the highest rates among these reports (Ghadirian, 1985; Saidi *et al.*, 2000, Islami *et al.*, 2004).

Results from previous studies have pointed at nutritional, social and demographic factors as possible risk factors for esophageal cancer (Siassi *et al.*, 2000; Ghadirian *et al.*, 1987; Shepard *et al.*, 2000; Ghadirian, *et al.*, 1985; Ghadirian, 1987a), but no specific works have been done on ethnicity as a possible risk factor for esophageal cancer in Turkmen population.

Regarding the ethnic disparity in Turkmen population and unusual esophageal cancer distribution in Golestan province, which changes over a small geographic area (Kemet and Mahboubi, 1972), we examined the ethnic disparity in Turkmen people with esophageal cancer.

In general, Turkmens are divided into several tribes and ethnic groups and there are only three major tribal/ethnic groups live in Golestan province (Northeastern of Iran), who are settled geographically from West to East, respectively (Sahrai, 1999). Based on the latest regional and local information, collected in 2003, major Turkmens' residential areas in the Eastern part of Golestan province are Gonbad, Minoodasht, Galikesh, Kalaleh and Maraveh Tappeh and these areas are mostly inhabitant to Turkmens.

MATERIALS AND METHODS

Patients with esophageal cancer who were diagnosed between March 2002 and February 2003 at a referral clinic (Atrak clinic), established in 2001 to identify upper gastrointestinal cancer cases in the region, were selected and contacted for enrolment to this cross-sectional research. Six other cases were added to the study after checking this list with the provincial cancer registry database, ICD codes (C15). These cases were diagnosed during the study period at other medical centers throughout the province.

Patients' demographic factors (sex and age), cancer histology (Squamous Cell Carcinoma and Adenocarcinoma), tumor origin (upper 3rd, middle 3rd and lower 3rd of esophagus) and their contact numbers were retrieved from Atrak clinic and cancer registry in Gorgan.

Telephone interviews were conducted with patients and/or their close relatives, to categorize them into

different groups based on their tribes/ethnicity. A sociologist independently confirmed patients' ethnicity by checking their name and place of residence, but in some cases especially the dead one, the ethnic group was not identified because of changing their place of residence and the surname.

Based on the Population Health Registry for rural and urban areas, kept by the Provincial Health Services, 732,000 people were lived in the Eastern part of the province in February 2003. There were no information available about the proportion of different ethnicity in Turkmen people but a panel of experts in the provincial level of the National Health Services suggested an estimation of population for three main Turkmen ethnic groups as follow; Ahtahbai (135,000), Jafarbai (57,000), Googlan (37,000). These numbers were used for calculating esophageal prevalence rate in different groups.

An approval was obtained from the Ethics Committee in Golestan University of Medical Sciences for this study. All patients in the referral clinic were signed a written, informed consent form as an agreement for using their information without any identification in further research. In addition, the interviewer explained the purpose of collecting the data in the telephone interview and make clear that participation in this research is voluntary and won't affect any services that they are receiving from the referral clinic.

Descriptive studies were performed. Within group differences on demographic and clinicopathologic factors were analyzed by Kruskal-Wallis Test for continuous variables and Chi-square for categorical variables with $p < 0.05$ as the level of significance. Patients with unidentified ethnic group were excluded from the analysis.

RESULTS

A total of 106 Turkmen patients (42.5% female) with mean age of 64.2 ± 12.1 were included in this study (Table 1). The age ($\chi^2(3) = 2.86$; $p = 0.41$) and gender ($\chi^2(3) = 0.22$; $p = 0.978$) were not significantly different between these ethnic groups.

Tumors were basically SCC and predominantly originated from middle 3rd of esophagus, 75 patients had information regarding tumor origin, (Table 2). Tumors' location ($\chi^2(3) = 5.694$; $p = 0.127$) and histopathological pattern ($\chi^2(2) = 0.859$; $p = 0.653$) were not significantly different between males and females.

There was a significant association between tumor histology and tumor location (Adenocarcinoma was more frequent at the lower 3rd of esophagus, $\chi^2(6) = 19.77$; $p < 0.05$).

Table 1: Ethnic groups and sociodemographic factors in Trukmens with esophageal cancer in eastern part of Golestan province (2002-2003)

	Ahtahbai (n = 31)	Googlan (n = 30)	Jafarbai (n = 27)	Others (n = 7)	Unidentified d ethnic group (n = 11)
Age median (Interquartiles)	65.0 (59.0-81.0)	63.5 (53.8-70.0)	65.0 (50.0-71.0)	64.0 (58.0-81.0)	74.0 (66.0-80.0)
Gender	Male	18	19	16	4
	Female	13	11	11	3
	Total	31	30	27	7
Place of residence	Gonbad	30	4	19	3
	Kalaleh and Maraveh	1	26	8	4
	Tappeh				

*p<0.0001 (unidentified cases are not included in analysis)

Table 2: Ethnic groups and clinicopathologic characteristics of esophageal cancer in Turkmen living in eastern part of Golestan province

	Ahtahbai (n = 31)	Googlan (n = 30)	Jafarbai (n = 27)	Others (n = 7)	Unidentified ethnic group (n = 11)
Tumor histology	SCC	27	25	25	6
	Adenocarcinoma	3	4	2	1
	Unknown	1	1	0	0
	Total	31	30	27	7

*p<0.0001 (unidentified cases are not included in analysis)

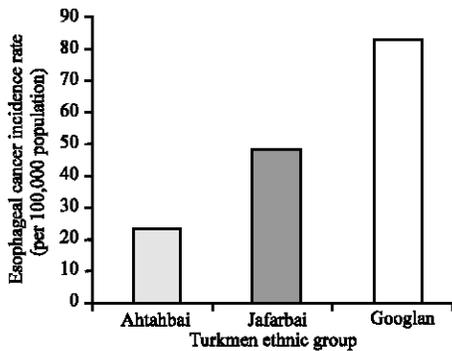


Fig. 1: Incidence rate of esophageal cancer in three major Turkmen ethnic groups

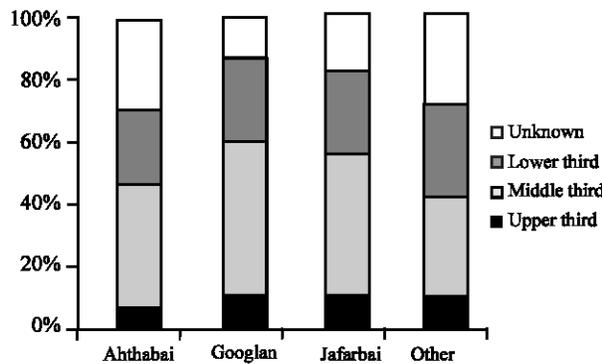


Fig. 2: Ethnic groups and the location of esophageal cancer in Turkmen living in eastern part of Golestan province

Patients were mainly from Gonbad district with predominantly Ahtahbai ethnicity, but Googlans were mostly from Kalaleh, Galikesh and Maraveh-tappeh districts (Table 1).

Based on the estimated population of each ethnic group, the incidence rate of esophageal cancer was

estimated for three major groups (Fig. 1). Googlan ethnic group had the highest and Ahtahbai the lowest incidence rate estimation ($\chi^2(2) = 22.9; p<0.001$).

Because of small sample size, we were not able to evaluate association between ethnicity with tumor origin and tumor histology (Table 2 and Fig. 2).

DISCUSSION

Esophageal cancer is a common cancer in Turkmen population in Golestan province (Kemet and Mahboubi, 1972). Incidence rate in Googlan, Jafarbai and Ahtahbai group were 81.0, 47.4 and 23.0/100,000, respectively.

Previous studies tried to identify association between social and demographic factors with esophageal cancer in this population (Siassi *et al.*, 2000; Ghadirian, 1987b; Shepard *et al.*, 2000; Ghadirian, 1985; Ghadirian *et al.*, 1987c), but none of them were specifically focused on different ethnicity within the Turkmen people as a possible risk factor for esophageal cancer. This study tried to explore characteristics of esophageal cancer in different Turkmen ethnic groups and estimate possible esophageal cancer incidence rates in major Turkmen ethnic groups in Golestan province.

Because of high incidence rate in eastern part of Golestan province (Saidi *et al.*, 2000), we recruited our cases from the clinic and completed the list with diagnosed and registered cases in cancer registry in deputy of health (which collect cancer data, from pathologic centers). This strategy was used to ensure most of diagnosed esophageal cancer cases in Eastern part of Golestan have been captured during the study period, which can be an advantage for our research.

Tumor histology, SCC and the mean age of patients were similar to findings reported by Saidi *et al.*, (2000) and Islami *et al.*, (2004).

In this study male/female ratio was 1.36, but in Ghadirian study it has been reported that esophageal cancer is more frequent in female than in male (Ghadirian, 1985) it may be results from the differences in sample size, our sample was smaller than their's.

This study did not include cases of esophageal cancer from western part of Golestan province and it would be one of our limitations. Based on the local information get from the certain sociologist we found that these cases are mostly Ahtahbai and comprise a small portion of esophageal cancer diagnosed cases in Turkmen population (A total of 12 cases; Ahtahbai 6, Googlan zero, Jafarbai 4 and others 2). No referral clinic is there in the west part of Province and we do not access to these patients' full data, therefore the sociologist suggested their ethnicity, based on their name.

Even if we included these cases into our analysis, overall esophageal cancer incidence rate in Ahtahbai ethnic group would have dropped because they live more in western part of province, greater denominator.

Different esophageal cancer incidence rates among major Turkmen-Iranian ethnic groups may raise the old theory about possibility of genetic propensity (Ghadirian, 1985) and/or life style characteristics that predispose a specific ethnic group (for example Googlans') to esophageal cancer. It may be an option to be investigated leading to a more comprehensive preventive programme for esophageal cancer in different Turkmen tribes.

Some possible lifestyles and/or genetic characteristics exist in Googlans' are:

- Cultural and social differences such as low fiber consumption, high opium dependence, high smoking rate and living on home made breads.
- Genetic and sociocultural characteristics; Googlans' are originally different from Ahtahbai and Jafarbai and they have more intertribal marriage (the last two ethnic groups are from a larger ethnic group; Yamoot).
- Characteristics of geographic areas; Ahtahbai and Jafarbai ethnic groups are basically living in central and northern part of Golestan province, but Googlans' are living in an area that is ecologically different from other parts of Turkmen Sahra (Turkmen' place of residence). (Sahrai *et al.*, 1999).

These characteristics may play a major role in heterogeneity in esophageal cancer incidence rate that we expect in major Turkmen ethnic groups in Golestan province. We could not find any dominant demographic or clinicopathologic characteristics regarding esophageal cancer in major Turkmen ethnic groups, but further

studies with population-based approach may better explore these characteristics and identify other possible factors related to esophageal cancer in Turkmen ethnic groups. Gathering information related to the ethnicity of esophageal cancer in future research, cancer registry and the population health registry would help finding out more about disease in Turkmen ethnic groups.

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