

RESEARCH COMMUNICATION

Gastrointestinal Cancer Occurrence in East Azarbaijan: A Five Year Study from North Western Iran

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Abstract

Background and aims: Regardless of the fact that neoplasms of the GI tract have been reported as the most common fatal cancers in east Azerbaijan, there is a serious lack of population based studies in this region. The aim of this pathology-based cancer registry report is to document epidemiologic aspects of gastrointestinal tract cancers in East Azerbaijan for further medical programs for treatment and screening of high-risk groups and study changes over time. **Methods:** A survey team reviewed and collected all records of cancer cases from all referral and valid pathology laboratories, hospitals and out patient public and private clinics of East Azerbaijan province during a five year period (September 1999 to 2004). **Results:** 5417 new cases of histologically confirmed GI tract cancers were registered, 61.7% of the subjects being male. The mean ($\pm$ SD) ages were 63.25 ± 12.79 and 59.45 ± 13.39 yr for men and women, respectively. Gastric cancer was the most common GI tract cancer with an annual ASR of 21.3 per 10^5 for males and 8.2 for females. The annual ASRs for esophagus and colorectal cancers were 9.4 and 6 in males and 7.1 and 9.2 in females. Gastric cancer was significantly more common among men although women were more likely to develop cancer in younger age. Some 14% of our subjects with colorectal cancer were under the age of 40. **Conclusion:** This first report from East Azarbaijan, suggests a need for further evaluations to map out the risk factors and interventions.

Key Words: Gastrointestinal tract cancer - registration - East Azarbaijan

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Introduction

Cancers of Gastrointestinal tract has been reported as the most common fatal cancer in East Azerbaijan (Ministry of Health and Medical Education; 2004). There is no reliable report on occurrence of GI tract cancers while this province is in alignment with Northern provinces of Iran which are well known as regions with high incidence of GI tract cancers in the world. East Azarbaijan has cultural, ethnic and geographical similarities to Ardabil province which is one of the high risk regions for gastric cancer. The aspect of cancers, which have a multifactorial etiology, may be similar in these regions.

Variation in the incidence of different cancers in our country has been a subject of interest (Haghighi, 1971; Habibi and Nasr, 1965; Mosavi-Jarrahi et al., 2001) and necessitates reliable cancer registries to supply data about the incidence, burden and changes in mortality and morbidity over years. However, there are few groups mapping out a reliable cancer incidence rate in different parts of Iran,

especially from northern provinces, including East Azarbaijan.

The aim of the Liver and Gastrointestinal Disease Research Center Cancer registry group (Tabriz University of medical sciences) is to study epidemiologic aspects of gastrointestinal tract cancers in our region, define medical programs for treatment and screening of the high-risk groups reducing mortality and morbidity and study changes with time. In this article, the first from east Azarbaijan province, we document epidemiological patterns of gastrointestinal tract cancers in this region (including a large population), which appears to have especially incidences of gastric and esophageal cancers.

Materials and Methods

East Azerbaijan is located in north western Iran (Figure 1). The population in this area is about 3,500,000 according to the census of 2005, most being from the Azari ethnic background. The census report of each year was considered

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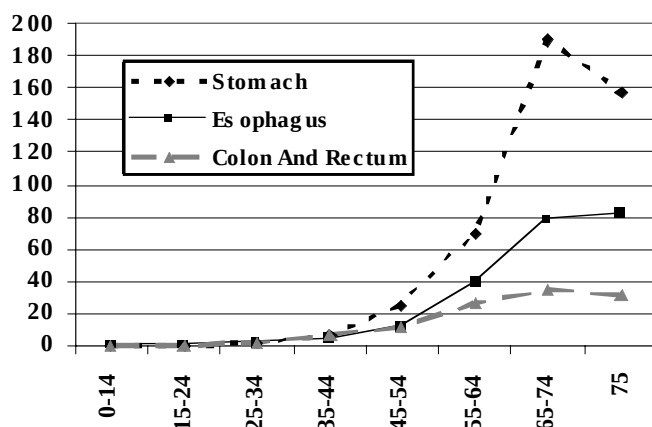


Figure 1. Map of Iran and East Azerbaijan Province

as the “population at risk”.

The survey team, general practitioners and medical students reviewed and collected all records of cancer cases respectively from all referral and valid pathology laboratories, hospitals and out patient public and private clinics of East Azerbaijan province. Copies of documents were obtained where possible. The five-year data (September 1999 to 2004) were gathered during a 7 month period and coded using ICD O. A final data check was performed and repeated cases with the same name, age and sex were deleted. There were 28 cases without valid information about the site of cancer which were excluded as well.

Cases were divided into 10 years age groups. Crude incidence rates were calculated in various age groups and for both genders in 100,000 person-years. The results are presented as incidence rates of cases by age, sex, site (ICD O), crude rate, age specific incidence rates and age-adjusted and standardized incidence rates per 100,000 using the direct method of standardization to the world population (Lensen et al.,1991). Data were analyzed using SPSS Software (version 11.5). The Student's t test was used to compare means and the Chi-square test to evaluate associations between the desired variables. The significance level was $p < 0.05$.



Results

In this laboratory-based study, 5417 cases with primary malignant lesions were registered in East Azarbaijan province over a 5-year period. 3,345 (61.7%) subjects were male and 2036 (37.6%) were female and 36 had undefined gender. The diagnosis was based on histopathology in all cases. The mean ($\pm$ SD) age at time of first diagnosis was 63.3 ± 12.8 and 59.5 ± 13.4 yr for men and women, respectively. The age group 64 – 75 years/old counted for 25% of reports. The age-specific incidences of major cancers in males and females are depicted in Figure 2.

While there was a significant difference between the age of two gender in the study population (P value < 0.0005), women were more likely to develop cancer at younger age (< 40 yrs) than men (P value < 0.0005). Gastric, esophagus, colorectal, small intestine and anal canal cancers comprised 41.1%, 26.6%, 16.3%, 1.5% and 0.88% of the total, respectively. We observed around 440 new gastric cancer cases and approximately 280 new esophagus cancer cases each year, but we noted an increase during the five year period. Tables 1 and 2 show the 10-year age-specific incidence and crude rates for both males and females for principle cancer sites.

Records that were missing gender or age could not be included in the rates presented in this report. Gastric cancer and cancer of anal canal were significantly more prevalent among men (P value < 0.0005). Subjects with colorectal cancer had a significantly lower mean age, when compared to subjects with gastric and esophagus cancer. The most common histopathology reported was adenocarcinoma, except in esophagus, for which 93% of malignancies were reported to be squamous cell carcinomas.

Discussion

This first report from East Azarbaijan documenting the profile of gastrointestinal tract cancers provides a primary

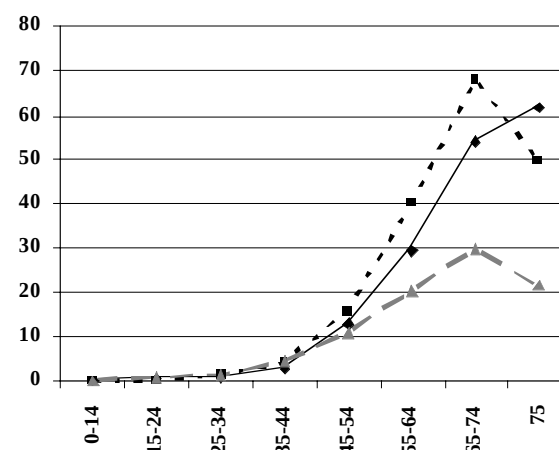


Figure 2. Age-specific Incidence Rates of the Major GI Tract Cancers in Males (left) and Females (right) in East Azerbaijan, 1999-2004

Table 1. Age-specific Incidence Rates, Crude Rates and Annual ASR in Males in East Azerbaijan, 1999-2004

Site	0-14	15-24	25-34	35-44	45-54	55-64	65-74	≥75	% total	Crude rate	ASR world
Stomach	0.1	0.1	1.5	5.6	24.8	69.1	189.5	157.2	49.7	19.5	21.3
Esophagus	0.0	0.2	0.8	3.7	10.9	38.3	78.0	82.0	24.0	9.4	10.4
Colon and rectum	0.1	0.5	1.7	6.2	11.2	25.8	34.2	31.0	15.5	6.0	6.7
Liver	0.0	0.2	0.8	1.2	2.4	5.5	15.5	11.5	4.4	1.8	2.0
Gallbladder, etc	0.0	0.0	0.0	0.2	0.2	0.7	1.9	1.2	0.4	0.2	0.2
Small intestine	0.0	0.1	0.0	0.8	0.8	1.2	2.8	4.6	1.4	0.6	0.5
Anal canal	0.0	0.0	0.0	0.6	0.5	0.5	1.6	3.4	0.7	0.3	0.3

Table 2. Age-specific Incidence Rates, Crude Rates and Annual ASR in females in East Azerbaijan, 1999-2004

Site	0-14	15-24	25-34	35-44	45-54	55-64	65-74	≥75	% total	Crude rate	ASR world
Stomach	0.0	0.2	0.7	2.8	12.7	29.4	53.8	61.8	30.3	7.1	8.2
Esophagus	0.0	0.0	1.1	4.0	15.5	39.9	67.9	49.5	39.3	9.2	10.0
Colon and rectum	0.1	0.6	1.0	4.5	10.7	20.1	29.6	21.5	20.5	4.8	5.2
Liver	0.1	0.2	0.2	0.7	4.1	5.49	8.1	11.1	5.7	1.3	1.7
Gallbladder, etc	0.0	0.0	0.1	0.0	0.5	2.2	5.0	5.2	2.3	0.5	0.6
Small intestine	0.0	0.0	0.2	0.2	0.6	0.7	0.2	2.6	1.5	0.4	0.2
Anal canal	0.0	0.0	0.1	0.0	0.2	0.5	1.0	1.3	0.4	0.1	0.2

source for epidemiological research, design and appraisal of cancer control programs. Poor-quality medical records and not using the ICD coding system in private and to some extent in public hospitals at the time of diagnosis, is one of the limitations of our study because of its retrospective nature. By using data from just reliable documents and making the diagnosis 100% based on histology records, we believe that these data are close to the real count of new patients. Accordingly, our results should be taken as the minimum, but valid, incidence of cancer in East Azerbaijan province.

Cancers of GI tract has been reported as the most common fatal cancer in this region (Ministry of Health and Medical Education, 2004). Despite the fact that the colorectal cancer in one of the most common cancers in western countries (Keighley, 2004; Ahmedin et al., 2002), it ranked after stomach and esophagus cancers in both genders in our data. On the other hand while only 2-8% of colorectal cancers in western countries occur before the age of 40, 14% of our subjects with so-called cancer were under the age of 40 (Ansari et al., 2005). This difference (the same as reported from other provinces of Iran) has been suggested to be related to genetic susceptibility.

Our results demonstrated that gastric cancer accounts for 43.3% of GI cancers, being more common in men. Approximately 90% of gastric cancers were

adenocarcinomas. Unfortunately, the site of gastric cancer (e.g. cardia, non cardia) was not mentioned in a nearly 70% of our subjects with gastric cancer. The estimation for cancers in Iran by GLOBOCAN 2002, is included in "south central Asia" and contains some differences from our results (Parkin et al., 2005) as described in Table 3. Stomach cancer, as the most common type in our results has been estimated to occur 6.9 per 100000 for men, but our results showed a much higher prevalence. It was reported from different parts of Iran as follows: Ardabil 49.1 (Sadjadi et al., 2003), Semnan 40, Fars 5.5, Khuzestan 0.3, Kerman 10 (Babaei et al., 2005). Considering the fact that our results may be an underestimation due to limitations in data collection, we estimate that this rate might be even more than 26.1, very much higher than in southern provinces and GLOBOCAN 2002.

The explanation for the high frequency of the said cancers is not clear but many risk factors have been associated with the development of gastric cancer, and the pathogenesis is most likely multifactorial including a combination of genetic and environmental factors. Certain genetic or familial syndromes, gastric colonization by *H. pylori*, and conditions resulting in gastric dysplasia, the use of tobacco, drinking habits, barbecued or grilled cooking (Layke and Lopez, 2004; Mayne et al., 2001) have been considered as important risk factors of gastric cancer, and dietary factors have been evaluated as "probable" risk factors (Inoue and Tsugane, 2005).

Helicobacter pylori infection has been reported in 91% of patients without esophagitis (64% positive for Cag A) in a recent unpublished study from this region which the infection is believed to occur early in life. While the outcome in individuals with *H. pylori* infection is influenced by the infecting strain of *H. pylori*, host's genetic makeup and environmental exposures, including diet. Adenocarcinoma in the absence of *H. pylori* infection has been reported to be rare in countries with high rates of gastric malignancy.

Table 3. East Azarbaijan Cancer Registry and GLOBOCAN south-central Asia ASRs (per 100,000)

	East Azarbaijan 1999-2004		GLOBOCAN 2002	
	Male	Female	Male	Female
Stomach cancer	21.3	8.2	6.9	3.6
Esophageal cancer	10.5	10.0	8.1	5.9
Colorectal cancer	6.7	5.2	4.7	3.5
Liver cancer	2.0	1.7	2.6	1.4

(Forman and Parsonnet , 2004).

Differences observed in incidence rates between regions can play an important role in decoding risk factors. Comparing the genetic differences between European and American population which develop colorectal cancer more than Asian population may helpful specially in familial type. Reducing morbidity and incidence rates in high-risk populations for GI tract cancers may be achievable by modifying some environmental factors such as eating habits and quality of food. Screening programs must be considered as well as further evaluations to map out the risk factors.

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