



Effective factors on 3-year mortality of operated gastric cancer at Modarres Hospital during 5 years

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Abstract

Introduction: Gastric cancer is one of most common and fatal malignancies worldwide. Majority of patients have advanced stage when visiting the physician. The aim of this study was to investigate the associated factors with mortality of operated gastric cancer at Modarres Hospital, Tehran, Iran.

Methods: All patients with gastric cancer that referred to Modarres Hospital between 2011 and 2016 were included in this study and data were gathered through patients' medical records and telephone interviews. Analysis was done by SPSS software.

Results: In this study 73 patients with gastric cancer participated. Three-years mortality was 72.1%. There was a significant association between the stage of cancer and mortality rate. Although mortality reduced by using neoadjuvant therapy.

Conclusion: High mortality of patients with gastric cancer in this study was directly related to higher stage of cancer and lack of a neoadjuvant therapy.

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Introduction

Cancer is the second leading cause of death due to non-communicable diseases in the world. Globally, the most common fatal cancers are cancers of the stomach, liver and lung.^{1,2} Gastric cancer is the fifth most common cancer and the third leading cause of cancer mortality worldwide. Recent studies have shown that nearly one million new cases are diagnosed with gastric cancer annually.³ According to the latest cancer registry, gastric cancer is the third most common cancer in Iran which has higher incidence in the north of the country.⁴ With regard to higher mortality and incidence of this cancer in our country, there is great necessity for prevention and screening programs in Iran.

Several studies have investigated

mortality rate in patients with gastric cancer. Heise et al. have reported a high mortality of gastric cancer in Chile, so that after 5 years of diagnosis, 90% of the patients died.⁵ According to another study, the highest rate of death from gastric cancer occurs in the elderly men. Researchers believe that mortality and morbidity rates of gastric cancer is high even after early detection of the disease because of high costs of treatment.⁶ According to the study of Biglarian et al.⁷ the mortality from gastric cancer in Iran has increased in recent years. According to the researches, the increase in the incidence and changes in the pattern of the disease (mostly involving proximal parts of the stomach compared to distal parts) are the main reasons for the increase in mortality from this disease. Moghimi et al.⁸ have also

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shown that the most important factor in reducing mortality in patients with cancer is diagnosing at the early stages of the disease.

The impact of various factors such as age, disease stage, metastasis and recurrence of the disease, sex and cancer histology on mortality of these patients were evaluated in several studies.⁹⁻¹² Neoadjuvant chemotherapy was proposed as an effective factor in reducing mortality in patients with gastric cancer but there is not a worldwide consensus about this. Given the lack of consensus regarding the use of neoadjuvant therapy despite its positive effects, this study aimed to evaluate the effectiveness of neoadjuvant therapy in treatment of gastric cancer.

Methods

Seventy-three patients were included in the study who had been diagnosed with gastric cancer and were admitted for surgery in Shahid Modarres Hospital, Tehran, Iran from July 2010 to July 2015. Patients were enrolled in the study using census method. Data were gathered using patients' hospital records and with contacting the patient or their relatives. All epidemiologic, biologic and demographic data including age, sex, occupation, family history smoking, alcohol, cancer pathology and stage, mortality within three years, the type of intervention, and history of neoadjuvant therapy were recorded.

Eight patients were excluded from the study due to incomplete records and lost to follow-up. Statistical analysis was performed using the statistical software SPSS (version X, IBM Corporation, Armonk, NY). Quantitative variables were defined by the mean and standard deviation (SD). Qualitative variables were defined by number and percentage of cases.

Comparison of quantitative variables was done by Student's t-test. Comparison of qualitative variables was performed with the chi-square test; $P < 0.05$ was regarded significant. Also logistic regression was used to determine the factors affecting the mortality of patients with gastric cancer. All data were reserved by the researchers and

patients were reported anonymously.

Results

From 73 patients with gastric cancer who underwent surgery, 32 (43%) were males and 41 (57%) were females. The mean \pm SD age of patients was 59.0 ± 15.5 years; mean age for men and women were 61.0 ± 15.0 and 57.4 ± 15.8 years, respectively. There was not any statistically significant difference between the age of women and men ($t = 1.024$ and $P = 0.309$).

Eight of these patients were farmer, seven were retired, twenty housewives, seventeen employees, thirteen self-employed and eight people had uncertain jobs. The pathology results showed 40 patients (54%) suffered from poorly differentiated adenocarcinoma, 15 (20%) had moderately differentiated adenocarcinoma, and 18 (24%) patients had well differentiated adenocarcinoma. In this study, of 32 male patients, seven men underwent total gastrectomy, seventeen had subtotal gastrectomy and eight patients underwent hemi-gastrectomy. Of 41 female patients, ten women underwent total gastrectomy and thirty had subtotal gastrectomy and one female underwent hemi-gastrectomy. Sixty-five patients were followed up completely and 8 patients (7 males, 1 female) were excluded from the study due to loss to follow-up. Among 65 patients who were followed, only 20 patients (10 men and 10 women) lived for three years and others died within 3 years.

Fourteen (19%) patients (5 males and 9 females) received neoadjuvant chemotherapy before surgery. Drugs used were oxaliplatin, docetaxel, and capecitabine. In fifty-six patients (76%) there was more than 6 (N3) metastatic involvement of lymph nodes around the stomach, in twelve (16%) patients lymph node involvement was ranging from 3 to 6 (N2), and in five (6%) patients less than 3 lymph nodes were involved and there was no patient (0%) without metastatic involvement of the lymph nodes. The study results showed that stage 3 diseases was the most common stage with a frequency of 43% during the admission. This could be due to

delays in seeking for treatment or late diagnosis of the disease.

According to the results of this study, smoking and alcohol consumption were reported in eight and in ten patients, respectively. But there was no significant correlation between smoking and alcohol consumption and mortality over three years ($P > 0.010$). In addition, eight patients (10%) had a positive family history of gastrointestinal tract cancer, but there was no significant correlation between positive family history and mortality over three years ($P > 0.010$). There was no significant relationship between sex and mortality ($P = 0.200$). Also there was not a significant relationship between patients' job and their outcome ($P = 0.17$). There was a significant relationship between neoadjuvant therapy and outcome and the patients who received neoadjuvant therapy had a better survival chance ($P < 0.010$).

Results of Spearman correlation analysis showed that at the higher the stages of disease, the survival rate was lower ($P < 0.010$). Chi-square test analysis showed that there was not a significant relationship between the type of intervention and 3-year mortality rate ($\chi^2 = 6.4$). Results of multivariate logistic regression model showed that only neoadjuvant therapy [odds ratio (OR) 0.92, 95% confidence interval (CI) 0.78-0.97] and disease stage (OR 1.34, 95% CI 1.11-1.57) had significant relationship with 3-year mortality rate.

Discussion

Gastric cancer is one of the most fatal cancers in Iran and regarding its high mortality and morbidity, the estimates about factors affecting its prevalence in Iran and its mortality rate and stages can be effective in decision-making about its screening and detection. During this study, 73 patients with gastric cancer were studied. Mortality rate after 3 years was 72.1%. There was a significant relationship between mortality rate and the presenting stage of gastric cancer. In current study the mortality rate in

men was more than women but this difference was not statistically significant. Roshanaei et al. also showed similar finding in patients referred to Imam Khomeini Hospital in Tehran Cancer Institute from 2003 to 2007.¹³ Also, there was not any statistically significant difference between the ages of women and men who suffered from gastric cancer. Stage 3 was the most common presenting stage and was seen in 43% of the patients. This shows that the majority of gastric cancer patients are presented or diagnosed with higher stages in Iran.

There was not a significant relationship between the type of intervention and 3-year mortality rate. Gouzi et al. in Toulouse, France¹⁴ compared two surgical techniques, total and subtotal gastrectomy, for adenocarcinoma of the gastric antrum. Their results showed that there was not a significant difference between type of intervention and mortality rate which is in concordance with results of this study.

Among the different variables, only neoadjuvant therapy and disease stage had significant relationship with 3-year mortality rate. This finding concurs with the results of the study by Yahyazadeh-Jabbari et al.¹⁵ The stage of disease has direct relation with mortality rate, so the higher the stage of the disease is associated with increased risk of death (OR = 1.34). According to the findings of other studies, later seeking for medical care could result in diagnosis of disease in higher stages which contributes to increased mortality rates in these patients.^{6,8} Health care providers should pay more attention to early diagnosis of patients to reduce their mortality rate.

According to results of this study, sex, age, smoking, alcohol, and a positive history of gastrointestinal cancers were not associated with mortality in patients with gastric cancer, but in some studies some correlation has been observed between them.

Conclusion

The purpose of this study was to evaluate treatment outcomes in patients with gastric

cancer in one of the academic centers of Iran. According to the effects of neoadjuvant therapy on death from gastric cancer which was observed in this study with a small sample size, it is wise to pay more attention on this issue and more studies with larger number of patients should be done on this topic.

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Authors' Contribution

Nasser Malekpour Alamdari was the operating surgeon, and supervised the

project. Barmak Gholizadeh gathered the data, and performed the analysis.

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Conflict of Interest

Authors have no conflict of interest.

Ethical Approval

The authors had made their best efforts to not reveal any information showing the identification of the patients with gastric cancer and keep them confidential.

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