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Delay in diagnosis and treatment of gastric cancer: from the beginning of symptoms to surgery - an Iranian study

Mide kanserinde semptomların başlangıcından cerrahi tedaviye kadar geçen gecikme süresi: Bir İran çalışması

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Background/aims: *In developed countries, diagnosis of gastric cancer is performed in early stages through screening, and the five-year survival rate has risen to 86%. Although patients in developing countries have digestive symptoms for some time, they do not undergo early endoscopy. The patients refer to physicians in developed stages. This research was conducted to determine the median time of delay from the beginning of symptoms to surgery.* ***Methods:*** *In this research, 63 patients suffering from gastric cancer were investigated during 2004-2005. A research questionnaire was completed from patient's admission to endoscopy until surgery through patient interview. Mann-Whitney statistical test and SPSS software were used for data analysis.* ***Results:*** *Out of 63 patients, 48 (76.2%) were male and 43 (68.3%) were rural residents. The most common cancer area was cardia (31 patients) and the most common symptom was abdominal pain (28 patients). The results showed that the median total delay from the beginning of symptoms until surgery was 96 days. Median patient delay [from first symptom to presentation to general practitioner] was determined as 8 days, general practitioner delay (from the first referral to endoscopy) as 57 days, pathologist delay (from endoscopy to pathology confirmation) as 12 days, and surgeon delay (from pathology confirmation to surgery) as 7 days. Factors such as place of residence, education, income and gender had no significant effect on time of delay.* ***Conclusions:*** *Delays from referral to endoscopy performance and from performance of endoscopy to pathologic confirmation were higher than expected. A screening plan for timely referral of patients and performance of endoscopy seems essential. To reduce the time of delay, efforts such as physician education, cooperation between hospital units and pathologists and provision of necessary hospital equipment are highly recommended.*

Key words: Gastric cancer, diagnosis, surgical treatment

Amaç: *Gelişmiş ülkerlerde gastrik kanserin tanısında tarama testlerinin kullanımındaki artışla birlikte büyük aşama kaydedilmiştir. Erken tanı alan hastalarda 5 yıllık sağ kalım %86'ya ulaşmıştır. Gelişmekte olan ülkelerdeki hastalara, semptomları bile olsa endoskopi yapılması oranı düşüktür. Bu hastalar doktora, hastalığın ileri evrelerinde başvurmaktadırlar. Bu çalışma bu gecikmenin süresini saptamak amacıyla düzenlenmiştir.* ***Yöntem:*** *2004-2005 yılları arasında gastrik kanser tanısı alan 63 hasta çalışmaya dahil edilmiştir. Hastalara endoskopi ve cerrahi öncesi araştırma anketi uygulanmıştır.* ***Bulgular:*** *Hastaların 48'i (%76.2) erkekti ve 43'ü (%68.3) kırsal kesimdendi. Kanserin en sık görüldüğü bölge mide kardiası (31 hasta) ve en sık karşılaşılan yakınma da karın ağrısıydı (28 hasta). Çalışma sonucunda semptomların ortaya çıkışından cerrahiye kadar geçen süre ortanca 96 gün olarak bulundu. Hastaların semptomların başlangıcından pratisyen hekime başvuruncaya kadar geçirdikleri süre ortanca 8 gün, pratisyenden endoskopiye kadar geçen süre ortanca 57 gün, patolojinin sonucunun alınmasına kadar geçen süre 12 gün ve bundan sonra cerrahiye kadar geçen süre 7 gün olarak tespit edildi. Yaşama bölgesi, eğitim durumu, gelir düzeyi ve cinsiyet gibi değişkenlerin bu gecikmeleri etkilemediği görüldü.* ***Sonuç:*** *Pratisyenden endoskopiye ve endoskopiden patolojinin sonucunun alınmasına kadar geçen süreler olması gerekenden uzun bulunmuştur. Bu nedenle bu gecikmeyi azaltacak tarama programlarının oluşturulması gereklidir. Ayrıca doktorların taramalar konusunda eğitilmesi ve hastane birimleri arasındaki koordinasyonun arttırılması da sistemdeki iyileşmeye katkı sağlayabilir.*

Anahtar kelimeler: Gastrik kanser, tanı, cerrahi tedavi

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INTRODUCTION

Gastric cancer is the second most common cancer in Asia (1). Approximately 93% of gastric tumors are malignant and gastric adenocarcinoma, which is generally referred to as gastric cancer, comprises 95% of overall stomach malignancies (2). About 800,000 new cases of gastric adenocarcinoma are discovered annually and 650,000 lose their lives due to the disease (3). Flexible upper endoscopy is the diagnostic means of choice, during which numerous biopsies can be taken from the margin of ulcer (1, 2). Diagnostic accuracy of the test reaches 98% in the case of removing numerous biopsies (1, 2).

Surgical resection is the only curative treatment (4). About 85% of the patients are operable, 50% of the lesions are removable (4), and the five-year survival rates in stages I, II, III and IV are 70%, 30%, 10% and 0, respectively (4,5). In Japan, great efforts have been made to diagnose gastric cancer in early stages (5), and the five-year post-operation survival rate has increased to 86% (5). Unfortunately, there is no screening plan for gastric cancer in developing countries and some patients remain undiscovered even with questionable long-term symptoms like gastric pain, weight loss, anemia, dysphagia, and vomiting. Thus, in view of the high prevalence and mortality rate of gastric cancer, existence of proper diagnostic equipment for early diagnosis, and the effect of operative treatment on survival rate of the patients in developed stages (1). This study was conducted to determine the median time of delay from the beginning of the symptoms to surgery in order to distinguish length of delay at each stage and take necessary measures.

MATERIALS AND METHODS

In this study, 63 patients suffering from gastric cancer (confirmed by endoscopy) were investigated in vali-e-Asr and Shafiieh hospitals in Zanjan city during 2004-2005. A research questionnaire was completed that included age, gender, place of residence, education, income, beginning time of symptoms, type of symptoms, time of visit to General Practitioner (GP), time of referral to specialist and endoscopy performance, gastric tumor area, pathologic confirmation and time of surgery. The questionnaire covered different stages from admission of the patients to endoscopy unit until surgery and the data were collected through patient interview. All patients had staging investigation and pre-operative management. The overall delay (in days) was recorded for each patient and divided into four periods as follows:

1. The time from first symptoms to first visit to GP (Patient delay).

2. The time from first visit to GP to referral to endoscopist (GP delay).

3. The time from endoscopy performance to establishment of a definitive histological diagnosis (Pathologist delay).

4. The time from histological diagnosis to the operation (Surgeon delay).

We used statistics appropriate for non-parametric data. Grouped data were compared by Mann-Whitney U test.

RESULTS

We recruited 63 patients (48 men, 15 women) over 20 months. The mean age of the patients when they first developed symptoms was 61.56 9.45 (range: 41 to 81 years). Forty-three patients were rural residents and 39 were illiterate. Thirty-one patients had cancer of cardia and upper stomach, 21 were located predominantly in the lower third and 11 were in the body.

The first symptom or sign was gastric pain in 28 (44.4%), dysphagia in 13 (20.6%), vomiting in 11 (17.5%), anorexia in 7 (11.1%), nausea in 3 (4.8%) and cachexia in 1 (1.6%). Some patients experienced more than one symptom.

Mean length of patient delay was 15.01 days and of GP delay was 83.38 days [this delay was over 112 days in 19 patients (30.2%) and less than 28 days in 20 patients (31.7%)]. Mean pathologist delay was 13.02 days and surgeon delay was 10.09 days (Table 1).

The delay from endoscopy until surgery was 23 days and the mean length of overall delay from beginning of symptoms until surgery was 121.5 days (range: 14 to 882 days). Calculation of the means in terms of gender indicated that patient delay and GP delay in women were higher than in men though not statistically significant. Contrary to what was expected, the median times of patient delay (8 vs. 4 days), GP delay (59 vs. 33.5 days) and overall delay (111 vs. 87.5 days) were higher for rural residents than urban residents; nevertheless, none of the differences was statistically significant.

Table 1. Diagnostic delays from first symptoms to surgery (in days)

Delay	Min	Max	Mean	SD	Median
From first symptoms to presentation to GP (Patient delay)	0	60	15.02	18.6	8
From presentation to GP to referral to endoscopist (GP delay)	1	805	83.38	125.8	57
From endoscopy to histological diagnosis (Pathologist delay)	7	28	13.02	4.08	12
From histological diagnosis to surgery (Surgeon delay)	2	36	10.09	8.5	7
Total delay	14	882	121.5	130.2	96

Although the median time of patient delay increased with increase in patient's educational level, there was no significant differences between the education of patient and median time of delay. Median GP delay time in patients suffering from dysphagia, vomiting, anorexia and abdominal pain were 61, 60, 45 and 43.5 days, respectively. The median delays from GP visit until endoscopy performance (GP delay) in lesion of cardia versus of body and fundus were 69 and 62 days, respectively. The median interval between endoscopy and surgery in patients was 19 (range: 11 to 52 days). The median interval between endoscopy and pathology confirmation (pathologist delay) was 12 days (range: 7 to 28 days). Pathology confirmation was under 10 days in 14 (22.2%) patients and over 10 days in 49 (77.8%) patients.

DISCUSSION

The results of this research showed a median total delay from the beginning of symptoms until surgery of 96 days, of which, median patient delay (from first symptom to presentation to GP) was 8 days, GP delay (from the first referral to specialist to endoscopy) was 57 days, pathologist delay (from endoscopy to pathology confirmation) was 12 days, and surgeon delay (from pathology confirmation to surgery) was 7 days. Factors like place of residence, education, income and gender had no significant effect on time of delay.

In this research, male to female ratio was 3:1 while in reference texts this ratio is 2:1 (2, 1). Martin and colleagues (6) reported the male ratio in their study as 2-3 times higher than females. In this study, the ratio of rural to urban residents was 2:1, which is in accordance with Martin and colleagues' study.

The most common area of gastric cancer was cardia, which is in accordance with universal statistics. In the past, the most common area of cancer was enter (1, 2) and delay in terms of tumor area was more usual in cardia. The most common symptoms in this study were abdominal pain and dysphagia. Delay in terms of symptoms was more common in patients with dysphagia. The patients probably recalled dysphagia more easily, though it was not statistically significant. In Look and colleagues' study (7), the most common symptoms were abdominal pain (66.3%) and digestive hemorrhage (27.7%).

In this study, mean patient delay was 15.01 days (12.3% of the total time) (median = 8 days), while in Look et al.'s (7) study, 30 days (48.6% of the total delay time) pertained to the patient's procrastination. In Martin et al.'s (6) study, 29% of the delay time was related to the patient's first referral to the physician. In Haugstvedt's (8) study, this time was 42 days. With regard to short time of delay for patients to refer to the physician, it seems that the patients received drug therapy at first visit and were not referred for endoscopy. In this research, GP delay was 83.38 days (68.08% of total time). It is necessary to mention that the amount decreases to 59.1 days if 3 patients are not taken into account who were referred for endoscopy after 200 days. This delay is reported as 110 days in Maconi's (9) study, 37 days in Haugstvedt's (8) and 21 days in Look et al.'s (7). In the study of Amin and colleagues (10), the time between the beginning of symptoms and pathology confirmation was almost 112 days, and Martin and colleagues (6) reported a median delay of 119 days. In our study, the mean time was 114 days and median was 77 days. Obviously, different studies have been conducted with different results, which illustrate the urgency of immediate endoscopy in high-risk patients and necessity of training physicians. GP delay accounts for the highest delay and it is dependent on two factors: 1) lack of physician's training concerning referral to endoscopist (9), and 2) patient's negligence in not following up (6).

The median delay time from endoscopy to pathology confirmation (pathologist delay) was 12 days, delay from pathology confirmation to hospitalization by surgeons was 4 days, and the interval

between hospitalizations and surgery was 2 days. It seems that the pathologist delay is more than would be expected. Since the surgeon's delay is due to various factors, i.e. the patient's referring to the surgeon, performance of necessary measures to prevent metastasis, pre-operation survey, patient's admission and availability of ICU bed, the length of delay seems reasonable. Total time from confirmation of endoscopy to surgery was 19 days. In the study of Look and colleagues, this time was 8 days (7). The results of this study are in accordance with other studies concerning the delay from endoscopy to surgery.

Hamy and colleagues (11) study results on 86 gastric cancer patients showed that the survival rate of the patients did not depend on delay but depended on involvement of deeper layers of stomach. In a study of 49 patients, Wile and colleagues (12) found that age, gender, period of symptoms and physician delay had no effect on survival rate of the patients. In a prospective study conducted by Zilling and colleagues (13) in 50 gastric cancer patients, it was revealed that the survival rate was only affected by tumor stage. They concluded that the patient and physician delays were considerable in the course of the disease, thus requiring the development of diagnostic procedures prior to emergence of symptoms and screening plans. A study in Japan on 112 gastric cancer patients revealed that the tumor doubling time was 37.5 20 days (14).

A research conducted by Windham et al. (15) indicated that if the period of time between appearance of symptoms and surgery is less than 60 days, there will be no negative effect on survival. If the delay from beginning of symptoms until surgery is more than 37 days, tumor cells will double, and if the delay is more than 60 days, a negative effect on survival occurs. Thus, accountability of each group in lowering the time of delay at each stage could affect the rate, though the effect on survival might not be remarkable. With regard to different stages of delay in this research, the problem primarily lies in physician and pathologist delay. Physician delay (from referral to endoscopy) was 83 days, which is contrary to expectations and remarkable. Thus, necessary training of physicians regarding timely referral of patients and informing the pathologist of patients undergoing endoscopy seems crucial. Delay for 13 days is also against expectations, and in most patients (77.8%), the pathology results were ready after 10 days. Hence, inter-departmental cooperation is necessary to shorten the length of delay.

Finally, we recommend that to reduce the time of delay, cooperation is needed between medical education departments and hospital units. Cooperation of pathologists, provision of proper hospital equipment, and strengthening of insurance systems should also be taken into consideration. Decreasing the time of delay to surgery together with screening plans to diagnose the disease in early stages will contribute to increasing the survival rate.

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