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Gastric carcinomas in Erzurum region

Erzurum yöresinde mide kanserleri

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Bacground/aims: *Histologic typing is important for estimating tumor progression and outcome of patients with gastric carcinoma. In this study, 95 cases of histologically diagnosed primary gastric cancer in resected specimens, obtained from the Pathology Department of Atatürk University Medical Faculty between dates of January 1995 and January 2001 were evaluated.* ***Methods:*** *The distribution of the cases according to Borrmann, Lauren, Ming and World Health Organization classifications was evaluated.* ***Results:*** *The 95 patients, with an age range of 27 to 78 years (mean age of 57.7 years in males, 57.3 years in females), were classified as type I (3 cases), type II (17 cases), type III (63 cases) and type IV (15 cases) according to Borrmann's classification; and as expanding (44 cases) and infiltrative (51 cases) according to Ming. They were classified as intestinal type (20 cases), diffuse type (44 cases) and mixed unclassified (31cases) according to Lauren's criteria and as adenocarcinoma (90 cases), undifferentiated (4 cases) and adenosquamous carcinoma (1 cases) according to World Health Organization classification.* ***Conclusion:*** *The results showed that in Erzurum region, the diffuse (Lauren's classification) and infiltrative types (Ming's classification) of gastric cancer occur at a higher rate compared to the literature data.*

Key words: Stomach, cancer, classification.

Amaç: *Mide kanserli hastalarda tümörün seyrini ve hastanın prognozunu belirlemek açısından histolojik tipi belirlemek önemlidir. Bu çalışmada Ocak 1995 ile Ocak 2001 tarihleri arasında Atatürk Üniversitesi, Tıp Fakültesi, Patoloji Anabilim Dalından elde edilen ve histolojik olarak primer gastrik karsinoma tanısı konan 95 gastrektomi materyali yeniden incelendi.* ***Yöntem:*** *Borrmann, Lauren, Ming ve Dünya Sağlık Örgütü'nün sınıflamasına göre olguların dağılımı yeniden gözden geçirildi.* ***Bulgular:*** *En genç hasta 27 en yaşlı hasta 78 yaşında olup, erkeklerde ortalama yaş 57.7 kadınlarda 57.3 yıl idi. Borrmann sınıflamasına göre: 3 olgu tip I, 17 olgu tip II, 63 olgu tip III ve 15 olgu tip IV idi. Ming sınıflamasına göre: 44 olgu ekspansif, 51 olgu infiltratif idi. Lauren'in kriterlerine göre: 20 intestinal, 44 diffüz ve 31 olgu miks; Dünya Sağlık Örgütü'nün sınıflamasına göre ise 90 olgu adenokarsinom, 4 olgu andiferansiye karsinom ve 1 olgu adenosquamoz karsinom idi.* ***Sonuç:*** *Sonuçlarımız literatür ile karşılaştırıldığında bölgemizde diffüz ve infiltratif tipin daha sık olduğu saptandı.*

Anahtar kelimeler: Mide, kanser, sınıflandırma.

INTRODUCTION

Carcinomas in various organs have been tradionally classified according to their gross and histologic features. Because of the complexity of morphological features, many gross and microscopic classifications have been devised for gastric carcinoma (1). The macroscopic appearance of gastric cancer formed the basis of its first classification system, the Borrmann classification (2). Microscopically, nearly all gastric cancers are of the adenocarcinoma type. In 1965, Lauren classified gastric adenocancers as one of two major types, intestinal or diffuse, based on their structural features. A third type of carcinoma with mixed features is called unclassified (1,4). The Ming classification of 1997 does not take into consideration any special histologic structural feature and is based solely on the biological behavior, as reflected by two main growth patterns: expanding and infiltrative types (1). The WHO International Reference Center for the Histologic Classification of Gastric Tumors (1977) recognizes four predominant patterns: tubular, papillary, mucinous and signet ring cell carcinoma (5). It is suggested that adenocarcinoma may be graded into well, moderately, and poorly differentiated subtypes. In WHO's classification, the following are found rarely; adenosquamous carcinoma, squamous cell carcinoma, undifferentiated carcinoma, unclassified carcinoma types.

In this study, 95 cases, diagnosed as gastric carcinoma in the Pathology Department of Atatürk University Research Hospital between 1995 and 2001, were reevaluated with respect to patient age and tumor type on the basis of three different histologic and one macroscopic classifications.

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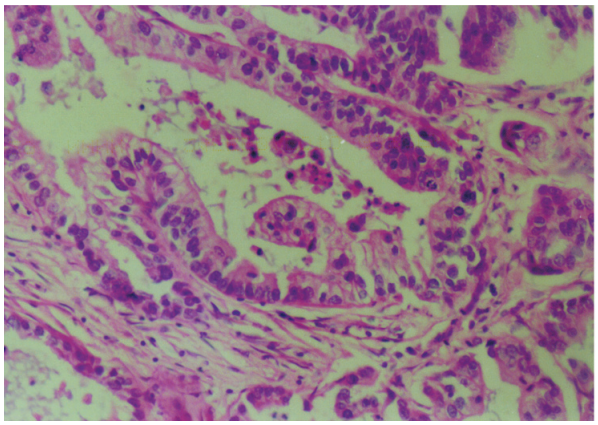

Figure 1. Gastric carcinoma, intestinal pattern (H&E x400).

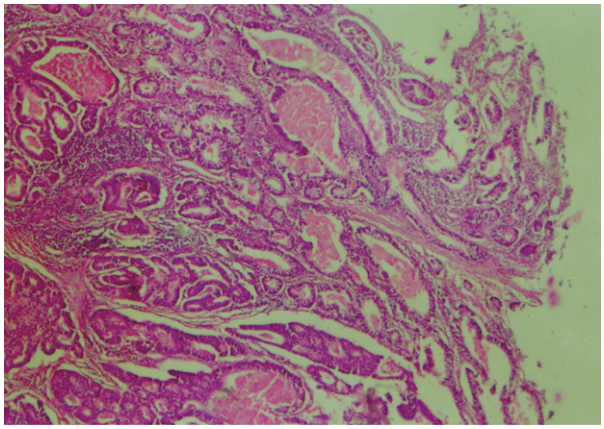

Figure 2. Gastric carcinoma, expanding pattern (H&E x200).

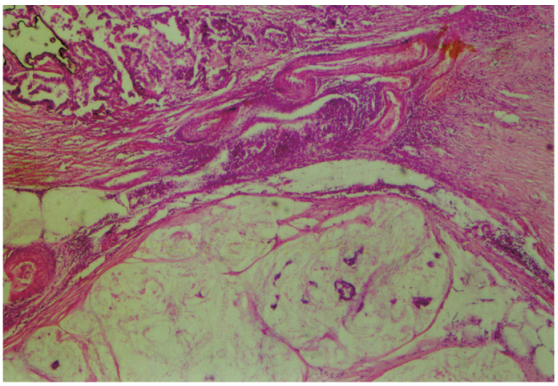

Figure 3. Gastric carcinoma, mucinous pattern (H&E x200).

MATERIALS AND METHODS

Between January 1995 and January 2001, 95 patients underwent surgery for gastric adenocarcinoma. Pathology was reviewed according to the WHO, Lauren, and Ming classifications. According to Borrmann classification, the cases were divided into four subgroups: 1) polypoid (Borrmann's type I). 2) fungating (Borrmann's type II); 3)ulcerated (Borrmann's type III). 4) Infiltrative (Borrmann's type IV);

Microscopically, according to the Lauren classification, intestinal-type carcinoma is usually sufficiently differentiated to have recognizable glandular structures lined by goblet cells containing acid mucin and absorptive cells with a brush border (Figure 1). The cells of diffuse-type carcinomas usually appear round and rather small and are either arranged as single cells or structured in abortive gland-like formations. Characteristically, these cells do not cause gross distortion of the glandular architecture but are merely scattered in the lamina propria, widening the distances between the pits and glands. In Ming classification, tumor cells of the expanding type (Figure 2) grow en masse and by expansion, resulting in the formation of discrete tumor nodules, whereas tumor cells of the infiltrative type penetrate individually and widely, eventually resulting in diffuse involvement of the stomach (1). On the basis of WHO classification there are four subtypes: 1) papillary 2) tubular 3) mucinous (Figure 3) 4) signet ring cell carcinoma.

The extent of penetration of the gastric wall and lymph node involvement were classified according to the tumor node metastasis (TNM) system (6). However, no distinction was established between T3 and T4, or between N1 and N2 groups.

The patients were followed up every three to four months during the first three years, and then every six months for up to 5 years at the Department of Surgery. Current follow-up information was obtained in 75 of the 95 patients (78.9 %). Information was obtained from medical charts and death certificates.

Statistics: Chi-square method was used to perform statistical analysis of results. p values of <0.05 were considered significant. Survival was estimated by Kaplan-Meier method. Survival differences were tested by the log-rank test.

Table 1. Borrmann classification of gross types of epithelial tumors of the stomach

Macroscopic type	*n*	*%*
type I : polypoid	3	3.15
type II: fungating	17	17.8
type III ulcerated	63	66.3
type IV infiltrative	15	15.7
Total		100

Table 2. Laurén classification of epithelial tumors of the stomach

Histologic type	*n*	*%*
Diffuse	44	46.3
Intestinal	20	21.1
Mixed(unclassified)	31	32.6
Total	95	100

Table 3. World Health Organization classification of histologic types of epithelial tumors of the stomach

Histologic type	*n*	*%*
Adenocarcinoma	90	
Tubular	57	60
Papillary	11	11.5
Signet ring cell	5	5.3
Mucinous	17	17.9
Undifferentiated carcinoma	4	4.2
Adenosquamous carcinoma	1	1.1
Total	95	100

RESULTS

The 95 patients comprised 69 men and 26 women. (age range 27-78 years, but most cases (49.4%) between 50 and 59 years). The median age was 56.8 years, 57.7 years in men and 57.3 years in women). Tumor size ranged between 1.5 cm and 11 cm in diameter.

When age distribution was investigated according to Borrman classification, younger patients £ 50 years had ulcerated type while those>50 years had ulcerated, infiltrative type cancer

According to Lauren's classification, the mean ages of intestinal, diffuse and mixed type were 55.2, 55.5 and 60.6 years respectively. Diffuse type was the most common among both women and men. (28/69 in men, 17/26 in women). The percentage of diffuse carcinomas with T3-T4 penetration of the gastric wall (90.3 %) was greater than that of intestinal carcinomas (75 %); lymph node involvement was almost identical in both types (63.3% and 62.5%, respectively).

On the basis of Ming classification, 51 (53.6%) cases were infiltrative type and 44 (46.3%) were expanding type. The median age of infiltrative and expanding types were 55 and 59 years respectively. The expanding type was more common in men (38/69) whereas the infiltrative type was more common in women (20/69). The male/female ratio for the expanding type was 1.9:1. According to Bormann's classification, 40% of infiltrative type was type III and 63.2% of the expanding type was type III and IV. The percentage of infiltrative carcinomas with T3-T4 penetration of the gastric wall (95.8%) was significantly greater ($P<0.05$) than that of expanding carcinomas (85.7%). Lymph node involvement was slightly greater in infiltrative (66.7%) than in expanding carcinomas (65.5%).

According to WHO classification, the median ages of tubular, papillary, signet ring cell and mucinous type carcinoma were 55.7, 59, 65.8 and 56.5 years respectively. Tubular type was the most common type among both women and men. The percentage of undifferentiated, signet ring cell and mucinous carcinoma with T3-T4 penetration of gastric wall(100 %) was greater ($P<0.02$) than that of tubular, papillary carcinomas (93.10 % and 33.3 % respectively). Lymph node involvement was greater in signet ring cell (100 %) than in other types of carcinoma.

The distribution of cases according to the three different histologic and one macroscopic type are summarized in Tables 1,2 and 3.

The overall two-year survival rate for patients with intestinal-type carcinoma was higher than that of patients with diffuse carcinomas(21.2 % vs.42.1 %, $P=0.017$). It was also higher for patients with expanding carcinomas compared to those with infiltrative carcinomas (38.9 % vs. 19.8 %) and for patients with tubuler and papillary carcinomas, it was higher than that patients was undifferentiated signet ring cell and mucinous carcinoma (Table 4).

Table 4. Extent of penetration of gastric wall, lymph node involvement classification (according to the tumor node metastasis system) and survival time.

	Histologic type (%of T3-T4)	*Penetration (% of N1-N2)*	*Nodal involvement (median time) (months)(range)*	*Survival time*
Lauren classification	Diffuse	93.3	63.3	12 (1-9)
	Intestinal	75	62.5	42 (31-43)
	Mixed (unclassified)	82.3	62.8	27 (21-24)
Ming's classification	Infiltrative type	95.8	66.7	16 (1-33)
	expanding type	85.7	65.5	36 (23-43)
WHO classification	Adenocarcinoma			
	Tubular	93.1	65.5	27 (5-36)
	Papillary	33.3	33.3	42 (32-42)
	Signet ring cell	100	100	7 (5-7)
	Mucinous	100	90	4 (1-10)
	Undifferentiated carcinoma	100	100	7 (0)
	Adenosquamous carcinoma	30.3	32.6	9 (0)

DISCUSSION

Despite a dramatic reduction in incidence and mortality rates, gastric cancer is still one of the most common malignant neoplasias worldwide (7). Males are affected more frequently than females at a ratio of 2/1 (8). In this study, 69 patients were male and 26 female, with a median age of 56.8 (range 27-78) years.

The macroscopic appearance of gastric cancer formed the basis of its first classification system, the Bormann classification (2). In one large gastric cancer series, the percentage for each gross subtype was as follows: polypoid, 7%; ulcerated, 25%; infiltrative, 26%; fungating, 36% (9). In the study of Eğilmez et al, the majority of cases had type III and IV tumours (10). The majority of our cases (66.3 %) had type III tumours. These patients tended to be younger (11). In our study, the median age of the Bormann's type IV gastric carcinoma patients was 45.3 years.

The intestinal type predominated in both men and women and in all age groups, contrary to the expectation of a diffuse predominance because of the relatively young population and low risk for gastric carcinoma in this region (12-15). The diffuse type of carcinoma is more common than the intestinal type in young people, particularly in females (9,16,17). In the gastric cancer series of Tunçyürek, et al., the intestinal type predominated in both men and women and patients with the diffuse type tended to be younger (13,18).

In the present study, the median ages for intestinal and diffuse types were 55.2 and 55.5 years, respectively and the diffuse type predominated in both men and women.

The advantage of Ming's classification is that it can classify practically every tumor (19). The infiltrative type occurs more commonly in women and the expanding type more commonly in men (20). In this study, the infiltrative type was more common than the expanding type, similar to findings of Italian and Sivas. Borrmann's gross types were represented as follows among expanding tumors: fungating, 63%; ulcerated, 20%; polypoid, 10%; and diffuse, 3%. (2). In our study, infiltrative type is the common ulcerated type and the expanding type is commonly the ulcerated and infiltrative type.

The WHO classification is less important as a prognostic factor. Signet ring cell carcinoma is a subtype which has a worse prognosis in the 50-70 year- old age group (20,21). The mean age of our cases was 65.8 years the male female ratio was 2/3 and all cases were Borrmann's type IV carcinoma. The WHO subtype of tubulary carcinoma is more common over the age of 40 years (8). In the study

of Eğilmez et al., the tubular type was most common and the mean age was 53.5 years (10). The tubular type was also the most common type in this study and median age was 55.7 years.

A TNM classification of gastric cancer has been proposed to stage the disease both clinically and pathologically (6). In the study of Ribeiro et al, the percentage of infiltrative carcinomas with T3-T4 penetration of the gastric wall(55 %) was significantly greater (P<0.50) than that of expanding carcinomas(34.8%). Lymph node involvoment was greater in infiltrative (65.0 %) than in expanding carcinomas (53.3 %) (9). In this study, the percentage of infiltrative carcinomas with T3-T4 penetration of the gastric wall(95.8%) was also significantly greater (P<0.05) than that of expanding carcinomas (85,7%) but lymph node involvoment was only slightly more common in infiltrative (66.7%) than in expanding carcinomas (65.5%). The percentage of diffuse carcinomas with T3-T4 penetration of the gastric wall (90.3 %) was greater than that of intestinal carcinomas(75 %); lymph node involvement was almost identical in both types(63.3% and 62.5%, respectively).

The survival rate in gastric cancer has also been shown to be different (1). Riberio et al. found the five-year survival rate to be higher in patients with intestinal type than diffuse type cancer (46 % vs. 23 %) and also higher in patients with expanding type than infiltrative type cancer (44% vs. 28%) (22), Likewise, this study also found the survival rate to be higher in expanding than infiltrative type cancer (38.9 % vs.19.8 %) and in intestinal than diffuse type cancer (42.1 % vs. 21.2 %).

In conclusion, no difference was seen with respect to distribution of histologic types of gastric cancer in the present study, but diffuse (Lauren's classification) and infiltrative types (Ming's classification) were more frequent when compared to literature data. Further population-based studies which include detailed pathologic examination are necessary.

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