Pathology

ATROPHIC GASTRITIS, INTESTINAL METAPLASIA, GASTRIC CARCINOMA AND IT'S VARIANTS IN DISPEPTIC CASES OF EASTERN BLACK SEA REGION

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SUMMARY: Gastroscopic biopsy samples taken from standard region of 338 dyspeptic cases from Eastern Black Sea Area were evaluated. Atrophic gastritis and intestinal metaplasia (IM) as benign lesions were significantly higher over 41 years of age. The incidence of type III IM which indicates high risk group for gastric carcinomas was 24%. The incidence of expansive carcinomas was 65% in advanced ages al though diffuse carcinomas in high number (67%) in younger ages. Atrophic gastritis associated carcinoma incidence was 51%, intestinal metaplasia was 43% type III, diffuse, score III IM incidence was significantly higher in cancer associated cases.

Key Words: Intestinal metaplasia, gastric carcinoma.

INTRODUCTION

The main purpose of this study was to investigate the high risk group of patients for gastric carcinomas among the various pathological lesions. Consequently gastroscopic controls of these high risk patients may obtain early gastric cancer. Gastric cancer classification introduced by Ming such as expansive and infiltrative is considered the most suitable classification for this purpose (14). According to this classification expansive gastric cancers may take place in advance ages and originatemg from pre-cancerous states such as severe atrophic gastritis and colonic type of intestinal metaplasia (6,7,15,17). Especially alcian blue plus high iron diamine positive sulphomucin contents of metaplastic epithelia is suggestive for cancer development and it may be proven by histochemical studies (3). CEA (carcino embriogenic antigen) characteristics may also be shown by PAP techniques (11) to obtain proliferative capacity of these pre-cancerous lesions. According to data mentioned above; gastroscopic biopsy materials of 338 dispeptic patients studied by AB (Alcian Blue). HID (High Iron Diamine), CEA histochemical techniques to delineate high risk group of patients for gastric carcinomas (23).

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MATERIALS AND METHODS

Fiber optic gastroscopic biopsies were taken from four standard region of 338 dispeptic cases (Table 1). Routine tissue processing were done for microscopic examination by Periodic Acid Schiff (PAS) for neutral mucosubstances , Alcian Blue (AB) for acidic mucosubstance. High Iron Diamine (HID) for sulphomucin, peroxidase anti peroxidase (PAP) cytochemistry for carcino embriogenic antigen (CEA) were utilized (3,11, 23). The term normal was used to define mucosa with no histologic abnormalities in pathologic evaluation; atrophic gastritis severity was classified as mild, moderate or severe according to thickness of the mucosal atrophic changes at the glands (20). Sipponen method was used for IM scoring (score 0-III) (24, 25). Intestinal metaplastic gland count in a region was graded according to Sequra (22), complete and in complete types of IM were differentiated by their cell types and contents (3). Ming's gastric cancer classification was used and the cases were classified as to their expansive and infiltrative characteristics (14). The results were statistically evaluated by x2 test.

Table 1: Standard biopsy region (8, 9, 21).

I	Prepyloric region at minor curvature
II	Incisura angularis at minor curvature
III	Incisura angularis at minor curvature
IV	Corpus at minor curvature

RESULTS

A total 338 gastric biopsy specimens removed from dispeptic cases were examined (Table 2). Of these only 13 cases were histologically normal. Superficial gastritis were diagnosed in 23 patients. 106 of the specimens revealed chronic atrophic gastritis. Infiltrative cancer incidence was high in third and fourth decades while expansive cancer incidence high in fifth decades (Table 3). Carcinoma associated and AG (Atrophic Gastritis) revealed significant parallelism (Table 4) in 74 cases intestinal metaplasia was observed of these 76% were (Figure 1) and 24% was type 3 (Figures 2 and 3). They were sulphomucin positive (HID+). The depth (score) and the width of the IM areas were closely related to it is type (Tables 5-7). The incidence of type III IM was 25% of the gastroscopic biopsies in carcinoma patients (92%) (Table 5).

Table 2: Gastric biopsy specimens diagnosis.

Number of case		Normal		Superficial Gastritis		Atrophic Gastritis		AG + IM		Carcinoma	
n	%	n	%	n	%	n	%	n	%	n	%
338	100	13	4	23	7	106	31	74	22	122	36

Table 3: Age distribution for gastric cancer types.

Age	Infiltrative cancer		Expansive cancer		Total	
	n	%	n	%	n	%
21-40	8	67	4	33	12	10
41-	39	35	71	65	110	90
Total	47	39	75	61	122	100

p<0.05

Table 4: Incidence of atrophic gastritis severity.

AG cases	Mild		Moderate		Severe		Total	
	n	%	n	%	n	%	n	%
AG	50	28	100	55	30	17	180	74
Carcinoma associated AG	15	24	18	29	29	47	62	26
Total	65	27	118	49	59	24	242	100

p<0.05

DISCUSSION

IM is one of a frequent (23%) finding of gastroscopic biopsies. Diagnosis of high risk group for EGC can be achieved by histochemical morphology of type III IM.

Table 5: Incidence of IM associated with benign and malignant gastric pathologies.

A) Width of IM associated with gastric carcinomas.						
IM Type	Affected area				Total	
	%0-25		%25-100			
	n	%	n	%	n	%
Type I-II	12	44	15	56	27	52
Type III	2	8	23	92	25	48
Total	14	27	38	73	52	100
					p<0.05	
B) Width of IM associated with benign gastric lesions.						
IM Type	Affected area				Total	
	%0-25		%25-100			
	n	%	n	%	n	%
Type I-II	33	59	23	41	56	76
Type III	3	17	15	83	18	24
Total	36	49	38	51	74	100
					p<0.05	

Identification of high risk patients for gastric cancer is especially important at endemic areas (1) such as Çaykara (Eastern Black Sea Region).

Table 6: Incidence of IM severity associated with benign and malignant gastric pathologies.

A) IM severerity with gastric carcinomas.								
IM width	IM severity						Total	
	Score I		Score II		Score III			
	n	%	n	%	n	%	n	%
Affected areas %0-25	9	64	4	29	1	7	14	27
Affected areas %25-100	3	8	7	18	28	74	38	73
Total	12	23	11	21	29	56	52	100
							p<0.05	
B) IM severerity with benign gastric pathologies								
IM width	IM severity						Total	
	Score I		Score II		Score III			
	n	%	n	%	n	%	n	%
Affected areas %0-25	19	53	13	36	4	11	36	49
Affected areas %25-100	7	18	25	66	6	16	38	51
Total	26	35	38	51	10	14	74	100
							p<0.05	

Table 7: Severity of type III IM.

Type III IM cases	Score I		Score II		Score III		Total	
	n	%	n	%	n	%	n	%
Carcinoma associated	3	12	3	12	19	76	25	58
Type III IM	3	17	11	61	4	22	18	42
Total	6	14	14	33	23	53	43	100
							p<0.05	

The most suitable gastric cancer classification for indicating type III IM-carcinoma is Ming's classification (14). According to this classification gastric cancer is divided into diffuse and expanding types. Type III IM shows a significant preponderance with expanding cancer than diffuse type our results correlate with this opinion (4,12,16,19). Accompaniment of type III IM with EGC, adenomas and invasive carcinomas confirmed it is pre-cancerous potential (5, 6, 7,10,15,17).

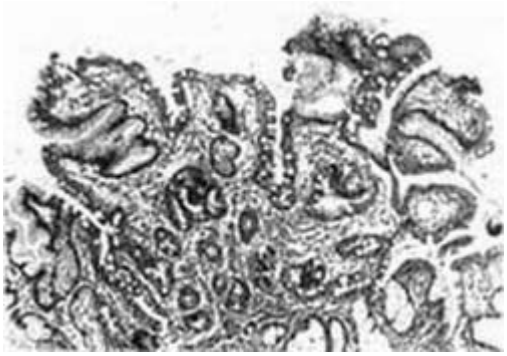

Figure 1: Gastric mucosa showing severe atrophic gastritis and wideness and extensive IM (score III) with distortion of architecture, irregular crypts lined by Goblet cells and columnar mucus secreting cells between (HEx12.5).

Gastroscopic biopsies should be taken from at least four standard areas shown in Table 1 for obtaining AG and IM localization and EGC (14, 27).

We did not observe any sex predilection for gastric cancer types. Diffuse gastric cancer usually involves younger individuals as it is seen in our study.

Incidence of AB and HID positivity of acidic mucous substances (sialomucin/sulphomucin) were seen at type III IM. In this study, incidence of CEA was significantly higher in incomplete type of IM than complete type and these observation supports earlier studies (3,18,26). This finding was parallel to HID positivity. These results indicate immaturity of the IM cells in type III IM. This parallelism of the two chemical substances uncovered in this study indicates their equal value in this particular area. Cancerous transformation is depending on proliferative capacity of the cells, CEA is an embryonic and/or proliferative antigen indicating these particular capacity. Another important

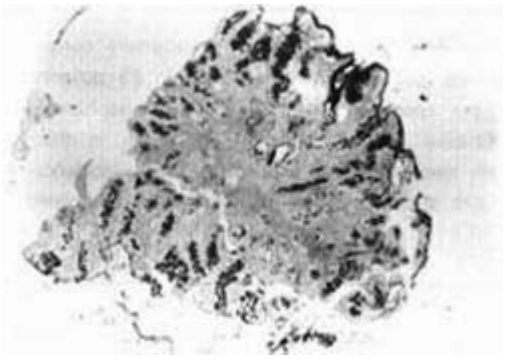

Figure 2: Type III IM is predominant in section stained with PAS/AB (pH 2.5x2.5) columnar mucus secreting cells contain neutral mucin (unstained) and Goblet cells contain acidic mucosubstance (Shades of black) (PAS/AB pH 2.5; HEx12.5).

result of these study is horizontal (wideness) and vertical (depthness) distribution of type III IM at gastric glands correlating histochemical alterations. It's incidence rises by the age grows older. In our study, HID positivity of mucus cells is appeared more important than Goblet cells for cancer development in type III IM.

In various studies IM and AG may take place in a range of 10-50% after 50 years of age (27, 28). We however found higher incidence (74%), the reason of which may have originated from samples taken from endemic areas for gastric cancer. As a consequence in 45% of the cases IM accompanied with the cancer.

According to the findings in the literature type I IM is not correlated by aging as a contrast to type III IM (8). Our results also confirmed this observation IM, AG scoring and typing is therefore important enabling identification of high risk group for gastric cancer. Type III IM may be accepted as dysplasia (4,16,19), although transitional forms of IM are frequently observed.

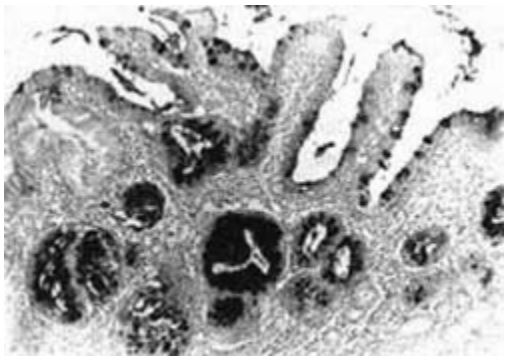

Figure 3: Score III IM, type III IM has widely taken place in section where Goblet cells containing sulphomucin stained shades of gray (HID/AB pH2.5; HEx6.3).

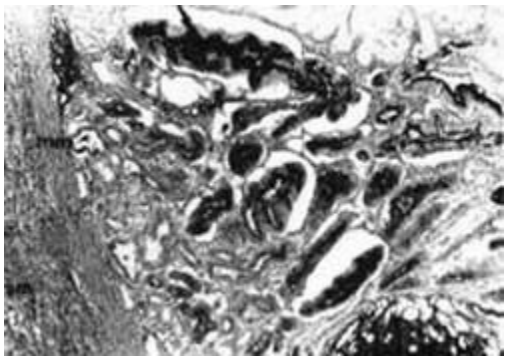

Figure 4: Score III, type III IM is predominant in section stained with HID/AB pH 2.5, sulphomucine positive contents of columnar cells (arrow) are seen (m.m.=muscularis mucosa, sm=tela submucosa, HID/AB pH 2.5; HEx12).

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