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Comparison of the gastric biopsy results of Afghan refugees and Turkish people

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Abstract

Helicobacter pylori- (H. pylori) infection is one of the effective factors in the development of gastric premalignant lesions, and it is known that socioeconomic conditions are closely related to *H. pylori* infection. Our aim was to show whether there were differences regarding *H. pylori* infection and gastric histopathological findings between humans who had to manage an exhausting escape out of their own country and residents of a coastal town in the black sea region of Turkey. Endoscopic findings of Turkish and Afghan patients who underwent gastroscopy for various reasons, gastric biopsies, and their histopathological results (*H. pylori,* intestinal metaplasia, and gastric atrophy) and some biochemical parameters were retrospectively screened from the hospital online data system. A total of 222 patients, 41 Afghan and 181 Turkish, were included in the study. There were no significant differences regarding age and gender of the patients between the groups. The percentage of the patients with intestinal metaplasia and *H. pylori* infection was higher in the group of the Afghan patients than in Turkish patients. Afghan refugees had similar rates of atrophic gastritis (23.1% versus 21.5%; p=0.834), when compared to resident controls. Risk factors of gastric cancer include the presence of *H. pylori* infection, atrophic gastritis, and intestinal metaplasia. This study supports the knowledge that socioeconomic factors such as low economic conditions and poor health infrastructure are one of the major causes of widespread global H. pylori infection status.

Keywords: gastric biyopsy, *H. pylori*, intestinal metaplasia, gastric atrophy

1. Introduction

Due to ongoing socioeconomic turmoil and civil war like circumstances almost four million Afghan refugees had to leave their country and to move to neighboring countries and to the middle east, as well. According to the Journal of UN (1) there are 300.000 Afghan refugees in Turkey with the world's largest refugee population of about four million refugees in total, being under official protection.

It is classically described that both refugees and immigrants have lower socioeconomic status and have diminished access to health care centers due to lack of proper supports in their residential areas. Overcrowded immigration centers, poverty and low education levels are also contributed to some communicable diseases among Afghan refugees (2).

H. pylori is a gram-negative, spiral rod-shaped bacterium mainly seen in Asia, affecting almost half of the world's population (3). It is one of the responsible reasons for gastric cancer and gastric mucosa-associated lymphoid tissue (MALT)-lymphoma which comprises 5% of all cancer types in humans (4). Environmental etiological factors for developing *H. pylori*-infection include consuming contaminated drinking water, living in overcrowded houses and dormitories, having either poverty or low education level (5).

Thus, immigrant populations are still the main targets of H. pylori studies to evaluate the spreading patterns of these infectious diseases.

Other hand, premalignant conditions and gastric cancer are one of the main health problems in some Asian countries including Japan, Afghanistan, Iran, and Turkey. Although the exact reason is not well established, those high rates of gastric cancer in such countries could be related to dietary habits and genetic predisposing factors (6). Intestinal Metaplasia (IM) means the emerging and presence of both colonic and intestinal mucosa in the gastric mucosa without well-established underlying factors. It is strongly associated and presented with intestinal type gastric adenocarcinoma and should be screened in all high populations (7). Risk factors of gastric IM have been reported as the presence of H. pylori infection, older age, smoking history, strong spicy food, occupation status and the presence of IL10-592 C/A (8).

Other hand, atrophic gastritis is defined as immunologically destructed parietal cells in either gastric fundus or corpus (9).

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Both of atrophic gastritis and gastric IM are implicated in gastric carcinogenesis and should be tracked by endoscopic screening programs (10).

Our aim in this study is to determine the frequency of *H. pylori* infection and associated gastric precancerous lesions in the Afghan patient group with poor access to health-sufficient socioeconomic conditions and to compare these findings with the resident Turkish patient group living in the same region.

2. Materials and Methods

This study is a retrospective, unicenter trial. All Afghan refugee and Turkish resident patients over 18 years of age who underwent gastroscopy with a diagnosis of dyspepsia between May 2018 and October 2019 were included in the study.

We had previously excluded patients with severe underlying disease, including gastric cancer and gastric resection. All Patients without gastric biopsies or with pathology results, which could not be obtained, were excluded.

The control group was selected from native Turkish subjects presenting with dyspepsia. Gastroscopy with antral biopsy was performed in all patients at enrollment of the study. Laboratory parameters were obtained from hospital data system.

2.1. Endoscopy and histologic examination

All endoscopic examinations were performed with propofol anesthesia using Fujinon videoscope (Tokyo, Japan). Biopsy samples were reviewed by a pathologist for GPL and *H. pylori* status. Gastric biopsy specimens were fixed in formalin and assessed for *H. pylori* (by Giemsa staining) and intestinal metaplasia (by staining with hematoxylin and eosin). Intestinal metaplasia was classified in two grades (absent or present). Atrophic gastritis was defined as absence or presence of parietal cells in gastric mucosa with similar pathologic methods.

2.2. Ethical approval

Ordu University Training and Research Hospital / Ordu, Decision of Invasive Clinical Research Ethics Committee, 2020.

2.3. Statistical analysis

All statistical analyses were performed with SAS software (SAS Institute, Cary, N.C.). The demographic, clinical, pathological and laboratory data and characteristics of the patients were compared by Student's t-test and Fisher's Exact-test to assess the difference between the proportions. All p-values were two-sided; significance was indicated by a p-value of less than 0.05.

3. Results

During the same time with fifty-five Afghan patients being gastroscopies, the gastroscopic findings of coincidentally found two hundred-forty Turkish patients were screened via the computer data system of the hospital. Fourteen Afghan and fifty-nine Turkish patients were excluded because of at least one exclusion criteria. Finally, forty-one Afghan and one hundred eighty-one Turkish patients were included into the study. The characteristic sociodemographic features at baseline were well balanced between refugees and control subjects with respect to age (40.5±13.3 versus 44.8±13.7 years) and gender (all p >0.05). The total of the demographic and laboratory results of both groups are presented in Table 1.

Table 1. Demographic and laboratory results of the Afghan and Control group

	Afghan Group		Turkish group		
	Mean values (95 % CI)	SD	Mean values (95 % CI)	SD	P
Age	40.53 (36.52- 44.55)	13.7	44.8 (52.8- 56.9)	13.7	<0.001
Gender					
Female	20 (48.78)		68 (37.6)		0.054
Male	21 (51.21)		113 (62.4)		0.054
Hemoglobin	13.43 (12.93- 13.94)	1.67	13.1 (12.8- 13.43)	2.12	0.413
Hematocrit	40.79 (39.51- 42.08)	4.27	40.56 (39.7- 41.4)	5.62	0.954
MCV	85.97 (84.12- 87.81)	6.15	85.45 (84.5- 86.4)	6.36	0.765
WBC	6.60 (5.91- 7.28)	2.28	7.85 (7.48- 8.21)	2.47	0.002
Thrombocytes	235 (211.97- 258.03)	76.5	279.0 (250.1- 308)	197.4	0.109
Glucose	108 (93.76- 122.24)	43.3	106.6 (99.7- 113.5)	49.9	0.148
Urea	27.88 (26.09- 29.67)	5.67	31.2 (29.2- 33.2)	13.1	0.210
Creatinin	0.69 (0.65- 0.73)	0.13	0.80 (0.76- 0.84)	0.27	0.003
AST	23.05 (18.94- 27.16)	13.2	23.74 (21.03- 26.46)	17.9	0.585
ALT	19.6 (15.4- 23.8)	13.8	23.64 (20.47- 26.82)	21.4	0.273
Albumin	4.1 (3.7-4.5)	0.4	4.57 (4.41- 4.72)	0.53	0.039
Ferritin	4.57 (4.41- 4.72)	56.1	52.34 (38.21- 66.47)	42.9	0.004
TSH	2.04 (1.36- 2.71)	2.25	2.02 (1.69- 2.34)	1.92	0.435

MCV: mean corpuscular volume; WBC: white blood cells; AST: aspartat-aminotransferase; ALT: alanin-aminotransferase; TSH: thyroid-stimulating hormone; CI: confidence interval; sd: Standard deviation

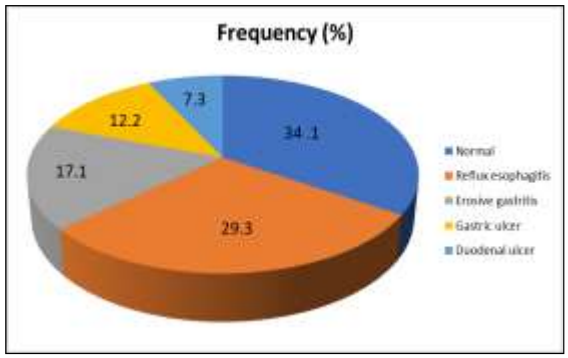

Fig. 1. Endoscopic findings of the Afghan patients

The histopathologic results of the gastric biopsies as *H. pylori,* intestinal metaplasia and gastric atrophy are demonstrated in Table 2. The gastric biopsy specimens unveiled a significantly higher rate of *H.pylori* infection and gastric intestinal metaplasia in Afghan patients in comparison to

Turkish patients (78% versus 60.8%; p= 0.037 and 19.5% versus 3.3%; p=0.001, retrospectively). Interestingly, Afghan refugees had similar rates of atrophic gastritis (23.1% versus 21.5%; p=0.834), when compared to resident controls.

The mean serum albumin levels among Afghan refugees were lower than those of the Turkish control group (4.1 vs. 4.57 g/dl). The ferritin values in the Afghan group were higher (89.58ng/mL) than in the Turkish group (52.34 ng/mL).

The means of serum creatinine and leucocyte levels were significantly higher in the Turkish group than in the Afghan refugee group (0.80±0.27 mg/dl versus 0.69±0.13 mg/dl; p=0.003 and 7.85±2.47mm³ versus 6.60±2.28/mm³; p= 0.002, respectively).

Table 2. Histopathologic results of *H. pylori*, intestinal metaplasia, and gastric atrophy

		Afghan group	Turkish group	P-value
H. Pylori; n (%)	No	9 (22)	71 (39.2)	<0.001
	Yes	32 (78)	110 (60.8)	
Intestinal Metaplasia; n (%)	No	33 (80.5)	175 (96.7)	0.000
	Yes	8 (19.5)	6 (3.3)	
Atrophy; n (%)	No	32 (78.04)	142 (78.5)	0.834

H. Pylori: Helicobacter Pylori

4. Discussion

H. pylori has infected millions of people worldwide and has caused millions of gastric cancer cases. Risk factors of gastric cancer include the presence of *H. pylori* infection, atrophic gastritis, and intestinal metaplasia. Possible gastric cancer related environmental factors include living in a weak health infrastructured area and being in low socioeconomic status. The turmoil in the middle east and central Asia, where health organizations still face major limitations, caused further dislocations of a huge number of immigrants into Turkey in recent years.

Supporting the setting of this study, we found that the rate of *H. pylori*-infection in the Afghan refugee group was statistically significantly higher than Turkish patients. An Afghan study pointed out, that the prevalence of *H. pylori* infection was found as 59.1% by using an enzyme linked immunosorbent assay test. In our study, the rate of *H. pylori* infection in the Afghan group was significantly higher with 78% compared to this study. The reason for this difference can be attributed to the fact that Afghan refugees had to leave their hometown for various reasons and live in lower socioeconomic and poor sanitation conditions. Its presence was reportedly correlated with as follows; hypertension, smoking cigarettes, higher body mass index, diabetes mellitus and higher total cholesterol levels (all p<0.05) (11). Unfortunately, we did not analyse underlying factors that prone to *H. pylori* infection due to the retrospective nature of the study.

The importance of intestinal metaplasia in the development of gastric cancer was first described as the Correa sequence in the 1970s. According to this hypothesis, *H. pylori* infection results in superficial gastritis, atrophic gastritis, and intestinal metaplasia (12). Later, the close relationship between *H. pylori*, glandular atrophy, and intestinal metaplasia was defined by Matsuhisa et al. (13). The lower socioeconomic status in Asia is one of the fundamental reasons for the higher seroprevalence of *H. pylori*. It is assumed to be responsible of emerging gastric cancers and MALT-lymphoma (6). It is supposed that the rate of intestinal metaplasia in the Japanese population leads to more frequent gastric cancer compared to other Asian countries (13). Another study was conducted in Afghan humans complaining dyspepsia. 364 native Afghan humans were screened by upper gastrointestinal endoscopy without sedation, unveiling rates of esophageal cancer and gastric cancer of 25.3% and 3.6%, respectively (14). In our study, we found higher rates of gastric intestinal metaplasia in Afghan refugees. We did not detect any gastric cancer cases in our study subjects. The reason for this situation can be considered as the low number of Afghan patients in the study and the general condition of the patients with gastric cancer not being able to take refuge.

The circumstance of lower albumin levels among Afghan refugees could be explained by malnutrition, as it was the case in our Afghan group (15), the higher levels of ferritin at normal hemoglobin in the Afghan group were interpreted as acute phase protein reaction rather than anemia.

The fact of higher creatinine-levels in the Turkish control group than in the Afghan group could be due to the lower weight and muscle mass because of malnourishment in the last months.

Our study was conducted retrospectively, so it could not be planned systematically like a prospective study. Another limiting factor of this study is that patients may be using a proton pump inhibitor before endoscopy, which may affect *H. pylori* evaluation. Finally, in this small city where the study was conducted, the number of Afghan refugees is quite low compared to metropolises. Further on, it is questionable, whether these patients represent most of the Afghan people in Turkey.

Our endoscopic findings may provide a novel opportunity to draw attention on the health problems, in particular the gastric cancer risk among Afghan refugees or asylum seekers all over the world. Of course, more studies are necessary on this topic to maintain a sufficient health care for the global challenge of refugees.

Conflict of interest

No conflict of interest was declared by authors.

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None to declare.

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