



Investigating prevalence of *Helicobacter pylori* and histological changes in patients with dyspepsia in Khorramabad City during 2013-2015

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General Note

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ABSTRACT

Dyspepsia which is a digestive syndrome with a prevalence of 50 % in some areas can be an important factor in *Helicobacter pylori* infection syndrome. This study was aimed to evaluate relative frequency of *Helicobacter pylori* infection and histological changes in dyspeptic patients presented to the Endoscopic unit of Shahid Rahimi and Shohadaye Ashayer hospitals in Khorramabad city, Iran. In this cross-sectional study, the population included all patients with dyspepsia referred to Endoscopic Unit of Shahid Rahimi and Shohadaye Ashayer hospitals in Khorramabad during the period of 2013-2015. After performing endoscopy, *H. pylori* diagnosis was done by biopsy method. In this study, 5213 patients with dyspepsia (including 49.2% male and 50.8% female) with the age range of 12 to 90 years (mean 17.36 ± 48.24 years) were studied. From this population, 57.3 percent were infected with *Helicobacter pylori* (50.8 % of men and 49.2% women). Most positive cases were over 60 years old and the most histological changes were respectively chronic active gastritis (40.3%). Similar to other studies, the prevalence of *Helicobacter pylori* infection is average in the population; however, these rates might be reduced through increased awareness and health care.

Keywords: *Helicobacter pylori*; Dyspepsia; Prevalence, Iran

1. INTRODUCTION

Helicobacter pylori, discovered in 1984, is a gram-negative microaerophilic bacillus of the size 2.5-3 μm , which can survive in acidic stomach due to resistance to gastric acid. The bacterium is often seen spiral in the gastric mucosa and curved in culture medium (Loho, 2008). The most common methods for transmission of *H. pylori* infection are fecal-oral and oral-oral transmissions, and also, the less common methods of transmission are via vomiting and therapeutic devices (Brown, 2000). The diagnostic methods of *H. pylori* include invasive (biopsy, culture and urea testing) and non-invasive methods (urea breath test, fecal antigen test, and serologic testing) based on the diagnostic costs, availability, patient position and prevalence of invasive infection (Xia et al., 2000). *H. pylori* infection is one of the most common chronic bacterial infections, which is the main reservoir of human bacteria, and it is estimated that about 50% of people have an infection with the infection. It infects human by various mechanisms (Azadegan-Dehkordi et al., 2015; Bagheri et al., 2015; Bagheri et al., 2013). Studies have shown that there is a difference in the infection rate in different countries of the world and even in different parts of the same country. The prevalence of *H. pylori* infection is due to factors such as socioeconomic level, health, age and demographic conditions (Ortiz et al., 2003; Eusebi et al., 2014). The prevalence of *H. pylori* infection varies from country to country, with 66.1% in South Africa, 54.9% in Saudi Arabia and 93.6% in Nigeria (Tanih et al., 2010; Ayoola et al., 2004). In addition, the prevalence of *H. pylori* in South Korea is 40.6%, Taiwan 50%, Australia 20%, and Germany 48.8% (Eusebi et al., 2014; Tanih et al., 2010; Ayoola et al., 2004; Jemilohun et al., 2010; Hunt et al., 2011). Studies in Iran show that the prevalence of *H. pylori* infection varies in different regions, with a 66% prevalence of infection observed in Kashan, 86.8% in Tehran and 31% in Southern Iran (Arj et al., 2011; Niknam et al., 2014; Shokrzadeh et al., 2012).

H. pylori is associated with various diseases in the upper gastrointestinal tract so that it is the main cause of chronic gastritis, peptic ulcer and cancer in the distal region and gastric lymphoma. This infection is the most common cause of peptic ulcer in the stomach and duodenum (Hatakeyama, 2009; Watanabe et al., 1998; Malekzadeh et al., 2004). One of the clinical manifestations of *H. pylori* infection in the gastro-intestinal tract is dyspepsia. It is considered as a risk factor for dyspepsia along with factors such as alcohol consumption, smoking, diet, non-steroidal anti-inflammatory drugs, age and race (Shimatani et al., 2005; Alazmi et al., 2010; Mahadeva et al., 2006). Dyspepsia is characterized by chronic or recurrent pain in the upper abdomen and is one of the most common causes of referral to gastrointestinal clinics, leading to high medical costs and many hours of work. Dyspepsia is considered as a sign or a set of symptoms that originate from the stomach. Symptoms include heartburn, abdominal discomfort after eating, premature fullness, bloating and epigastric pain (Alazmi et al., 2010; Mapel et al., 2013; Miwa et al., 2012). Studies in Iran have

reported a different outbreak pattern for dyspepsia, including a prevalence of 54.6% in Sanandaj and 29.9% in Shiraz (Yazdanpanah et al., 2012; Khademolhosseini et al., 2010).

Considering the different prevalence rates of *H. pylori* infection in different regions, the dependence of this rate on the factors affecting access to health facilities and socioeconomic status of individuals, as well as the relationship between dyspepsia and *H. pylori*, the aim of this study was to determine the prevalence of *H. pylori* infection and histological changes in patients with dyspepsia referring to the endoscopic department of Shohadaye Ashayer and Shaheed Rahimi hospitals in Khorramabad town of Lorestan province., Iran.

2. PATIENTS AND METHODS

The population of this study consisted of all individuals with dyspeptic symptoms (including epigastric pain, bloating, sourness, vomiting and heartburn) referring to the gastroenterology clinic of Shaheed Rahimi and Shohadaye Ashayer hospitals in Khorramabad during the years 2013 to 2015. Patients were referred to the endoscopy department after an examination by a specialist physician and with the diagnosis of the need for endoscopy. Before the endoscopy, the characteristics of patients such as age and sex and background illness were recorded in the formulated questionnaire after receiving written consent from the patients. Patients with a history of *H. pylori* eradication, history of esophageal and gastric surgery, and gastrointestinal bleeding, were excluded to the study. During the endoscopy, a biopsy was performed from the upper gastrointestinal tract by a gastroenterologist and the tissue was moved to a buffered formalin vial for fixation. Then, the samples were embedded in paraffin and 3µm thick tissue sections were cut from them. These slices were placed on the slide. In the pathological study, all samples stained with Hematoxylin-Eosin were investigated by a pathologist for the presence of *Helicobacter* bacilli and histological changes.

Statistical analysis was performed by SPSS software v.19, using Chi-square and independent t-test. In all studies, the level of significance was considered less than 0.05.

3. RESULTS

The aim of this study was to determine the prevalence of *H. pylori* infection and histological changes in patients with dyspepsia in Khorramabad city. A total of 5213 people were included in the study, of which 194 were excluded. The minimum age of patients was 12 and the maximum age was 90 with an average age of 48.24±17.36 years. The most frequent referrals were those over the age of 60. In this study, 2563 subjects were men (49.2%) and 50.8% women.

Statistical analysis showed that the prevalence of *H. pylori* in patients with dyspepsia was 57.4%, of whom 1520 were men (50.2%) and 1473 women (49.8%). Our survey showed that there was a statistically significant difference in terms of gender between infected and uninfected subjects ($p < 0.01$). The mean age of *H. pylori* positive cases was 48.13±17.11, and although most patients with *H. pylori* were over 60 years old, but there was no statistically significant relationship between infection and age ($p > 0.05$) (Table 1). Most of histological changes in patients with *H. pylori* were in patients with chronic active gastritis (40.3%), significant difference ($p < 0.01$). Other pathological findings of the patients studied are shown in Table 2.

Table 1 Demographic data of patients under study

Variable		<i>Helicobacter pylori</i> infection		P value
		Infected (Quantity 2223) Quantity (%)	Uninfected (Quantity 2220) Quantity (%)	
Gender	Men	1520 (50.8%)	1043(47%)	$p < 0.01$
	Women	1473 (49.2%)	1177 (53%)	
Age (Mean±SD)		48.13±17.11	48.4±17.7	$p > 0.05$
Age Group	<30	498	390	$p > 0.05$
	31-40	601	434	
	41-50	638	446	
	51-60	550	369	
	>60	706	581	

Table 2 Frequency distribution of *Helicobacter pylori* infection according to histological changes

Variable		<i>Helicobacter pylori</i> infection		P value
		Infected	Uninfected	
Mild gastritis	Infected	248	408	p<0.01
	Uninfected	2745	1811	
Severe gastritis	Infected	1085	899	p<0.01
	Uninfected	1098	1321	
Severe gastritis	Infected	486	44	p<0.01
	Uninfected	2507	2176	
Mild atrophy	Infected	61	39	P>0.05
	Uninfected	2931	2181	
Severe atrophy	Infected	7	6	p>0.05
	Uninfected	2986	2214	
Complete intestinal metaplasia	Infected	22	38	p<0.01
	Uninfected	2971	2182	
Incomplete intestinal metaplasia	Infected	190	196	p<0.01
	Uninfected	2803	2024	
Mild dysplasia (low grade)	Infected	33	37	p>0.05
	Uninfected	2960	2183	
Severe dysplasia (severe degree)	Infected	5	10	p>0.05
	Uninfected	2988	2210	
Polyps	Infected	40	98	p<0.01
	Uninfected	2953	2122	
Malignancy	Infected	8	183	p<0.01
	Uninfected	2985	2037	
Chronic gastritis	Infected	1205	388	p<0.01
	Uninfected	1788	1832	

4. DISCUSSION

Helicobacter pylori infection is one of the most common chronic infections around the world; this kind of infection differs from country to country (Ortiz et al., 2003; Eusebi et al., 2014). Dyspepsia is one of the most common causes of referral of patients to gastrointestinal clinics and is one of the clinical manifestations *H. pylori* infection in the gastrointestinal tract, leading to a high treatment cost. Dyspepsia is defined as having one or more of the symptoms including heartburn, abdominal discomfort after eating, premature fullness, bloating and epigastric pain (Mapel et al., 2013; Miwa et al., 2012). Based on the results of this study, the prevalence of *H. pylori* infection in patients with dyspepsia referring to the endoscopic section of Shohadaye Ashayer and Shaheed Rahimi hospitals in Khorramabad was 57.4%, which is different from some similar studies. In the study of Ahenjan et al., in 2013, the prevalence of *H. pylori* infection was reported to be 54.15% in Sari (Ahanjan et al., 2015). In a study by Arj et al. in Kashan, the prevalence of infection in dyspepsia patients was 66% (Arj et al., 2011). Shokrzadeh et al reported the prevalence rate in Tehran as 86.8% (Shokrzadeh et al., 2012). In the study of Kargar et al., in 2014, entitled "the epidemiological study of *H. pylori* infection in patients with gastrointestinal disorders in Chaharmahal-o-Bakhtiari", 82% of the subjects tested positive for *H. pylori* (Kargar et al., 2013). A survey by Niknam et al. in southern Iran in 2014 showed that 31% of the subjects were infected to *Helicobacter pylori* (Niknam et al., 2014). Fallahi et al. reported a prevalence of *H. pylori* infection in patients with disturbances of upper gastrointestinal duct in Bushehr port as 43.5% (Falahi et al., 2015). A study by Tanih et al. in 2010 found that prevalence of *H. pylori* infection in patients with dyspepsia in South Africa was 66.1% (Tanih et al., 2010). Ayobanji et al. reported the prevalence of infection in Southwest Saudi Arabia as 54.9% (Ayoola et al., 2004). In a report by Olokoba et al. in 2013, and a study by Jemilohu et al. in 2010, the prevalence rates in Nigeria were 93.6% and 62% (Jemilohun et al., 2010; Olokoba et al., 2013). In a study conducted in Ghana by Mary et al., 52.72% of the subjects were infected by *H. pylori* (Afihene et al., 2014). The prevalence of *H. pylori* was 40.6% in South Korea, 50% in Taiwan, 20% in Australia, and 48.8% in Germany (Eusebi et al., 2014; Hunt et al., 2011).

From these findings, it can be concluded that the prevalence of *H. pylori* infection in the present study is moderate and is less or more than in some studies in Iran and around the world. Different results in various studies can be due to the method of *H. pylori* infection identification in the target group as well as differences in crowdedness, geographical, social, economic, health, ethnic and racial profiles of the populations studied. This variation may even be observed inside a city, such that Mokhtari et al. showed that the rate of *H. pylori* infection among children 1 to 7 years in Isfahan's densely populated areas was about 64% and in the low population areas was about 31% (Ortiz et al., 2003; Eusebi et al., 2014; Mokhtari et al., 2002). In the present study, dyspeptic patients who were infected with *Helicobacter pylori* included 50.2% and 49.8% women. Statistically, there was no significant difference in terms of gender. These results are consistent with some studies (Brown, 2000; Niknam et al., 2014; Shokrzadeh et al., 2012; Everhart et al., 2000). Age is one of the important factors in the prevalence of *H. pylori* infection. In this study, the mean age of the patients was 48.13 ± 17.11 . Although most of the patients with *H. pylori* were over 60 years old, but there was no statistically significant relationship between infection and age which is similar to some other studies (Ahanjan et al., 2015; Kargar et al., 2013). An increase in infection prevalence in people over 60 years of age is likely due to the fact that at a higher age, the frequency of contact with infectious agents, and consequently, the chance of getting an infection are increased. It should be noted that this bacteria attack to human by various mechanisms and, like other ones, may get resistant to antibacterial agents. This affects the eradication rate which in turn affects the prevalence rate (Rafiean-Kopaei et al., 2012; Rahimian et al., 2014).

The most histological changes in patients with *H. pylori* were active chronic gastritis. The study of Arj et al. in Kashan showed that chronic gastritis was the most common histological change in patients with dyspepsia (Arj et al., 2011). In the study by Ayobanji et al. in the southwest Saudi Arabia, 60.1% of patients had chronic gastritis (Ayoola et al., 2004). A study by Olokoba et al. in Nigeria showed that most patients suffered from gastritis (Olokoba et al., 2013).

Despite the existence of a rich statistical population, this study had some limitations, including the lack of access to the history case of some patients and not using other diagnostic methods for the *Helicobacter pylori* infection.

5. CONCLUSION

In this study, the prevalence of *H. pylori* in patients with dyspepsia was 57.4%. Although most people with *H. pylori* were over 60 years old, but there was no significant relationship between the infection and age. There was a statistically significant difference between infected and uninfected subjects in terms of gender. Considering similar studies, the prevalence of *H. pylori* infection in the population under study was modest, which might be reduced by increasing awareness and health care.

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CONFLICT OF INTEREST

The authors declare that there was no conflict of interest.

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