

***Helicobacter pylori* Immunoglobulin-M Antibodies among Urticaria and Non-urticaria Patients Attending Khartoum Dermatology Hospital, Sudan**

Mohamed S Ibrahim^{1*}, Adam A Adam¹, Khalid A Abdelhalim²

¹Department of Microbiology, Faculty of Medical Laboratory Sciences, Al-Neelain University

²Department of Microbiology, Faculty of Medical Laboratory Sciences, The National Ribat University

*Corresponding author: Mohamed S Ibrahim

Email: samer12999521@gmail.com

Abstract

Background: *Helicobacter pylori* is the commonest bacterium that infects humans worldwide, its prevalence is low in the developed countries and high in the developing countries. The association of urticaria with *Helicobacter pylori* infection has been reported in different studies. Eradication of this bacterium through medical treatment has led to improvement in some patients with urticaria as has been reported in some studies. In this study we aimed to test the association of urticaria with *Helicobacter pylori* infection by measuring *Helicobacter pylori* serum IgM antibodies among urticaria patients compared to non-urticaria patients.

Materials and Methods: The study enrolled 90 participants, 45 (50%) of them represented the urticaria cases who fulfilled the clinical criteria for diagnosis of urticaria while the other 45 (50%) participants were the non-urticaria cases as a control. Five milliliters of venous blood were collected from each participant and the sera were harvested and tested for *Helicobacter pylori* IgM antibodies by enzyme-linked immunosorbent assay (ELISA) technique. The demographic and personal data were collected via a predesigned structured questionnaire. The collected data were compiled and analyzed with the computer programme SPSS version 16.

Results: The mean age for urticaria case was 39.2 years (range 15-55 years) and for the non-urticaria case was 40.8 year (range 15-55 years). 29 (64.4%) of the urticaria cases were females and 16 (35.6%) were males and the same figures stood for the gender of non-urticaria cases. Serum specimens of 39 (86.7%) urticaria cases were

found to be positive for *Helicobacter pylori* IgM antibodies. Regarding the non-urticaria cases, the sera of 5 (11.1%) participants were found to be positive. The association of urticaria and the *Helicobacter pylori* IgM infection was statistically significant among urticaria cases (p value=0.000). Age and gender were insignificant parameters (p value =0.677, 0.779) in this association. From the findings in this study we concluded that urticaria is associated with *Helicobacter pylori* infection. Such an association necessitates screening of urticaria patients for infection with *Helicobacter pylori*.

Key words: *Helicobacter pylori*, Immunoglobulin-M, ELISA.

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Introduction

Helicobacter pylori is a spiral-shaped bacterium that infects over 50% of the world's population^(1, 2). Its prevalence differs between developed and developing countries, being higher in the latter⁽³⁾. It is the commonly isolated etiological agent in cases of peptic ulcer diseases, gastritis and gastric carcinoma⁽³⁾. Moreover, the association of its infection with urticaria was noticed in different reports⁽⁴⁾. This association has been related to the allergic diseases promoting a Th2 response⁽²⁾. Few reports on such an association were published in Sudan⁽⁵⁾. Different reports documented that in case of such an association, medical treatment for *Helicobacter pylori* infection has led to improvement of urticaria⁽⁶⁾. This may prompt consideration of investigation for *Helicobacter pylori* infection in patients with urticaria; a condition that may lead to improvement of urticaria if such an infection is medically treated. In this study we intended to determine the seroprevalence of *Helicobacter pylori* infection by measuring *Helicobacter pylori* IgM antibodies in sera of urticaria and non-urticaria patients attending Khartoum Dermatology Hospital, Sudan.

Materials and Methods

In this study we enrolled 90 participants, 45 (50%) of them represented the urticaria cases (study cases) that fulfilled the criteria for clinical diagnosis of urticaria while the other 45 (50%) participants were non-urticaria cases (healthy people as a control group). The urticaria cases and the non-urticaria cases were matched with age and gender. Five milliliters of venous blood were collected from each participant and serum was harvested and tested for *Helicobacter pylori* IgM antibodies by enzyme linked immunosorbent assay (ELISA) technique. The demographic and personal data were collected via a predesigned structured questionnaire. The collected data were compiled and analyzed with the computer programme SPSS version 16.

Results

The mean age for urticaria case was 39.2 years (range 15-55 years) and for the non-urticaria case was 40.8 year (range 15-55 years) (table 1). 29 (64.4%) of the urticaria cases were females and 16 (35.6%) were males and the same figures stood for the non-urticaria cases (table 2). Serum specimens of 39 (86.7%) urticaria cases were found to be positive for *Helicobacter pylori* IgM antibodies and the sera of 9 (13.3%) of them were negative (table 1). Regarding the non-urticaria cases, the sera of 5 (11.1%) participants were positive and the sera of 40 (88.9%) of them were found negative to *Helicobacter pylori* IgM antibodies (table 3). The association of urticaria and the detected *Helicobacter pylori* infection was statistically significant among urticaria cases (p value=0.000). Age and gender were statistically insignificant with the presence of *Helicobacter pylori* serum IgM antibodies (p value =0.677, 0.779 respectively).

Table (1): shows distribution of urticaria and non-urticaria cases according to age groups.

Age group (Years)	Urticaria cases		Non-urticaria cases		Total examined
	Frequency	Percentage	Frequency	Percentage	
15-24	5	11.1%	5	11.1%	10
25-34	9	20.0%	6	13.3%	15
35-44	14	31.1%	16	35.6%	30
45-55	17	37.8%	18	40.0%	35
Total	45	100%	45	100%	90

Table (2): shows distribution of urticaria and non-urticaria cases according to gender.

Gender	Urticaria cases		Non-urticaria cases		Total examined
	Frequency	Percentage	Frequency	Percentage	
Males	16	35.6%	16	35.6%	32
Females	29	64.4%	29	64.4%	58
Total	45	100%	45	100%	90

Table (3): shows distribution of urticaria and of non-urticaria cases according to the result of *Helicobacter pylori* serum IgM antibodies.

H. pylori IgM	Urticaria cases		Non-urticaria cases		Total examined
	Frequency	Percentage	Frequency	Percentage	
Positive	39	86.7%	5	11.1%	44
Negative	6	13.3%	40	88.9%	46
Total	45	100%	45	100%	90

Discussion

In this study the overall prevalence of *Helicobacter pylori* among the whole participants was (48.9%), a figure which is quite close to the worldwide prevalence⁽¹⁾. Regarding the urticaria cases, the *Helicobacter pylori* IgM antibodies prevalence was (86.7%) versus (11.1%) among the non-urticaria cases. This finding is in accordance with other reports such as that reported by Mogica *et al* 2013 and Akelma *et al* 2014 who documented prevalence of (62.6%) and (51.4%) respectively among urticaria cases^(7, 8). However, Cuevas *et al* 2006 reported IgM in sera of (33.3%) of patients with urticaria in Puebla University Hospital⁽⁹⁾. The present study showed that there is significant association between serum IgM antibodies to *Helicobacter pylori* in urticaria patients compared to that of non-urticaria cases (P value 0.000). This result did not agree with the results of the study conducted by Sianturi *et al* 2007 and Akelma *et al* 2014 who reported insignificant difference between the urticaria patients and the non-urticaria cases^(8, 10). Tang L *et al* 2014 reported that *Helicobacter pylori* infection significantly increased the risk of chronic urticaria⁽¹¹⁾. *Helicobacter pylori* infection is commonly diagnosed by carrying out invasive laboratory techniques such as those requiring upper gastrointestinal endoscopy for gastric or duodenal biopsies and urea breath test. In spite of the high accuracy of the invasive technique, it is commonly done for the patients with digestive symptoms. Patients with extra-digestive infections are commonly missed. However, the serological investigation by measuring of *Helicobacter pylori* serum antibodies may detect both digestive and non-digestive infection in spite of being less accurate than the invasive technique. Different reports documented that in case of such an association, medical treatment for *Helicobacter pylori* infection has led to improvement of urticaria in these patients⁽⁶⁾. This may prompt consideration of investigation for *Helicobacter pylori* infection in patients with urticaria; a condition that may improve with eradication of this bacterium and avoidance of the side effects of antihistamines and steroids used in symptomatic treatment.

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