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The Patients Infected with *Helicobacter pylori* are Susceptible to Idiopathic Chronic Uritcaria

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Authors' contributions

This work was carried out in collaboration between all authors. Author ZF designed the study, performed the statistical analysis, wrote the protocol. Author SFA wrote the first draft of the manuscript and managed literature searches. Authors SFA and BA managed the analyses of the study and literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Chronic Idiopathic Urticaria (CIU) manifested by weal eruptions of unknown cause lasting for more than six weeks induced by histamine hyper-secretion due to immunological and non-immunological factors. Hernando-Harder et al. [1] as many other studies supported the possibility of *Helicobacter pylori* autoantibodies induction that may cross react with mast cell receptors or increases sensitivity of skin vessels to histamine. Throughout eight months 73 patients referred to Khartoum Dermatology Hospital and 73 normal matched subjects were enrolled to detect possibility of association between *H. pylori* and chronic urticaria. The stool tests for *H. pylori* antigen revealed that 6 patients and 2 normal subjects were infected thus there was no wide discrepancy between the two groups but 46.6% of patients showed GIT symptoms. Eradication regimen received by the six CIU patients for three weeks then symptoms reexamined for one, three, and six weeks intervals. The percentage of failure was seen in 33.30% and no patient completely cured. This

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indicates that there is no association between *H. pylori* infection and development of CIU but GIT upsets may raise the possibility of other microbes association.

Keywords: CIU; Helicobacter pylori.

1. INTRODUCTION

Urticaria is a dermatological condition manifested by rapid appearance of wheal with or without angio-edoma [2]. With prevalence of 0.1% [3]. Chronic urticaria is defined as the development of cutaneous wheals that occur on regular basis, usually daily for >6 weeks with individuals lesions lasting from 4 to 36 hours. The incidence of chronic urticaria is 20%. Presence of autoantibodies of IgG subclass against FCεRI on mast cells and basophiles indicated the autoimmune involvement in CU [4]. Only patients with CU were functional histamine releasers among other urticariae [5]. About 35–50% of chronic urticaria cases are related to autoimmunity, [4] and the non immunologic causes that induce direct mast cell release [4,6,7]. Parasitic infections such as intestinal strongyloidiasis may occasionally cause chronic urticaria in endemic areas [8]. The *H. pylori*, which has an immunogenic cell envelope, may play an indirect role in etiology of chronic autoimmune urticaria by reducing immune tolerance and inducing autoantibody formation, such as anti- FCεR1, [9,10] some authors have found an increased frequency of *H. pylori* IgG antibodies in patients with chronic urticaria, [11] while others have not Gravina et al. [12] found strong link between *H. pylori* infection and rosacea and reduction of its severity after *H. pylori* eradication [13]. Whether eradication of *H. pylori* is effective in the treatment of chronic urticaria is a controversial issue. *H. pylori* is a curved, gram-negative microaerophylic, oxidase, catalase and urease positive bacillus. [14] motile flagellated bacteria [15] One possible explanation that links the *H. pylori and development of CU is* mediator releasing, result in a non-specific increase of the skin vessel sensitivity to agents increasing vascular permeability [16] A number of agents might act through this mechanism. As a matter of fact, increased production of IL-8, platelet activating factor (PAF) and leukotrienes (LT) B_4 and C_4 has been observed in gastric mucosa of *H. pylori* infected patients [17,18] and these mediators exert evident actions on the skin. Both invasive and non-invasive tests are used in the diagnosis of *H. pylori* infection. Endoscopic mucosal samples is the basis of the former [19] while the non invasive procedures include, detection of antibodies by ELISA or using latex agglutination methods [20-23]. Breath urea test [24] and stool antigen tests based on immunoassay ELISA [25-28]. The stool antigen test based on lateral flow chromatography with polyclonal antibodies that detect *H. pylori* antigens present in human stool is available which is rapid 15 minutes assay based [26]. It has 94%-100% sensitivity and 95%-100% specificity [27]. The current recommendation is treatment with amoxicillin or metronidazole, clarithromycin and proton pump inhibitor (PPI) for 2 weeks [29].

2. PATIENTS AND METHODS

During eight months the patients referred to Khartoum Dermatology Referral Hospital (KDH) were searched, a 73 patients were recruited, as they had chronic idiopathic urticaria (CIU) lasting for more than six weeks and their ages were 18 or more, not on proton pumps inhibitors or/ and antibiotics for last four weeks and not pregnant females. No patients was known to be atopic or allergic to particular drug or food but IgE levels were not measured. HBV and HCV screening tests were not done, but the possibility of hepatic viral infections had been exclude by absence of history of jaundice. Seventy three normal subjects were matched as control group. Stool samples were taken from all participants and detection of *Helicobacter pylori* antigen done. The positives were treated by the recommended eradicating regimen (Flagyl 500 mg, calrithromycin and omeprazole 20 mg b.d for three weeks) then their conditions reevaluated within one, three, and six weeks intervals for signs and symptoms. Ethical issues followed and participants consents were obtained.

3. RESULTS

Seventy three patients were enrolled, thirty eight (52.1%) were females and thirty five (47.9%) were males. The minimum duration of CIU among the study group was found to be two months, the maximum was more than three years, and the mode was one year. Thirty one (42.5%) patients presented with mild to moderate itching, while forty two (57.5%) patients presented with severe itching and thirty four (46.6%) patients had associated GIT symptoms.

Among the CIU group, there were six (8.20%) *H. pylori* positive cases, four (66.70%) were females and two (33.30%) were males. Their ages distribution ranged from (29-39) years, n = 3 (50.0%) and (40-50) years n = 3 (50.0%). The duration of their CIU was ranged from two months to three years and the mean was one year. Follow up after eradication of *H. pylori*, revealed no complete cure of CIU symptoms, as four patients showed moderate to significant relieving and two didn't improve. Within the seventy three control subjects, two (2.70%) subjects were *H. pylori* positive. It is obvious that the prevalence of *H. pylori* among the study group was very low, but unfortunately there were no available prevalence studies to compare.

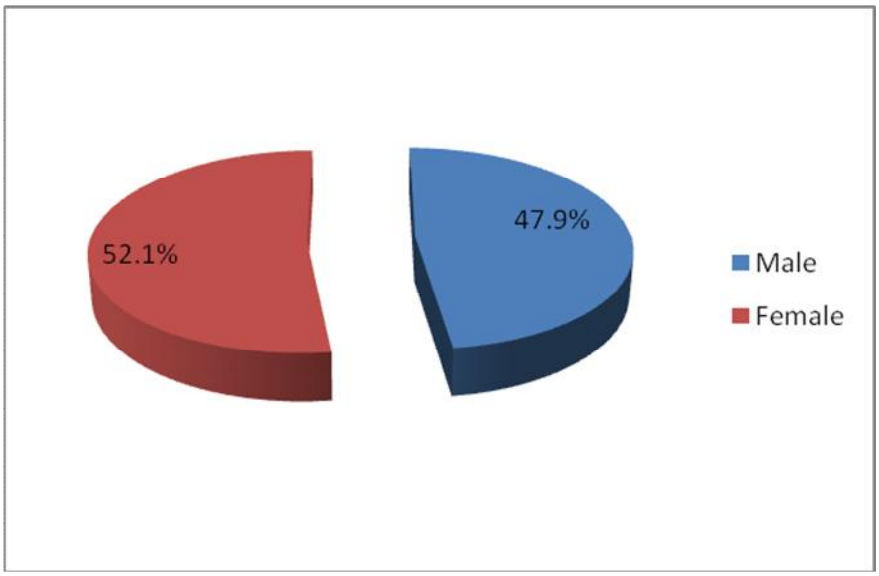

Fig. 1. Sex distribution of the study population with CIU (December 2010 to March 2011)

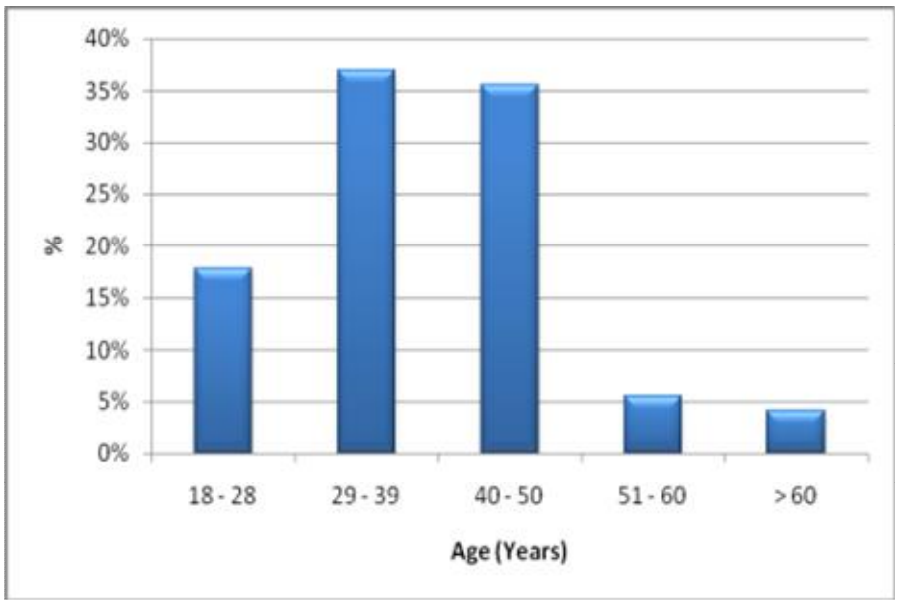

Fig. 2. Age distribution of the study population with CIU (December 2010 to March 2011)

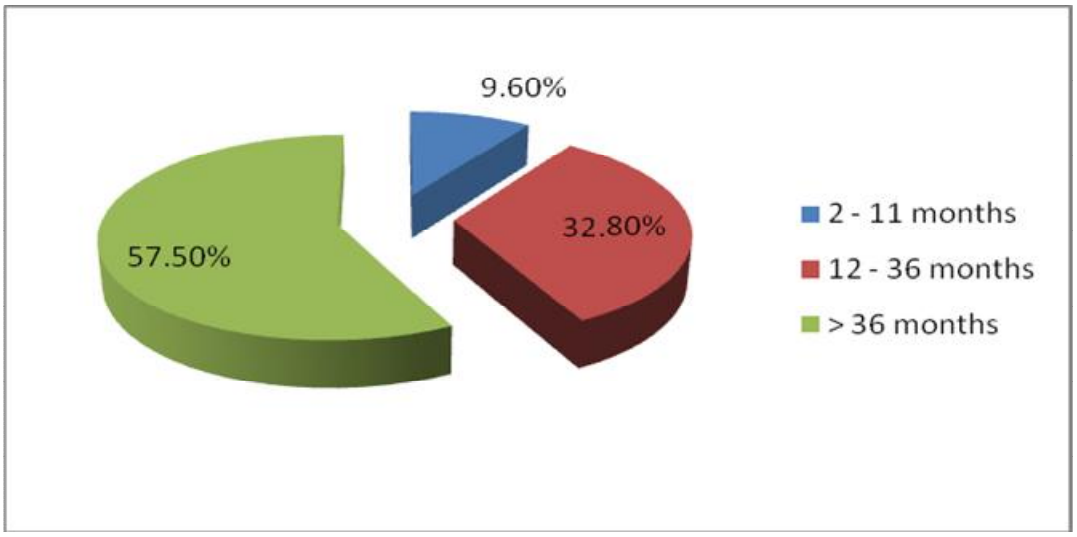

Fig. 3. Duration of symptoms among CIU patients

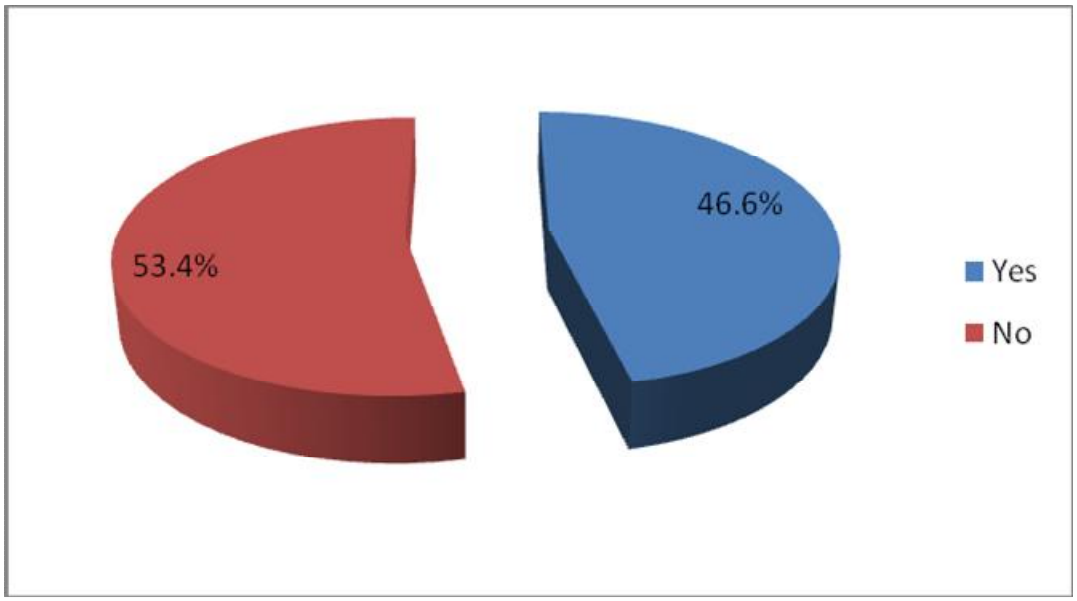

Fig. 4. Associated GIT symptoms among the study population with CIU

Table 1. Distribution of patients with CIU and control according to *H. pylori* (December 2010 to March 2011)

H. pylori	Study groups	
	CIU	Control
Positive	6	2
	8.20%	2.70%
Negative	67	71
	91.80%	97.30%
Total	73 (100%)	73 (100%)

4. DISCUSSION

This study was the first study done in Sudan to assess the possible association of *H. pylori* infection with CIU. This study so far is important because there are conflicting reports about this association from several studies. It revealed no difference between the prevalence rates of *H. pylori* infection in CIU patients and control subjects. (Chi = 1.19, df = 1, P. value = 0.275) and that *H. pylori* eradication didn't appear to have marked influence on the course of CIU.

Table 2. Parameters distribution among CIU, *H. pylori* positive cases in the study population

Parameter	Sub-parameter	Percentages
Age (years)	29 - 39	3 (50.00%)
	40 - 50	3 (50.00%)
Gender	Male	2 (33.30%)
	Female	4 (66.70%)
Residence	Urban	2 (33.30%)
	Rural	4 (66.70%)
Socioeconomic status	Low	4 (66.70%)
	Medium	1 (16.70%)
	High	1 (16.70%)
Duration of the disease	Minimum	2 month
	Maximum	3 Years
	Mode	1 year
Associated GIT systems	Yes	3 (50.00%)
	No	3 (50.00%)
Receiving antihistamine and or Steroid	Antihistamine	3 (50.00%)
	Both	3 (50.00%)

Table 3. Follow up for *H. pylori* positive cases after eradication therapy (December 2010 to March 2011)

Duration	Relief			
	Complete	Significant	Moderate	Failure of treatment
One week	-	4 (66.70%)	1 (16.70%)	1 (16.70%)
Third week	-	2 (33.30%)	2 (33.30%)	2 (33.30%)
Six week	-	2 (33.30%)	2 (33.30%)	2 (33.30%)

These results were consistent with that by other researchers, from Switzer land and Brazil [30-32]. On the other hand many studies done in India, Spain and Japan described significant association between *H. pylori* and CIU [31]. The discrepancy may be due to different methods used for detection and establishment of *H. pylori* infection of resistance of *H. pylori* to therapy or recurrences shortly after successful therapy. Finally our results provide with evidence against the role of *H. pylori* in CIU in Sudan. Not like rosacea [13]. It seems that *H. pylori* eradication is of no benefit in CIU remission, but because of relative high GIT symptoms among CIU patients other GIT causes as parasitic infestations should be searched.

5. CONCLUSION

There was no clear relation between CIU and *H. pylori* its eradication has no effect on CIU course. A larger sample size is required to show whether there is indeed a clear relationship between *H. pylori* infection and persistence of CIU' Immunological studies, is highly recommended.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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