

Ige Level Correlation with H-Pylori Infection and Asthma

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ABSTRACT

Introduction

H-pylori are one of common infection in human. It is gram negative spiral bacteria. H-pylori bacteria can cause many presentations such as gastritis, peptic ulcer and some times end by gastric cancer. Immune response due to H-pylori infection primarily presented humoral and cellular response.

Aim of study:

To assess the association between immunoglobulin E level and asthma in one hand and H-pylori infection on another hand.

Method

A cross sectional study enrolled patients with gastric upset and dyspepsia.

Ninety six patients those completed the intended investigation. Antibody for H-pylori was evaluated for every patient. Measurement of serum IgE level was done.

Result

The mean age of enrolled patients was 46.2 ± 10.4 , with range 15-60 years. The male was constituent 62.3% and female was 37.7%.

The mean level of IgE in patients had been infected was 198.2 ± 43.6 which is higher than level of non infected patients 87.1 ± 23.8 . Regarding asthma there were only four patients had history of asthma were infected by H-pylori which significant difference.

Conclusion

There were direct correlation between high IgE level H-pylori infection with inverse association between H-pylori and asthma.

INTRODUCTION

H-pylori are one of common infection in human. It is gram negative spiral bacteria. It's forming urease enzyme for survival. Prevalence of infection is different between nations some times reach to 30% in developed countries ⁽¹⁾. Which are reported infections at late age infection. On other hand in developed countries acquired of infection occur in early life before age of puberty ⁽¹⁾. H-pylori bacteria can cause many presentations such as gastritis, peptic ulcer and some times end by gastric cancer. Due to infection and colonization of H-pylori there are numerous types pro inflammatory factors will released from gastric mucosa for example cytokines. Thus there is a link between infection by H-pylori and immune activation or inflammatory mediators' diseases ⁽²⁾. However diagnosis of H-pylori could be detected by observe of antibody IgG in the blood of patients and urea breath test, detect of antigen in stool and by endoscopic biopsy ⁽³⁾. After infection via H-pylori gastric mucosa infiltration by leukocytes macrophage and lymphocytes, overlap with increase production of interleukin-12 and IFN- γ . Th-1 is direct immune response activated by H-pylori infection this will lead to gastric inflammation and atrophy of villi ⁽⁴⁾. While Th-2

reduces this action, act in redirection to Th-1. Variable mechanism responsible to for much Th-1 response induced by H-pylori one of them stimulation of neutrophils, dendritic cell and monocytes in accordance with H-pylori neutrophil activating protein highly regulates interleukin production ⁽⁵⁾. In addition there are numerous studies about link of allergy and childhood infection especially regarding H-pylori infections ⁽⁴⁾. Asthma it is one of allergic diseases that cause narrowing of respiratory tracts lead to suffering of patients from short of breath. The disease is considering a chronic inflammatory disorder with hyper responsiveness to variable stimuli ⁽⁶⁾. An observation of increase of prevalence of allergic diseases in developed countries like asthma. The suggestion about this is relation between allergic asthma and many factors like social habit smoking, diesel and exposure to infection ⁽⁷⁾. One of strong theory, children are reduce exposure to microorganism. Called hygiene hypothesis ⁽⁴⁾. The microorganism infection will change polarized response producing more allergic disease which is lead to increase in allergic disorder in general ⁽⁸⁾. The mechanisms of asthma are complex inflammatory process the result in activation different types of Th cells and distinctive cytokine and chemokine factors ⁽⁷⁾. When allergen expose to air ways they induce Th-2 lymphocytes and other several cytokines for example interleukin four and five ⁽⁵⁾. Cytokines produced by Th-2 cells such as IL-4 induce IgE secretion and that share in type I hypersensitivity reaction. Interleukin and IgE serum level are up regulating by inhibition effects of Th-1 derive cytokines for example IFN γ . For this, there is a balance between Th-1 and Th-2 to control IgE response. Th-1 cytokines suppress response of IgE and Th-2 cytokine which augment the IgE response ⁽⁹⁾. 4 Immune response due to H-pylori infection primarily presented humoral and cellular response ⁽¹⁰⁾. T cell (Th-1) induce bactericidal activity of macrophage by induce the expression of cytokine for example interferon- γ (INF γ), interleukin 18 and 12 and tumor necrotic factors ⁽¹¹⁾.

Aim of study:

To assess the association between immunoglobulin E level and asthma in one hand and H-pylori infection in another hand.

METHOD

A cross sectional study enrolled patients with gastric upset and dyspepsia whose attendant to Afaq general hospital, medical clinic. The study continues to six months from 1st June to 1st November.

Data collection

Ninety six patients those completed the intended investigation. Interview every patient alone by physician with guide of well structure questionnaire which consist from demographic part (age, gender and occupation), history of past medical diseases, presentation illness and last part for results of investigations.

Exclusion Criteria: - excluded patients that have diseases highly associated with H-pylori risk.

1. Cardiac diseases
2. Un control hypertension
3. diabetes mellitus
4. pulmonary tuberculosis
5. Chronic hepatic diseases
6. Neuromuscular diseases.

Investigation:-

Antibody for H-pylori were evaluated for every patients by enzyme link immunosorbent assay (ELISA).

Measurement of serum LgE level was done by an immunometric assay. IgE level above 160 IU/ml consider high.

Ethical approval

Permission to conducted the study was obtains from health authorities. After clarify the objectives and technique of study for patients, take permission for including in this study, verbal consent is taken from each patient.

Statistical analysis

Data were analyzed using SPSS version 24. Categories variable presented as number percentage and analyzed by chi square. While continuous variables are presented as mean \pm SD and analyzed by T-test. P-value consider significant if less than 0.05.

RESULT

The mean age of enrolled patients was 46.2 ± 10.4 , with range 15-60 years. Thirty four of patients belong age group 35-49 years, 23.2% of them belong 20-34 years group. The male was constituent 62.3% and female was 37.7%.

Table 1: demographic characters

Variant	Groups	No.	Percentage
Age group	< 20 years	12	17.3%
	20-34 years	16	23.2%
	35-49 years	24	34.8%
	50-60 years	17	24.7%
	Total	69	100%
Gender	Male	43	62.3%
	Female	26	37.7%
	Total	69	100%

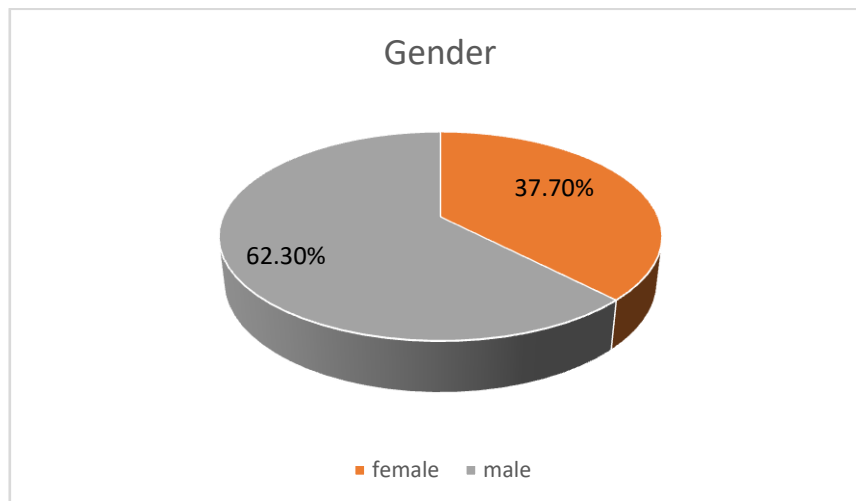


Figure 1: Gender distribution

There were 52% of patients had infected by H-pylori bacteria. Out of 69 patients there were 24% had history of asthma and 7.2% had history of skin allergy. Thirty four percent of patients had positive IgE level above 160 as in table 2.

Table 2: show clinical findings of patients.

Variables 69	Number	Percent
H pylori test +ve	36	52%
Asthma	17	24%
atopic	5	7.2%

IgE +ve	24	34.7%
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There was significant difference between groups of patients that had H-pylori infection in term of IgE level, the mean level in Patients had been infected was 198.2 ± 43.6 which is higher than level of non infected patients 87.1 ± 23.8 . Regarding asthma there were only four patients had history of asthma were infected by H-pylori which significant difference. Other hand out three of five patients had atopic presented with H-pylori infection at survey. As in table 3.

Table 3: show the relation between H-pylori infection and clinical finding.

Variables	H pylori test		Total	p-value
	+ve	-ve		
IgE level	198.2±43.6	87.1±23.8	69	0.001
Asthma	4	13	17	0.01
Atopic	3	2	5	0.9

DISCUSSION

The prevalence of H-pylori infection variable from country to country as well as in according to race. There was an increasing in developing world reaching to 90% and in developed countries about 40%⁽¹²⁾. The mean age of patients in our study was 46.2 ± 10.4 , with range 15-60 years. The male was constituent 62.3% and female was 37.7%. It consist with previous study⁽¹³⁾. While Rasmi Y et al presented patients with mean age 41.4 ± 14.81 years, 47.3% was male and 52.7% was female in study of 72 patients⁽¹⁰⁾. Other study found female about 60% of sample and mean age was 41.3 ± 15.6 years⁽⁷⁾. Hessein et al study reported female was 75% with mean age 36.2 ± 5.9 and male was 25% and average age for male was 38.7 ± 4.2 ⁽¹⁾. There were 52% of patients had infected by H-pylori bacteria. Out of 69 patients there were 24% had history of asthma and 7.2% had history of skin allergy. Thirty four percent of patients had positive IgE level. These results agree with study Rasmi Y et al⁽¹⁰⁾. Whereas Hessein et al reported 33% of patients with allergic was infected by H-pylori⁽¹⁾. Other finding, There was significant difference between groups of patients that had H-pylori infection in term of IgE level, the mean level in Patients had been infected was 198.2 ± 43.6 which is higher than level of not infected patients 87.1 ± 23.8 . Regarding asthma there were only four patients had history of asthma were infected by H-pylori which significant difference. On other hand out three of five patients had history of skin diseases presented with H-pylori infection at survey. It consist with other study⁽¹⁾. The study by E.O. Arram et al. found serum level of IgE in patients about 190.4 ± 80.3 much significant than control person was level 94.3 ± 40.3 with p-value 0.001. In addition they found H-pylori was positive in 35% of asthmatic patients and 65% of control group was infected by H-pylori⁽⁷⁾. A study by Rasmi Y et al. stated strong relation between high level of IgE and infection by H-pylori. They were showed elevated IgE serum level in 25% and 12% of patients and control respectively, which indicated obvious difference⁽¹⁰⁾. Kalho's study reported non significant difference between patients and control⁽¹⁴⁾. Studenikin et al. noted that greatest elevation in IgE level in patients infected by H-pylori when compared to control individual⁽¹⁵⁾. When patients get H-pylori infection destroy gastric mucosa by this bacteria, which increase flow of antigens of food through cells causes' allergic reaction, there is special pathway for IgE production that response to allergy in atopic persons⁽¹⁰⁾. In addition there is activation for sympathetic nervous system due to H-pylori infection. This stimulation in tone increase immunological response to product

much Th2 which is responsible to induce excessive allergic reaction^(16, 17). Another reason there are multiple inflammatory mediators released for H-pylori immune response for example IL-1, TNF and PAF, these factors might play a roles in mechanism of allergy⁽¹²⁾. Zevit et al. reported that H-pylori infections were inversely related to asthma in pediatric age. Additionally, Alhelu et al stated that highly significance difference between patients with H-pylori and patients with negative result regarding severity of asthma attacks^(18,19). A study by Soad et al. showed no relation between H-pylori infection and incidence of asthma⁽²⁰⁾. More over Wang et al. failed to speculate an association between development of asthma and H-pylori infection⁽³⁾.

CONCLUSION

There were direct correlation between high IgE level H-pylori infection with inverse association between H-pylori and asthma.

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