Role of Adiponectin in Endoscopic Gastritis

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Endoscopic gastritis is a term used when there is an inflammatory change in the gastric mucosa like color and/or structure that was noticed by endoscope. Is to assesses the effect of these factors and association of adiponectin with these factors. This is a case-controlled study. The study consists from 100 subjects. Eighty of them had gastritis by endoscopy Forty of them were *H. pylori* positive and the rest were *H. pylori* negative. The rest twenty persons were healthy control group. Demographic information's were taken like age, sex and others by questionnaire. Endoscopy and lipid profile were done for them. Adiponectin was significantly lower (P=0.001) in gastritis patients whether infected (8.783±0.968) with *H pylori* or not (8.278 ±0.838) when compared with control group (9.119±0.1593) (Table-1-). Regarding lipid profile , there was a significant in all parameters of lipid profile in gastritis patients than healthy group (Table-1-). Analysis of correlation between adiponectin and BMI and weight demonstrated a negative correlation with gastritis with h pylori infection (r= -0.068 and r=0.356 respectively). This study shows that adiponectin had an important role in gastritis especially when there is an *h pylori* infection. Its level had a negative correlation with BMI and lipid profile.

Keywords: Adiponectin, gastritis, *h pylori*.

Endoscopic gastritis is a term used when there is an inflammatory change in the gastric mucosa like color and/or structure that was noticed by endoscope[1,2]. This can be defined by flat depressed white spot surrounded by reddish area with superficial bleeding or small elevated area with umblication in the center[3]. There are many factors effect upper gastrointestinal diseases like gastritis, gastric ulcer, deoudenitis and gastroesophageal reflux disease. One of these important factors is body mass index (BMI) which is known to be associated with gastritis[4]. There are several studies showed the association and potential effect of obesity on gastritis[5,6]. Yamamoto et al. showed that BMI was significantly higher and the serum adiponectin level was significantly lower in gastritis-positive patients than in gastritis-negative patients[7]. This study demonstrated the association between hypoadiponectinemia and erosive gastritis, adding to that other studies showed that low plasma adiponectin levels had a role in gastric cancer[8,9]. So adipose tissue is an important endocrine organ secreting a large number of endocrine factors like adiponectin that had wide physiological functions[10]. Increase in its serum level protect against many diseases[11]. Other factor that leads to gastritis is infection with *Helicobacter pylori* that involves in progression to atrophy , intestinal metaplasia and gastric cancer[12]. After the discovery of *H. pylori* in 1983, these bacteria

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is an important factor in gastritis and its prevalence was decreased in Western countries and in some Asian countries like Japan[13]. It found that treatment and eradication of these bacteria leads to increased circulating adiponectin levels in Japanese patients and could be helpful for preventing gastritis and its progression to other diseases [14].

Consequently, there are several important factors that related with endoscopic gastritis like BMI, *Helicobacter pylori*, lipid profile and adiponectin. This study assesses the effect of these factors and association of adiponectin with these factors.

Patients and methods

This is a case-controlled study done by Al-Kindy College of Medicine from January 2017 to June 2018. The approval of medicinal morals board was obtained for contributors in this study. The proposal was accepted by the Al-Kindy College of Medicine and Al-Kindy Teaching Hospital. The knowledgeable permission was obtained from all of them. The Scientific and Ethical Committee of Al-kindy medical college and Al-Kindy Teaching Hospital had approved and registered the study. Written informed consents were obtained from the patients and control normal blood donors.

The inclusion criteria were patients complaining from dyspepsia, upper abdominal pain, acid regurgitation, heartburn The exclusion criteria were patients who had history of gastric surgery, peptic ulcer, gastric cancer, previous *H. pylori* eradication, esophageal avarices and patients who were on medications like antacids, H2 blockers, proton pump inhibitors and non-steroidal anti-inflammatory drugs.

Data were collected from 100 subjects. Eighty of them had gastritis by endoscopy Forty of them were *H. pylori* positive and the rest were *H. pylori* negative. The rest twenty persons were healthy control group. Demographic information's were taken like age, sex and others by questionnaire.

Endoscopy

All patients examined for upper gastrointestinal endoscopic using gastroscope: GIF-H260; Olympus, Tokyo, Japan and Display screen; Olympus OEV-261H liquid crystal display monitor; Olympus, Tokyo, Japan. Endoscopic examinations performed by well-trained gastroenterologists. The presence or absence of endoscopic gastritis was determined by endoscopist

according to their criteria[15].

Anthropometric Measurements

All measurement like weight, height, waist circumference, body mass index was calculated as weight in kilograms divided by the square of height in meters (16):
1. Normal Weight group: BMI 18.5 - 24.9 kg/m^2.
2. Over Weight group: BMIs 25.0 - 29.9 kg/m^2.
3. Obese group : BMIs e" 30 kg/m^2.

Waist circumference was measured in centimeters (cm)[17].

Biochemical analysis

Five ml of venous blood were obtained from all subjects. Serum were analysis for lipid profile (cholesterol, triglyceride, HDLP, LDLP (Human-Germany), adiponectin (Human-Germany), and *H pylori* (Eco test-Chain).

Statistical analysis

was done using MiniTab version 3.0 software. Data analysis was done using chi- square test for frequencies, while ANOVA test for means and standard deviation. Correlation coefficient used to assess the correlation between different parameters by Pearson correlation. P-value less than 0.05 were considered statistically significant.

RESULTS AND DISCUSSION

The total numbers of study groups were one hundred subjects, forty of them were gastritis with *H pylori* infection and the other group was gastritis alone without *H pylori* infection and the rest were twenty control healthy subjects. There was no significant differences among their ages and gender (P=0.134 and P= 0.334 respectively)(table-1-).There was a significant increase in BMI(P=0.000), weight(P=0.000), waist circumference (P=0.018) in patients with gastritis with or without H pylori when compared with control group(Table-1).

In this study, adiponectin was significantly lower (P=0.001) in gastritis patients whether infected (8.783±0.968) with H pylori or not (8.278 ±0.838) when compared with control group (9.119±0.1593) (Table-1-). Regarding lipid profile , there was a significant in all parameters of lipid profile in gastritis patients than healthy group (Table-1-). Analysis of correlation between adiponectin and BMI and weight demonstrated a negative correlation with gastritis with h pylori

Table 1. Demographic differences of various parameters among patients with
gastritis with and without *H pylori* infection and control group

P- value	Control Group No.=20X±SD	Gastritis patients with *H pylori* -ve NO.=40X±SD	Gastritis patients with *H pylori* +ve NO.=40X±SD	Parameters
0.134	37.30± 12.43 (25-68)	46.25 ±21.07(14-83)	40.70± 14.95 (12-68)	Age (year)Range
0.334	14(70%)	20(50%)	22(55%)	Male %
	06(30%)	20(50%)	18(45%)	Female %
0.024	1.7230± 0.0814	1.6905± 0.1297	1.6460±0.0898	Height (m)
0.000	73.72± 2.54	78.39± 3.42	82.23 ± 3.79	Weight (Kg)
0.000	24.408± 0.777	27.30± 1.05	27.134 ±0.853	BMIKG/m^2
0.018	93.45± 13.30	95.80± 15.41	103.90± 16.14	Waist circumference Cm
0.994	1.0340± 2.15	1.0985± 3.46	1.1140 ± 2.36	Waist to Hip Ratio
0.001	9.119±0.1593	8.278 ±0.838	8.783±0.968	Adiponectinng/ml
0.000	200.7± 35.9	253.6±16.6	285.3± 14.8	Cholesterol Mg/dl
0.000	160.0 ± 30.2	290.0 ± 36.4	174.5± 17.9	TriglycerideMg/dl
0.000	40.92 ±1.20	48.60± 3.39	52.48 ± 3.41	HDLMg/dl
0.001	164.2 ± 27.7	175.1± 15.7	179.2± 13.4	LDLMg/dl
0.000	3.545±0.0385	4.338±0.0734	6.70± 0.197	LDL/H|DL

infection (r= -0.068 and r=0.356 respectively) while in gastritis without h pylori infection only negative correlation with weight, waist circumference and waist hip ratio (Table-2-). About lipid profile with adiponectin, there was a negative correlation between adiponectin and cholesterol, Triglyceride, LDL. There is only positive correlation between adiponctin and HDL and LDL/HDL in both groups of gastritis whether infected with H pylori or not as showed in table-2.

It has been reported that obesity and increased BMI are related to gastrointestinal symptoms and endoscopic gastritis. Adiponectin is an anti-inflammatory and its serum concentrations are reduced in obesity with increased visceral fat accumulation. In this study, gastritis developed when there is increased in BMI especially with H pylori infection. This is associated with decreased adiponctin serum level. This is in agreement with other results that showed adiponectin promotes

Table 2. Pearson correlation analysis of adiponectin
with different parameters in GERD patients

P- value	Gastritis patients with H pylori -ve NO.=40r	P- value	Gastritis patients with H pylori +ve NO.=40r	Parameters
0.266	-0.180	0.266	-0.180	Age (year)
0.527	0.103	0.000	-0.601	Height (Cm)
0.007	-0.418	0.024	-0.356	Weight (Kg)
0.184	0.214	0.677	-0.068	BMIKG/m^2
0.001	-0.506	0.429	-0.129	Waist (Cm)
0.103	-0.262	0.927	0.015	Hip Waist Ratio
0.013	-0.391	0.791	-0.043	Cholesterol Mg/dl
0.337	-0.156	0.030	-0.344	TriglycerideMg/dl
0.809	0.040	0.001	0.487	HDLMg/dl
0.047	-0.315	0.735	-0.055	LDLMg/dl
0.184	0.214	0.308	0.165	LDL/HDL

ulcer healing, decrease ulcer area, reduce edema and leukocytes infiltration in submucosal layer[18,19]. It is well known that adiponectin is associated with better inflammation reduction and healing[20]. The gastric protective effect of adiponectin might be due to reduction of neutrophil infiltration, decrease in gastric motility and relaxation of circular muscles, flattening of the folds and reduce the volume of the gastric irritants on the rugal crest[21,22]. In addition to that, adiponectin activates AMP-activated protein kinase (AMPK) system that regulates growth arrest and apoptosis by stimulating p53 and p21 and decreases production of reactive oxygen species (ROS) which may result in decreased activation of mitogen-activated-protein-kinase (MAPK)[23,24,25]. So increase level of adiponectin reduce the risk of development of many diseases[26]. There is a negative correlation with body mass index and adeponectin in gastritis with *H pylori* and in general there is in agreement with other studies that demonstrated plasma adiponectin concentrations are inversely related to BMI, weight and waist circumference[27]. The possible mechanism is that during adipogenesis, a feedback inhibition in its production may occur due to increase in the production of other adipocytokines like TNF-± that decrease adipocyte expression and secretion of adiponectin[28]. In addition to that infection with H pylori leads to decrease in adiponectin serum level which in agreement with other studies [12,29]. This study demonstrated a negative correlation between adiponectin with Cholesterol, triglyceride and LDL. Adiponectin has been shown to regulate weight reduction as well as free fatty acid oxidation. The mechanism underlying this is regulation of production proteins associated with triglyceride metabolism including acyl CoA oxidase, activated protein kinase, and peroxisome proliferator- activated receptor [3] (PPAR[3]) which is in agreement with other studies[30].

CONCLUSIONS

This study shows that adiponectin had an important role in gastritis especially when there is an h pylori infection. Its level had a negative correlation with BMI and lipid profile.

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