THE RELATION BETWEEN EATING DISORDERS AND ICAM-1, E-SELECTION AND GHRELIN RESTING LEVEL IN OVERWEIGHT MEN

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Abstract

Objective(s): There is an agreement that eating disorder is related to psychological characteristics and on the other hand, level of ghrelin hormone, ICAM-1 and E-selection also change during eating disorders. We aim to study the relationship between eating disorders and rest levels, ICAM-1, E-selection, and ghrelin hormone in obese men. Materials and Methods: In this quasi-experimental study, 120 obese men (25-30 years old) were purposefully selected. Then the data about their eating disorders gathered with EAT questionnaire. In the next phase in the rest condition and after overnight fasting, blood samples are collected for measurement of rest levels, ICAM-1, E-selection, and ghrelin hormone. Finally the data were analyzed with appropriate statistical tests. Results: Mean and deviation of rest levels, ICAM-1, E-selection, and ghrelin hormone were respectively 3064.19, 61.5±19.7, and 2.5±1.5 and there was not any statistical significance relationship between eating disorders ICAM-1, E-selection, and ghrelin hormone in obese men. Conclusion: According to our results, the prevalence of eating disorders can be a reason other thanRest Levels, ICAM-1, E-selection, and ghrelin hormone.

Key words: Eating Disorders, ICAM-1, E-selection, Ghrelin

Introduction

After obesity and asthma, eating disorders are the third most common cause of disease in the young people of societies (Ljubunčić et a., 2005).There is a significant relation between ghrelin levels and nutritional conditions and energy balance, so that some researchers believe that ghrelin effects on increasing of fat storage should be taken independently from its effort on growth hormone (Hansen et al., 2002). Weight control, permanent mental concern of food and dissatisfaction from body image understanding, lead to some sort of nutritional - psychological disorders that is known as eating disorders. The main and obvious features of these disorders are use of different kind of diets and weight control methods, disorganization of balanced nutritional behaviors and causing evident thought and individual imaginations disorders concerning the food and its own (specially about weight).

These disorders have numerous nutritional and psychological effects and may cause to some problems, such as stress and depression and if they would not diagnose it may lead to intense and clinical cases as bulimia nervosa and anorexia nervosa (O'Brien et al., 2011). The prevalence of obesity and overweight is dangerously increasing through the world. There is also a high present of obesity and overweight probably in different sex and age groups in our country (Bayati, 2012). Obesity and overweighting are of the most important unavoidable factors that may lead to illness and death. There are some sticky molecules which have important effect on cardiovascular diseases and specially Atherosclerosis and mostly in overweight people, including ICAM-1 and E-selection and ghrelin.

These molecules are glycoprotein receptors that lie on the outer surface of the cell membrane and reach to cytoplasm after crossing cell membrane. They motive white blood cells to movement to lymphoid tissues and especially to infectious and inflamed areas and take part in vascularization, wound healing, inflammation, and development and coordination of vessels processes (Bayati, 2012). Previous researches have shown that ghrelin hormone has strong effects in commencement of getting the food so that by increasing of this hormone man feels hungry. Establishment secretion of ghrelin in stomach and gastric – intestinal rout, Ghrelin receptor synthesis in Valgus Nerve and numerous gastric – intestinal effects of this hormone, indicate the significant role of ghrelin in brain stem gastric (Moghamasi et al., 2004; Wu et al., 2004).The advantage of ghrelin as hunger hormone with its effects on appetite that is created by hypothalamic peptides, neuropeptide Y, and Agouti-Related Protein (AGRP). According to continual concerns of overweight people, in this type of diseased,the probability of eating disorders is higher than others and the prevalence of these disorders can be an important step in nutrition planning in order to prevention and treatment and may have effective role in their health promotion.

There are also some investigations subject to ICAM-1 and E-selection resting levels and ghrelin in obese people, such as Boos (2008), Mensud (2007), Josef (2005), Dace (2012) (Boss et al., 2008; Mensud, 2007; Josef, 2005; Dace, 2012). Therefore this study intends to examine the relation between eating disorders and ICAM-1 and E-selection resting levels and ghrelin in overweight men.

Materials and Methods

In this study we invite 120 overweight 30-35 year old men who had come into Alzahra Hospital in Isfahan, they also were nonsmokers and had no diabetes or endocrine and disease. They were explained about conditions then completed the testimonial forms and participate in this research. In this study the result of hormonal evaluation kept confidential and after examining the result, their hormonal evaluations were given to them. This study has accomplished in multistage thus that after filling the questionnaire, in sitting mode and fasting condition, 5 MI venous blood, was taken from left hand's Antecubital vein.

After 5 minutes for coagulation, the mentioned samples were centrifuged with 3000 rpm for 10 minutes. Blood tests have carried out to determining the serum ghrelin levels, ICAM and E-Selection. The triables were performed by quantitative detection kit, under the care of the researcher in the specialized laboratory. Then each group eating disorders data collected through 26 question questionnaire. Afterward, in resting condition and after overnight fasting, a blood sample was taken and after separating its plasma, it was kept in -20 degree in laboratory until the ghrelin resting levels, ICAM and E-Selection measuring time. The data analysis is performed by spss18 software and according to the data normality, the analyzing of the data is done by descriptive statistics and inferential statistics. For examining the normality of the data Kolmogorov-Smirnov test was applied and to assess the relation between variables, t test and Pearson correlation coefficient and correlation test was used. Additionally the level of confidence for all the tests was considered to 95%. In accordance with ethical standards this study complies with the current laws of Iran. For preparing blood samples from subjects, consenting form completed by them.

Results

Based on the results of investigations Body Mass Index (BMI) of the participants was 25 – 30 Kg/m^2, weight range was 87.4 ± 9.3 and age group was 25 – 30 year old. As it shown the average and standard deviation of the ghrelin resting levels, ICAM and E-Selection are 3064.19 ± 371.61, 61.5 ± 19.7, 2.5 ± 1.5, respectively. Therefore there is no significant relation between eating disorders Pearson correlation coefficient and ghrelin, ICAM and E-Selection hormones (p-value > 0.05).

Discussion

In the present study the prevalence of eating disorders relative to ghrelin, ICAM and E-Selection resting levels in overweight men is determined, but no significant relation was found. Eating disorders is under influence of several factors such as social – psychological mechanisms, genetics and physiology. Eating problems and weight control behaviors, cover apply to wide range of

Table1 Relation between eating disorders and ghrelin, ICAM and E-Selection resting levels

Variable	N	AVG ^St.D>	Eating dis.	correlation	p-level
Ghrelin	120	3064.19 ± 371.61	0.8	0.04	0.816
ICAM	120	61.50 ± 19.70	0.8	0.06	0.489
E- Select.	120	2.50 ± 1.50	0.8	-0.09	0.278

people. In the last decades a considerable growth in prevalence of weight disorders and eating problems in obese people is observed. In the most of studies of ghrelin basic levels in various types of clinical eating disorders, such as anorexia nervosa and bulimia nervosa is reported more than basic level of them in healthy people (Dace, 2012; Prine et al., 2009; Troisi et al., 2005). Some investigations result indicated that in medical conditions and reaching to the normal weight ghrelin basic levels will decrease and in some cases they will decrease more than the level of this hormone in healthy people (Geleibter et al., 2005). The results of this research subject to ICAM-1 and E-Selection serum level in comply with Anki Tonjes (2007), Saetre (2011), Hejazi (2013), Robert (2006), Wang (2001), Sampson (2006), Adamopoulos (2001), Rothenbacher (2003), Zoppini (2006), (Janas-Kozik et al., 2007; Tönjes et al., 2007; Saetre et al., 2011|; Hejazi et al., 2013; Roberts et al., 2006; Wang et al, 2001; Ding et al., 2005; Simpson et al., 2006; Adamopoulos et al., 2001; Rothenbacher et al., 2003; Zoppini et al., 2006).

It is reported that inflammation and notice to CAMs as cardiovascular risk factors is very important in people whit coronary heart disease. These factors have strong relations with the other risk factors such as CRP, cholesterol and lipoprotein A. Endomyocardial represent the considerable relation between increasing of CRP and ICAM-1 in vascular endothelial. And also the interaction between lipoprotein A and ICAM-1 is indicated (Davies et al., 2008). In inflammation condition by increasing the circulatory system activity that is one of the important parts of inflammation responses, vessels endothelial damageswill be extended and the molecules which are commencer in topical delivery of leukocytes will be active. Sticky molecules, such as ICAM-1, can be released (specific or nonspecific) by inflamed tissue damage, for example nonspecific proteolysis (Macias et al., 2003). Regular exercise by decreasing the sympathetic stimulation and increasing the anti-inflammatory cytokine can restrain the releasing of IL-Iß and TNF-a pro-inflammatory cytokines from adipose tissue and consequently the serum concentration of ICAM-1 and E-Selection will decrease (Mohammad-Ali et al., 2000). Doing exercise by decreasing harmful lipolysis and increasing blood helpful lipolysis, decrease the risk of cardiovascular diseases.

The endocrine system, can increase lipid oxidation (lipolysis) by accretion epinephrine, norepinephrine and growth hormones and cortisol and therefore provide the required energy for the muscles. During these actions, after 30 -45 minutes of activity

commencement, plasma cortisol value reach to maximum and by increasing the gluconeogenesis process, accelerate calling and using of free fatty acids for producing energy during the exercise (Wegge et al., 2004). Since adipose tissue is one of the important areas for secretion of inflammatory markers and cytokines, endurance exercises by increasing the lipolysis and decreasing the body fat can be a mechanism for reducing the inflammatory mediators and intercellular sticky molecules.

Conclusion

The results of this study indicates that the eating disorders prevalence can happen in consequence of reasons other than ghrelin, ICAM-1 and E-Selection resting levels, and according to the determined percent of eating disorders prevalence in overweight people, there would be a need to inform people about the healthy and unhealthy methods of weight control and proper nutrition.

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ODNOS POREMEĆAJA U PREHRANI I ICAM-1, E-SELEKCIJE I GRELIN RAZINE U MIROVANJU KOD MUŠKARACA PREKOMJERNE TJELESNE TEŽINE

Sažetak

Ciljevi: Utvrditi postoji li odnos kod kojih je poremećaj prehrane povezan s psihološkim osobinama, a s druge strane, razinom hormona grelin, ICAM-1 i E-selekcije i mijenja li se tijekom poremećaja prehrane. Cilj nam je proučiti odnos između poremećaja prehrane i razina odmora, ICAM-1, E-selekcije i hormona grelin u pretilih muškaraca. Materijali i metode: U ovoj kvazi-eksperimentalnoj studiji, 120 pretilih muškaraca (25-30 godina) su namjerno odabrani. Tada su podaci o prehrambenim poremećajima prikupljeni EAT upitnikom. U sljedećoj fazi u stanju mirovanja i nakon noći posta, uzorci krvi su prikupljeni za mjerenje razine odmora, ICAM-1, E-selekcije, i hormona grelin. Konačno, podaci su analizirani odgovarajućim statističkim testovima. Rezultati: Srednja vrijednost i odstupanje razina odmora, ICAM-1, E-izbor, i hormona grelin su redom 3.064,19, 61,5 ± 19,7 i 2,5 ± 1,5 i nije bilo statistički značajnih odnosa između poremećaja prehrane ICAM-1, E-izbor i grelin hormona u pretilih muškaraca. Zaključak: Prema našim rezultatima, učestalost poremećaja prehrane može biti razlog drugim razinama thanRest, ICAM-1, E-selekcije i hormona grelina.

***Ključne riječi**: poremećaji prehrane, ICAM-1, E-selection, Ghrelin*