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Impact of BMI on liver enzymes in perimenopausal women

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Abstract
Objectives: To assess the impact of BMI on liver enzymes in perimenopausal women.
Methods: The present study was conducted on 100 perimenopausal women. Subjects were divided into 3 subgroups normal, overweight and obese on the basis of BMI. Bodyweight and height was taken and BMI was calculated using Quetelet index. Blood samples were taken in the early morning. Data obtained was compiled and statistical analysis was done.All parameters were reported as mean and standard deviation. The statistical differences in mean values were tested using Levene's test for equality of variances followed by t-test for equality of means. ANOVA was used to do comparison with in the subgroups. Pearson correlation was used to calculate the correlation between various variables.
Conclusion: Positive correlation was seen between liver enzymes AST (aspartate aminotransferase) and BMI (body mass index) in normal, overweight and obese perimenopausal females.

Keywords: Liver function tests, perimenopause

Introduction
Menopause is a normal aging phenomenon in women consisting of gradual transition from the reproductive to non-reproductive phase of life [1]. Menopause is a natural process but it can be induced by surgicsl removal of ovaries, chemotherapy or high dose radiotherapy related to cancer treatment [2] Perimenopause encompasses the change from ovulatory cycles to cessation of menses and is marked by irregularity of menstrual bleeding. The most dramatic endocrine alteration of perimenopause involves the decline in the circulating level and production rate of estradiol [3]. Elevated circulating levels of FSH mark this menstrual cycle change before menopause and are accompanied by decreased inhibin levels, normal levels of LH, and slightly elevated levels of estradiol [4]. The abrupt endocrine changes during menopausal transition have important impacts on the physiology of female body which exacerbate risks for many diseases and disabilities during postmenopausal life [5]. The present study is planned to assess the effects of body mass index on liver enzymes in perimenopausal person.

Material and Methods
1OO perimenopausal women in the age group of 40-45 years were selected. All those women with history of diabetes mellitus, hypertension, neurological disorders, any other illness known to affect liver enzymes were excluded from the study. Body weight and height was taken. BMI was calculated using Quetelet's index [6]. Subjects were classified into three subgroups normal, overweight and obese on the basis of BMI. Estimation of liver enzymes AST (aspartate aminotransferase) and ALT (alanine aminotransferase) was done. AST metod is recommended by the International federation of Clinical chemistry [7] and ALT metod is based on the principles of using pyridoxal-5-phosphate [8].

Statistical Analysis
The data obtained was analyzed. All parameters were reported as mean and standard deviation. The statistical differences in mean values were tested using Levene's test for equality of variances followed by t-test for equality of means. ANOVA (analysis of variance) was used to do comparison with in the subgroups. Pearson correlation was used to calculate the correlation between various variables.

Results

Correlation of BMI with AST in Perimenopausal Women

BMI (kg/meter-square)	Classification	Perimenopausal (no.)	Mean AST±SD (IU/ml)	Pearson correlation with p-value
18.50-24.99	Normal	54	28.44±6.48	0.425 P=0.001
25.00-29.99	Overweight	27	38.62±18.34	O.427 P=o.o26
>30.00	Obese	19	47.73±17.47	0.387 P=0.002

Table shows mean AST levels in normal perimenopausal women is 28.44 (SD±6.48) IU/ml. Overweight females have mean AST levels 38.62 (SD±18.34) IU/ml. Obese perimenopausal females have mean AST levels 47.73 (SD±17.47) IU/ml. There is a positive correlation in all 3 subgroups and p-values are highly significant in all 3 subgroups.

Correlation of BMI with ALT in Perimenopausal Women

BMI (kg/meter –square)	Classification	Perimenopausal (no.)	Mean ALT±SD (IU/ml)	Pearson correlation with p-value
18.50-24.99	Normal	54	34.47±10.59	0.320 P=0.018
25.00-29.99	Overweight	27	58±23.96	0.491 P=0.009
>30.00	Obese	19	72.89±25.68	0.056 P=0.027

Table shows mean ALT levels in normal weight perimenopausal females is 34.57 (SD±10.59) IU/ml. Overweight perimenopausal females have mean ALT levels of 58 (SD±23.96) IU/ ml. Obese perimenopausal females have mean ALT levels of 72.89(SD±25.68) IU/ml. There is a positive correlation in all 3 subgroups and p-values are significant in all 3 sungroups.

Discussion

Now a days, due to urbanization and industrialization, there is a dramatic change in lifestyle, consisting of physical activity, diet rich in fat, sugar and salt, coupled with a high level of.mental stress, weight gain and lifestyle diseases associated with it, which can be prevented due to lifestyle modifications such as diet and exercise [9] So, the current is focused on the abrupt endocrine changes during menopausal transition which have important impact on the physiology of human body, which exacerbate risk for many diseases and disabilities. The findings are also in agreement with the study that obesity is one of the risk factors most frequently associated with increased liver enzymes [10]. Also, elevated ALT levels in patients with increased BMI [11]. Liver accumulation of fat in patients with diabetes mellitus or with the insulin resistance syndrome is associated with increased lipolysis of adipose tissue, with increased flux of free fatty acids to the liver that exceeds the liver's capacity to export VLDL [12]. Increased levels primarily of ALT appear to be the most sensitive biochemical indicator of the presence of hepatic steatosis [13, 14]. Correlation of BMI with AST in two subgroups (normal and overweight) of perimenopausal women is highly significant. This is in accordance with the study that liver is profoundly affected by obesity, where it may be associated with hepatomegaly, increased biochemical values and alterations in liver histology like macrovesicular steatosis, steatofibrosis, fibrosis and cirrhosis [15].

Conclusion

The present study shows positive correlation was seen between liver enzymes AST and BMI in normal, overweight and obese perimenopausal females.

Reference

1. Staessen JA, Celis H, Fagard R. The epidemiology of association between hypertension and menopause. J Hum Hypertens 1998; 12(9):587-592.
2. Barrett CE, Bush TL. Estrogen and CHD in women. Jama. 2001; 265:1861-1867.
3. Bulun SE. Physiology and pathology of the female reproductive axis. Reproductive physiology management of menopause. William's Textbook of Endocrinology, 2011, 641-645.
4. Buckler HM, Evans CA, Mamtora H. Gonadotropin, steroid, and inhibin levels in women with incipient ovarian failure during anovulatory and ovulatory rebound cycles. J Clin anovulatory and ovulatory rebound cycles. J Clin Endocrinol Metab. 1991; 72:116-124.
5. Mishra SK. Menopausal transition and postmenopausal health problems: A review on its bio-cultural perspectives. Health. 2011; 3(4):233-237.
6. Pranita A, Phadke AV, Singh R, Melinkeri RR, Joshi AR. Prediabetes status in obese and preobese women in the age group 45-49 years. J Assoc Phys India. 2012; 60:121-127.
7. Bergmeyer HU, Schelbe P, Nahlefeld AW. Optimization of methods for aspartate aminotransferase and alanine aminotransferase. Clin Chem. 1978a; 24(1):58-73.
8. Wroblewski F, La Due JS. Serum glutamic pyruire transaminase in cardiac and hepatic disease. Proc Soc Exp Biol Med. 1956; 91:569.
9. Pranita A. Pre-diabetes warning bell for diabetics. Int J Clin Cases Invest. 2011; 2(6):18-26.
10. Robinson D, Whitehead TP. Effect of body mass and other factors on serum liver enzyme levels in men attending for well population screening. Ann Clin Biochem. 1989; 26:393-400.
11. Salmela PI, Sotaniemi EA, Niemi M, Maentausta O. Liver function tests in diabetic patients. Diabetic Care. 1984; 7:248-254.

12. Naveau S, Giraud V, Borotto E, Aubert A, Capron F, Chaput JC. Excess weight as a risk factor for alcoholic liver disease. Hepatol. 1997; 25:108-111.
13. Bellentani S, Saccoccio G, Masutti F, Croce LS, Brandi G, Sasso F *et al*. Prevalence of and risk factors for hepatic steatosis in Northern Italy. Ann Intern Med. 2000; 132:112-117.
14. Omagari K, Kadokawa Y, Masuda J, Egawa I, Sawa T, Hazama H *et al*. Fatty liver in non-alcoholic non-overweight Japanese adults: incidence and clinical characteristics. J Gastroenterol Hepatol. 2002; 17:1098-1105.
15. Mokdad AP, Ford I, Bowman BA. Prevalence of obesity, diabetes and obesity-related health risk factors. J Am Med Assoc. 2001; 289:76-79.