The Role of Blood Lipid Parameters in the nature Formation of Different Temperaments

Asghar Karbord[1]*, Mahdi Zahedpanah[2], Maryam Rajabi[3] Fariba Hashemi[4], Mohammad Bokharaei[5] and Marzieh-Beygom Siahpoosh[6]

[1]MSc epidemiology & faculty members of surgical technology group of paramedical college of Qazvin University of medical science, Iran

[2]Assistant professor hematologist & Faculty of Allied Medicine of Department of Medical Laboratory Sciences, Qazvin University of Medical Sciences, Iran/Metabolic Diseases Research Center, Qazvin University of Medical Sciences, Iran

[3]Professor assistant of anesthesiology, Faculty member of medicine college of Qazvin University of Medical Sciences, Qazvin, Iran

[4]MSc educational surgery nursing &faculty members of surgical technology group of paramedical college of Qazvin University of medical science, Iran

[5]MSc educational ICU nursing & faculty members of surgical technology group of paramedical college of Qazvin University of medical science, Iran

[6]Cell and Molecular research center (CMRC), Qazvin University of Medical Sciences, Iran

*Corresponding author: Asghar Karbord, MSc epidemiology & faculty members of surgical technology group of paramedical college of Qazvin University of medical science, Qazvin, Iran

Abstract

Background: According to Canon, illness could be without any established disease and without any manifested changes in measurable parameters. Therefore, it is possible to assume Hypo/hyperlipidemia as an illness.

Objectives: The aim of this study determinant role of blood lipid parameters (Hypo/hyperlipidemia normal limits) how formation temperament profiles at different persons. Methods: this cross-sectional study performed on 400 personality of either gender with rang of age 20 to 40 years. The participants' temperament was determined using questionnaire. Measurement was carried out by blood cell counter System KX21N and auto-analyzer Erba XL 600 using Pars Azmoon Company's Quantitative Detection Kit. Software SPSS22 used for data analysis.

Results: There was a statistically significant difference in cholesterol (p=0.007) and triglycerides (p=0.004) of females with warmness-wetness and warmness-dryness. The highest average values of cholesterol as well as the lowest average value of HDL-C were in males with coldness-wetness Mizaj. The highest mean of triglycerides was in males with warmness-wetness. Those who sorted into dryness group have an average triglycerides and cholesterol concentration lower and HDL-C, lipase concentration higher than wetness individuals. There was a negative correlation between lipase (r=- 0.25, p=0.001), triglycerides (r=-0.18, p=0.047).

Conclusion: The wetness Mizaj could be a predictable Mizaj of prone to hyperlipidemia.

Keywords: Mizaj (Temperaments); blood lipid parameters; Persian traditional medicine

Introduction

The blood constituents profile even in normal limits varies according to different factors such as races, gender, and in the same person under various conditions. This profile is based on biochemical reactions which affect and are also affected by the changes in the body and impart a certain Mizaj (temperament) to the body as well [1]. In the Canon, Avicenna states "Mizaj" is that quality which results from the mutual interaction and impression of the four contrary primary qualities, namely heat, cold, moisture, dryness residing within the imponderable) elements [2]. In Persian traditional medicine, Mizaj have divided into nine categories including medium and four simple Mizajes warm, cold, moist, and dry and four combined Mizajes warm and moist, warmand dry, cold and moist, cold and dry [3]. The normal population Mizaj,

which is basically the upper and lower limits of normal range, is the narrowest of Mizaj [4]. The imbalance in body Mizaj and humors is the trigger for increasing susceptibility to illness or leads to the onset of disease condition [5,6]. Humors are the soluble substances produced from food and drink by the digestive stages, including blood, phlegm, yellow bile, and black bile. Thus, humors are referring to classes of biochemical compounds in the human body. Based on Persian traditional medicine, the various digestive processes, in order of the food materials passageway, includes a certain amount of digestion during the act of mastication, true digestion in the stomach by reason of the heat of the enveloping members, yielding "chyle", the digestive function of the liver, the vessels digestion, and finally, the tissues bath [7,8]. The metabolic syndrome is a cluster of conditions includes obesity, hyperglycemia, dyslipidemia, and hypertension. Component features include insulin resistance, fasting hyperglycemia, raised blood pressure, raised triglycerides, low HDL-cholesterol concentrations, and obesity (in particular, abdominal obesity). The presence of these clinical conditions is associated with increased risk of cardiovascular disease and of developing diabetes [9,10]. The discussion about a healthy person could be focused on normal temperament and element composition of the blood According to Canon, illness could be without any established disease and without any manifested changes in measurable parameters and result from simple disturbance of temperament without the involvement of any humors. Ill used for conditions which have not been diagnosed, and yet may prove? [1, 11-13]. Therefore, it is possible to assume metabolic syndrome as an illness. Now, the question is, does the study of Mizaj and humor in relation to the lipid serum parameters arrives us at early signs of illness, diagnose, and treat? The aim of this study is try to answer this question if the lipid serum, within normal limits, related to metabolic syndrome, differs in persons with various normal temperament profiles. With the results of this study, the potential for developing blood lipid parameters in virtue of Mizaj type couldbe predictable.

Materials and Methods

The QUMS (Qazvin University of Medical Sciences) committee approved our study (Ethical Code: IR.QUMS.REC.1396.82). A descriptive study performed on 400 healthy subjects of either sex with ranging in age from 20 to 40 years. For participation in the study, the adequate information delivered to the volunteers by written consent form. Demographic forms were full filled. Exclusion criteria were current evidence history of any clinically significant disease or any chronic disease, pregnancy, taking any drug or medication, smoking, alcohol ingestion and vegetarian. The participants' mizaj was determined using questionnaire that traditional medicine researchers of Shahed University of medical science had previously found its satisfactory reliability and validity. All participants were asked to fast for 8 to 12 hours before blood taking. Venous whole blood samples were collected using anticoagulant ethylene diamine tetra acetic acid (EDTA) for analysis of platelets and without the use of anticoagulants in order to test the serum constituents. Platelets were immediately measured with blood cell counter Sysmex KX21N (Sysmex Corporation, Kobe, Japan). Serum obtained by

centrifugation (150 g for 5 min) of 3 ml coagulated whole blood. Measurement of biochemical analytic triglycerides, cholesterol, HDL-C, LDL-C, lipase was performed using the Pars Azmoon Company's Quantitative Detection Kit (Iran) and by auto-analyzer Erba XL 600 (Mannheim, Germany).

Statistical Analysis

Software of SPSS22 (SPSS, Chicago, IL, USA) was used for data analysis. The obtained data were analyzed by statistical tests of means ± SD, ANOVA, and independent samples t-test and Pearson correlation coefficient. A p- value of <0.05 was the chosen significant level.

Results

We studied four hundred volunteers with a mean age of 28.7±7.6 (range 20-40) years. The subjects were 177 males (44.2%) and 223females (55.8%). Regardless of the gender, the percentage of the participant individuals, which falls on five sectors of combined mizajes, included: coldness-wetness, coldness-dryness, warmness-wetness, and warmness-dryness were 21.75%, 10.75%, 22.75%, 11.5% respectively. In addition, the total estimated frequencies of four simple mizajes were coldness 32.5%, warmness 34.25%, wetness 44.5% and dryness 22.25%. The rest of these sectors are medium mizaj with frequency of 33.25% in the totality of subjects. The frequencies of warmness-wetness in males and coldness-wetness in females were more common among different combined mizajes. The observed analytic values with typical reference intervals or at recommended normal cut-off points in adults have been included in this study. Lowest or highest values was considered an outlier and therefore omitted from all further analyses. Analysis of blood constituents levels of triglycerides, cholesterol, HDL-C, LDL-C, lipase and platelet in different groups have been shown in tables 1 to 5. In general, the outcome of the comparison study of analytic, by gender, displayed that HDL-C and platelet value averages were higher in women than in men, which only the latter was significant (p=0.004). The mean of four others including triglycerides, cholesterol was higher in men than women but not statistically significant (p>0.05). Pair wise comparisons among combined mizajes by gender showed that a statistically significant difference exists in HDL (p=0.007) and triglycerides (p=0.004) of females with warmness-wetness and warmness-dryness. In addition, in women with coldness-wetness to coldness-dryness Mizaj was significantly more mean values of HDL-C (p=0.04) and lipase (p=0.02).The results showed that the highest average values of HDL (48.9±4.1) and cholesterol (183.6±32.1 mg/dl) as well as the lowest average value of HDL-C (45±8.1 mg/dl) were in males with coldness-wetness Mizaj (Tables 1-5). In addition, the lowest average values of triglycerides (67.6±21.5 mg/dl) and cholesterol (162.6±27.3 mg/dl) found in females with warmness - dryness mizaj. Besides, the highest mean of triglycerides (101.3±37.6 mg/dl) was in males with warmness-wetness. When two opposite simple Mizajes in total subjects are compared, there are a statistically significant difference between dryness and wetness Mizajes for triglycerides (p=0.0001), cholesterol (p=0.02), HDL-C (p=0.02), lipase (p=0.01) and amylase (p=0.03). Those who sorted into dryness group have

an average triglycerides and cholesterol concentration lower and HDL-C, lipase concentration higher than wetness individuals. In general, simple Mizajes with coldness or wetness have higher mean amount of triglycerides, cholesterol, and LDL-C. Correlation analysis revealed no association between amylase and FBS or lipids (p>0.05) except for HDL-C (r=0.144, p=0.026).There was a negative correlation between lipase and triglycerides (r=-0.18, p=0.047),

and no association with cholesterol (r=-0.044, p=0.541), LDL-C (r=0.045, p=0.472), and HDL-C (r=0.045, p = 0.52). Regarding LDL-C and platelet profile, although, the results of mizaj groups had not statistically significant difference in LDL-C and platelet, but the highest mean of thosewas observed in coldness-wetness men and coldness-dryness women, respectively.

Table 1: Comparison of lipids levels between temperament indices.

Sex	Indices		Triglycerides Levels (mg/dl)					Cholesterol Levels (mg/dl)				
			Min	Max	Mean		P value	Min	Max	Mean		P value
Male	Coldness	Wetness	36	142	9590.00%	3290.00%	0.34	134	228	183.6	32.1	0.08
		Dryness	40	138	8120.00%	3330.00%		137	217	169.8	24.6	
	Warmness	Wetness	42	149	10130.00%	3760%	0.56	105	236	178.3	30.1	0.39
		Dryness	45	147	8720.00%	3080.00%		113	238	170.5	37.7	
	Medium		34	145	8760.00%	2820.00%		115	241	178.2	30.6	
	Total		34	149	9930.00%	3440.00%		105	241	176	31.3	
Female	Coldness	Wetness	33	148	9270.00%	3560.00%	0.21	117	238	174.3	28.4	0.39
		Dryness	47	131	8350.00%	2530.00%		124	224	169.2	29.6	
	Warmness	Wetness	38	148	9230.00%	3110.00%	0.004	132	236	175.9	27.3	0.06
		Dryness	42	115	67.6	2150.00%		123	208	162.6	27.3	
	Medium		37	146	83.5	31.2			237	168.5	31.2	
	Total		33	148	92.3	39.3			238	169.9	29.2	
Total	Coldness		33	148	97.9	34	0.72	117	238	174	28.6	0.7
	Warmness		42	149	96	31.2		105	238	172.5	31.3	
	Wetness		38	149	105	34	0.0001	105	238	176.4	29.2	0.02
	Dryness		42	147	82	25		113	238	166.7	28.8	
	Medium		65	110	85.8	30.9			241	171.5	32.1	

Table 2: Comparison of lipoproteins levels between temperament indices.

Sex	Indices		LDL-C levels (mg/dl)				P value	HDL-C levels (mg/dl)				P value
			Min	Max	Mean	±SD		Min	Max	Mean	±SD	
Male	Coldness	Wetness	71	98	86	12.7	0.49	30	62	45	8.1	0.7
		Dryness	36	100	79.7	22.5		33	72	47.7	17.8	

Table 3.

	Warmness	Wetness	22	93	81.7	18.3	0.67	31	90	46.3	12.2	0.41
		Dryness	76	100	85.4	11.2		41	63	51.2	8.4	
	Medium		66	97	85.1	10.9		37	73	48.7	9.5	
	Total		22	100	83.9	15.7		30	90	47.7	10.4	
Female	Coldness	Wetness	59	100	83.9	12.4	0.91	35	69	50.6	8.5	0.04
		Dryness	64	99	83.5	12.2		39	76	55.6	10.1	
	Warmness	Wetness	69	89	84.2	9.4	0.56	43	74	55.2	7.9	0.77
		Dryness	63	100	81.8	12.8		33	74	54.3	11.3	
	Medium		49	100	82.9	13.3		31	70	53.2	10.8	
	Total		49	100	83	12.4		31	76	52.9	9.7	
Total	Coldness		36	100	83.9	13.4	0.35	30	76	50.5	10.2	0.83
	Warmness		22	100	81.7	14.5		31	90	50.9	10.5	
	Wetness		22	100	83.1	13.5	0.83	30	90		9.7	0.02
	Dryness		36	100	82.6	13.6		33	76	53.5	11.2	
	Medium		49	100	84.5	10		30	90	51.1	10	

Female	Coldness	Wetness	109	392	222.5	54.2	0.23
		Dryness	153	300	237.7	41.2	
	Warmness	Wetness	163	420	252	57.3	0.12
		Dryness	161	331	228	49.5	
	Medium		231	432	224	62.4	
	Total		109	432	222.8	51.2	
Total	Coldness		109	392	221.9	48.6	0.9
	Warmness		110	420	222.6	51.6	
	Wetness		109	420	224.5	51.7	0.3
	Dryness		143	331	217.3	45.1	
	Medium		111	432	223.5	53.7	

Discussion

The most of studied subjects fall into wetness mizaj. A criterion of this mizaj is muscular or fatty that the latter in combined with coldness temperament may progress to obesity which is considered to be a feature of the metabolic syndrome .In addition, in wetness subjects have been found, on the one hand, a significantly higher mean of cholesterol and triglycerides, and, on the other hand, lesser of HDL-C than dryness individuals. Moreover, the highest average values cholesterol and LDL-C, as well as the lowest average value of HDL-C were in males with coldness-wetness mizaj. Considering that the abnormal of those analytic (i.e., increased triglycerides, cholesterol, LDL-C and decreased HDL-C) in a defining level are criteria for clinical identification of metabolic syndrome. One could speculate that men with wetness mizaj especially in combined with coldness may be prone to this condition. Besides, visceral fat accumulation leading to increased triglycerides, low HDL-C, contributes to the individuals meeting a diagnosis of blood lipid parameters. In traditional medicine, the fat and the oil are coldness and moist constituents of the body. According to Avicenna, in chapter of urinalysis of The Canon of medicine, In contrast, the association of warmness-dryness mizaj in females with the lowest average values of, triglycerides, cholesterol and LDL-C suggests that the dryness, leading to skinny due to reduction in body fat or muscles, when combined with warmness, might be associated with a decreased risk of metabolic syndrome. Given that individuals with warmness mizaj are muscular, it is perhaps relevant that, diminishing the serum levels of lipids could be attributed at least in part to better metabolized in mitochondria's muscles. Interestingly, we observed that the levels of essential digestive enzymes amylase higher in dryness than wetness mizajes inversely with lipids and HDL-C. Total Serum amylase contains an approximately equal proportion of salivary and pancreatic is enzymes; therefore it have endocrine functions as well; its physiological secretory function could be either digestive or non-digestive. We found that lipase have a strong and weak negative correlation with triglycerides, respectively, but no correlation with cholesterol or LDL-C and HDL-C. These observations led us to speculate that lipase could be involved in the metabolisms of lipids. Lower mean serum lipase levels than healthy subjects. Nevertheless, our results were unlike to those reported by Adedeji et al. in diabetes mellitus which lipase activity is elevated at increased concentrations of glucose and lipids. Given that, there are various lipases, the role that each of them plays I n development of metabolic syndrome is a controversial issue. Based on the Miyashita and Shirai study, lipoprotein lipase (LPL) mass is low in type 2 diabetes mellitus and is inversely proportional to the amount of serum triglyceride and directly proportional to the HDL-C, consistent with our results. Also, there was a significant lower LPL in individuals with metabolic syndrome and coronary atherosclerosis. However, unlike LPL, endothelial lipase (EL) that effectively hydrolyzes HDL phospholipids is associated with lower HDL-C and might play a role in progress of atherosclerosis in individuals with overweight and metabolic syndrome. Inhibition or decreased synthesis of lipoprotein or hepatic lipases increases plasma triglyceride. In addition, maldigestion of the fat and hyperglycemia have been observed in pancreatic lipase deficiency. Besides, in Persian traditional medicine the existence of oily substance in blood, the diabetes or anorexia could be due to abnormal digestion, raw humors or dominant phlegmatic humor Furthermore, the higher of lipids levels in wetness mizajes might be attributable in part to less Observed normal activity of amylase and lipase than dryness. Our results showed that a mildly high LDL-C and platelets in men with coldness-wetness Mizaj. Diet-induced hyperlipidemia can

Potently activates human platelets via oxidized LDLs. Oxidized HDLs, on the contrary, can inhibit platelet aggregation. Thus, it has been reported that platelet hyper reactivity in response to elevated levels of oxidized LDL contribute to the cogenesis, and the metabolic syndrome.

Conclusion

People with different normal Mizajes indicate different mean value of some blood and serum parameters, within normal limits, related to blood lipid disorder. As expected, the wetness Mizaj individuals have higher mean normal levels of lipids, especially when combined with coldness Mizaj in men. Thus, this could be a predictable Mizaj of prone to blood lipid disorder. Inaddition, it appears that blood lipid disorder role of lipase, which is less value in wetness than dryness Mizajes, influences on progress to blood lipid disorder.

References

1. AbuAsab M, Amri H, Micozzi MS (2013) Avicenna's medicine: A new translation of the 11th-century canon with practical applications for integrative health care. Simon and Schuster.

2. Adedeji OO, Oyakhire GK, Ene DM, AlGhamdi SA (2007) Role oflipase in glucose and lipid metabolisms. Saudi Med J 28(6): 841-843.

3. Akbar S (2012) Body Constitution, Temperament and Health: What about the Mind? Trafford Publishing, USA.

4. Alberti KG, Zimmet P, Shaw J (2005) The metabolic syndromeanew worldwide definition. The Lancet 366(9491): 1059-1062.

5. Avicenna (1973) The Canon of Medicine of Avicenna. AMS Press, New York, USA.

6. Badellino KO, Wolfe ML, Reilly MP, Rader DJ (2005) Endothelial lipase concentrations are increased in metabolic syndrome and associated with coronary atherosclerosis. PLoS Med 3(2): e22.

7. Borovickova I, Bhatt NR, Boran GP, Ridgway PF (2016) Persistent chronic hyperamylasemia: Clinical interpretation and diagnostic approach. JOP 17: 349-358.

8. Burtis CA, Ashwood ER, Bruns DE (2012) Tietz textbook of clinicalchemistry and molecular diagnostics-e-book. Elsevier Health Sciences, Netherlands.

9. Des Gachons CP, Breslin PA (2016) Salivary amylase: Digestion and metabolic syndrome. Curr Diabetes Rep 16(10): 102.

10. Emtiazy M, Keshavarz M, Khodadoost M, Kamalinejad M, Gooshahgir S, et al. (2012) Relation between body humors and hypercholesterolemia: An Iranian traditional medicine perspective based on the teaching of Avicenna. Iran RedC resent Med J 14(3):133-138.

11. Lamarche B, Paradis ME (2007) Endothelial lipase and the metabolic syndrome. Curr Opin Lipidol 18(3): 298-303.

12. Mandel AL, Breslin PA (2012) High endogenous salivary amylase activity is associated with improved glycemic homeostasis following starch ingestion in adults. J Nutr 142(5): 853-858.

13. Miksztowicz V, Schreier L, McCoy M, Lucero D, Fassio E, et al. (2014) Role of SN1 lipases on plasma lipids in metabolic syndrome and obesity. Arterioscler Thromb Vasc Biol 34(3): 669-675.

14. Miyashita Y, Shirai K Clinical determination of the severity of metabolic syndrome: preheparin lipoprotein lipase mass as a new marker of metabolic syndrome. Curr Med Chem Cardiovasc Hematol Agents 3(4): 377-381.

15. Mojahedi M, Naseri M, Majdzadeh R, Keshavarz M, Ebadini M, et al. (2014) Reliability and validity assessment of Mizajquestionnaire: A novel self-report scale in Iranian traditional medicine. Iran Red Crescent Med J 16(3): e15924.

16. Nakajima K (2016) Low serum amylase and obesity, diabetes and metabolic syndrome: A novel interpretation. World J Diabetes 7(6): 112-121.

17. Pierzynowski SG, Goncharova K, Gregory PC, Weström B, Podpryatov SE, et al. (2017) Experiments suggesting extra digestive effects of enteral pancreatic amylase and its peptides on glucose homeostasis in a pig model. Sci Rep 7(1): 8628.

18. Pravenec M, Kurtz TW (2002) Genetics of Cd36 and the hypertension metabolic syndrome. Semin Nephrol Elsevier 22(2): 148-153.

19. Relou IA, Hackeng CM, Akkerman JW, Malle E (2003) Low density lipoprotein and its effect on human blood platelets. Cell Mol Life Sci 60(5): 961-971.

20. Rezaeizadeh H, Alizadeh M, Naseri M, Ardakani MS (2009) The Traditional Iranian Medicine Point of View on Health and disease. Iranian J Publ Health 38(1):169-172.

21. Schneeman BO, Inman MD, Stern JS (1983) Pancreatic enzyme activity in obese and lean Zucker rats: a developmental study. J Nutr 113(4): 921-925.

22. Sina I (1997) The Canon of Medicine. Urine. Soroush, Tehran, Iran, pp. 641.

23. Skrha J, Stěpán J (1987) Clinical significance of amylase isoenzyme determination. Acta Univ Carol Med Monogr 120: 1-81.

24. Srihardyastutie A, Soeatmadji DW, Fatchiyah A (2015) Relation of Elevated Serum Lipase to Indonesian Type 2 Diabetes Mellitus Progression. 26(2).

25. Valiyaveettil M, Kar N, Ashraf MZ, Byzova TV, Febbraio M, et al. (2008) Oxidized high-density lipoprotein inhibits platelet activation and aggregation via scavenger receptor BI. Blood 111(4): 1962-1971.

To Submit Your Article Click Here: [Submit Article]

LOJMS

Lupine Online Journal of Medical Sciences

Assets of Publishing with us

- Global archiving of articles
- Immediate, unrestricted online access
- Rigorous Peer Review Process
- Authors Retain Copyrights
- Unique DOI for all articles

Lupine Online Journal of Medical Sciences