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A Cross - Sectional Descriptive Study of Relation of Clotting Time and *Mizaj* in Young Adults.

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ABSTRACT:

Background-Concept of *mizaj* in the Unani system of medicine is a wide area of research. *Mizaj* is the main thing that confers a legitimate shape and construction to the human body and makes an individual skilled to appropriately carry out his functions. In the event that the *Mizaj* of an individual is changed, his capabilities, as well as designs, will generally change, bringing about diseases. Any demeanour of a sound individual addresses a decent profile of the normal state which keeps ideal concordance between the milieu Interieur (the environment inside the body) and the environment outside. Therefore, it is important to understand its link to physiology of clotting time, which may be influenced by individual *mizaj* (body type). So, it is necessary to find out its relationship with clotting time which may be influenced by individual *mizaj* (body type) and it can be considered as a decisive advantage to selecting an appropriate diagnostic tool for treatment in clinical practice. Research in this area is very scanty and inconclusive, therefore the participants of young age and clinically healthy have been chosen as the subject of study.

Objective(s)- The objective of the present study is to find out the nature of mizaj (body type) with clotting time.

Material and Methods- Using simple random sampling in Delhi (India) Sixty-two (62) college students from Ayurvedic and Unani Tibbia college and Hospital, Karol Bagh were selected as per inclusion and exclusion criteria and asked to complete the Mizaj questionnaire followed by checking of clotting time of each paticipants face to face under supervison. SPSS statistics software 22.0 was used for was used to establish a database for statistical description. The One-way ANOVA test in SPSS was used to analyze the differences between the groups. $P < 0.05$ suggested that the difference was statistically significant.

Results- Based on the results it is found that clotting time is lowest in people having Damvi *Mizaj and safravi Mizaj* and highest in *balghami* and *saudavi mizaj* which is in concordance with the experimental hypothesis of this research work.

Conclusion- From this study, it is clear that a possible correlation between clotting time (CT) and *Mizaj* certainly does exist. After that, clotting time could be considered as one of the diagnostic indices of temperament.

Keywords: *Mizaj, Damvi, Balghami, Safravi, Saudavi,* Clotting time

INTRODUCTION

Unani medicine is said to have a holistic approach, refers to the whole knowledge as a total recognition of the patient's condition. "It is more important to know what sort of person has a disease than to know what sort of disease a

person has" – Hippocrates. According to practitioners of Unani Medicine, the health of the human Body is maintained by the harmonious arrangements of *Umoor-e-Tabiyah*, the 7 basic Physiological principles of the unani Medicine. These Principles include: 1. *Arkan* or elements 2. *Mizaj* or Temperament 3. Akhlat or Bodily Humours 4. Aaza or Organs and systems 5. Arwah or vital Spirit 6. *Quwa* or Power 7. *Afaal* or functions.[1] Interacting with each other, these seven natural components maintain the balance in the natural constitution of the human Body. Each Individuals constitution has a self-regulating capacity or power called Tabi,, ah *Mudabbir-e-badan viz* medicatix naturae which is considered the supreme planner of our body and whose sole function is to keep the seven components in the equilibrium.[2]

Mizaj (temperament) indicates the properties of an ,unsur, a molecule, a cell, a tissue, an organ and of the organism as a whole. According to Tibb the cause of health is the maintenance of *mutadil mizaj* (normal temperament) within the cells. The four essential mizaj (temperaments) are hot, cold, moist and dry. Four more are compounded of those single temperaments namely hot and dry, hot and moist, cold and dry, and cold and moist possessed in different proportions. *Mizaj* is balanced by all entities in the cosmos including all plants, minerals and animals. The equilibrium of the individual's elemental combination and resulting mizaj, as determined by tabi „ at, provides a stable constitution to that individual. Therefore, *mizaj* plays a pivotal role in unani in characterizing a person‟s normal state (physical, mental and social), as well as the nature of the disease.[2,3,4,5]

Spontaneous arrest of bleeding from injured capillaries and venules is called as hemostasis, which includes vasoconstriction, platelet plug formation, clot formation, clot retraction and clot lysis.[6] Clotting time (CT) is the time interval from onset of bleeding to formation of first fibrin thread. Normal value of clotting time is 5 to 8 minutes.[7,8,9,10]

Causes Of Prolonged Clotting Time Are[10,11]: Coagulation factors deficiencies which may be:

1. Congenital.
2. Acquired.
3. Severe deficiency of any known plasma clotting factors except XIII (fibrin-stabilizing factor) and VII.
4. Drugs like heparin and thrombin inhibitor.
5. Marked hyperheparinemia.
6. Afibrinogenemia.

Coagulation time normal seen in: Thrombocytopenia, Deficiency factor VII, Mild coagulation defects due to any reason, Von Willebrand syndrome.

Pathophysiology [10,11]

1. For clot formation, prothrombin is converted into thrombin.
2. Thrombin converts soluble fibrinogen into insoluble fibrin.
3. For this process, clotting factors are needed, along with calcium.
4. Also assisted by the factors produced by platelets and damaged tissue.
5. So clotting time is the time needed for the generation of thrombin from the complex system of clotting.
6. When there is any deficiency in these factors, it will lead to prolonged clotting time.
7. It is rarely used because of the variation; instead, the clotting factors are more accurate.[10,11] Fig 1- Fig 2

One study reported that platelet count were decrease progressively with age, with the consequence that thrombocytosis was more frequent among younger people, While thrombocytopenia was more common among the elderly.[12] In contrast fibrinogen levels in the plasma increases with age which shortens clotting time in elderly people, which makes them more prone to thromboembolism. [13,14,15] Thrombocytosis is associated with an increased risk of thrombosis.[16] Even after thorough review of literature, we didn't find articles related to clotting college students and mizaj. Hence, the present study was undertaken to assess the relationship of mizaj and clotting time.

METHODOLOGY

A cross sectional descriptive study was conducted to assess the Mizaj of 62(sixty two) clinically healthy young adults of both gender in physiology department, A and U tibbia college and hospital, Karol Bagh, Delhi during period of 2020-2021.

Inclusion criteria

- Individuals of 18-25 years of age.
- Either sex.
- Clinically healthy individuals.

Exclusion criteria

- Alcoholics.
- Smokers and tobacco users.

- Pregnancy and lactation.
- Past history of trauma.

METHOD

Participants came to department of physiology, A and U tibbia college, delhi for Clotting time test and mizaj assessment. All the participants gave their consent to participate within the study. All paticipants were briefed regarding research ethics and signed an consent form after being fully apprised of the aim of the study, the advantage of participation, and withdrawal of participation.

Determination of mizaj (body type)

Mizaj of each subject was assessed with the help of mizaj assessment Questionnaire for assessment of mizaj(body type) i.e Damvi(Sanguineous), Safravi(Bilious), Balghami(Phlegmatic), Saudavi(Melancholic) which is based on Ajnas e Ashra or ten classical parameters i.e. Malmas (Tactus), Lahm-wa-Shahm (Flesh and fats), Ashaar (Hair rate of growth,colour, distribution)), Laun-e-Badan(Body Complexion), Hayyat-e-Aza(Physique), Kaifiat-e-Infaal(Resposiveness of organs),Afal-e-Aza(State of functions)),Fuzlaat-e-Badan(body waste),Nom-wa-Yaqza (sleep and wakefulness), Infalat-e-Nafsaniya (Psychic Reactions) described in Unani classical literature and generated by Central Council for Research in Unani Medicine (CCRUM), Ministry of AYUSH, New Delhi. The participants respond the questionnaire according to their charecterstics and were calculated for score and whichever of these Mizaj scored highest, patient had that Mizaj dominating and controlling his or her body anatomically,physiologically and psychologically.

Determination of clotting time by capillary method:

Apparatus required:

Spirit, cotton, needle, capillary tube, stop watch.

Normal range of bleeding time in adults:

2-8 minutes

Principle

Whenever a great blood vessel ruptures bleeding continues. In a few minutes blood looses its fluidity and sets into a semisolid mass. The mass is referred as clot and the phenomenon as coagulation. Clotting time is defined as the time interval in between onset of bleeding and appearance of semisolid mass i.e. clot.

Procedure

Capillary glass method:

1. The finger tip of the subject was sterilized and a bold prick was made in the finger tip with a sterilized needle for free flow of blood.
2. The blood came out of the puncture Is sucked into a capillary glass tube of 15 cm long.
3. Then the tube was kept undisturbed horizontally for about 1-2 minutes.
4. A small bit of the glass tube was broken off every 30 seconds until a fine thread of clotted blood appears.
5. When the thread appeared the stop watch was stopped. This gave us the clotting time. The period in between appearance of blood in finger and formation of clot was taken as clotting time.[17]

Statistical methods.

SPSS statistics software 22.0 was used for was used to establish a database for statistical description. The One-way ANOVA test in SPSS was used to analyze the differences between the groups. $P < 0.05$ suggested that the difference was statistically significant.

OBSERVATION

Total 62 volunteers were randomly selected for Mizaj identification and determination of clotting time as per inclusion criteria.

The 62 volunteers were distributed according to their Mizaj as shown in table 1. Damwi Mizaj included 23, Safrawi included 19, Balghami included 14 and Saudawi included 6 volunteers. The maximum number of individuals was of Damwi Mizaj. It is because all participants were young individuals between the age group 18-25 years and the Mizaj of young people (sinn-e-namu) is Damwi as stated in Unani classical literature (Ahmad, ynm). The least number of individuals were in Saudawi Mizaj.

Table 2. Shows Mean & standard deviation of Clotting Time in different Mizaj group. Mean of clotting time in balghami Mizaj individual is highest(148.57±25.07) among all Mizaj group followed by saudavi Mizaj (133.22±27.62), damvi Mizaj (125.21± 25.02) and Balghami(148.57±25.07). One-way ANOVA test was applied to compare mean of clotting time of all four Mizaj groups i.e. Damwi, Safrawi, Balghami and Saudawi Mizaj groups. Table 3. Shows One-way ANOVA for Clotting Time

Statistical decision

Since computed F of 8.861 is greater than 2.7694, therefore H0 is rejected. As H0 is rejected, it is concluded that the

four Mizaj groups do not have the same clotting time mean and at least two groups had significant difference in mean clotting time.

P value: Since 8.861> 2.76, p< 0.001 (p=0.0001).

DISCUSSION

In greece, fasd was mostly used in people who are prone to amraze damwia (diseases due to blood impairment) around time of Hippocrates where there occurs plethora in the body preferably in spring or summer is recommended in person of sanguinous temperament.[18] This is in accordance with our results as mean clotting time is lower in our study as compared with balghami and saudavi mizaj which may be because in damvi mizaj clotting abnormalities are more common.

Transfusions are used for various medical conditions to replace lost components of the blood. Early transfusions used whole blood, but modern medical practice commonly uses only components of the blood, such as red blood cells, white blood cells, plasma, clotting factors, and platelets [19]And dam is dominant humor in damvi mizaj.[3] Thus, it has high clotting fators which leads to less clotting time. So, Donating blood is good for health of damvi mizaj individuals to removes waste and morbid matter from the body, like extra iron load or clotting factors also.

Person with damvi mizaj are more muscular with prominent pulse and In safravi mizaj person having medium strature, medium built, rapid and powerful pulse with good digestion which is directly responsible for high BMR[4] while balghami mizaj have flaccid and obese body built with soft and flabby muscles, flat chest, not prominent blood vessels, soft, slow and infrequent pulse and saudavi mizaj have lean and thin built with narrow chest, coarse and rough skin.[5] which shows characterstics of low BMR. Thus, clotting mechanism could be slow in balghami and saudavi mizaj and high in damvi and safravi mizaj which is significant to our study results.

This study has limitations as this data as female participants and male participants has huge difference in size and sample size of this data is small. So, this data can't be generalized over the whole population. Further study needs to be conducted with a large sample size to get a better understanding of the correlation of Clotting time with mizaj.

CONCLUSION

Based on the results it is found that clotting time is lowest in people having Damvi Mizaj and safravi Mizaj and highest in *balghami and saudavu mizaj* which is in concordance with the experimental hypothesis of this research work. From this study it is clear that a possible correlation between clotting time and Mizaj certainly do exist.

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Conflict of Interest: The authors declare that there is no conflict of interest.

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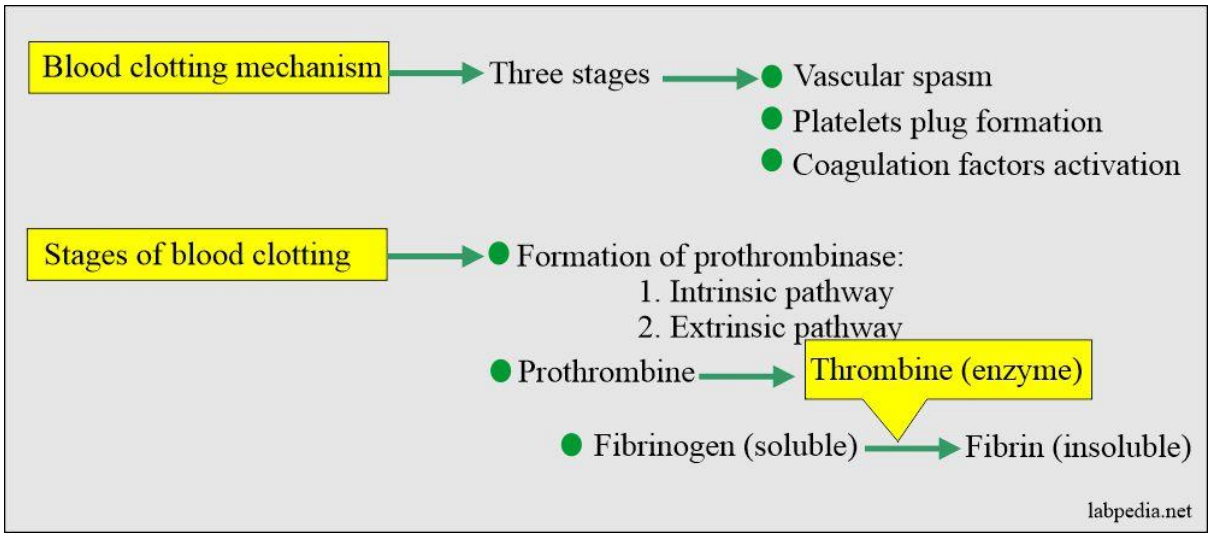

Fig 1- Blood clotting mechanism[7]

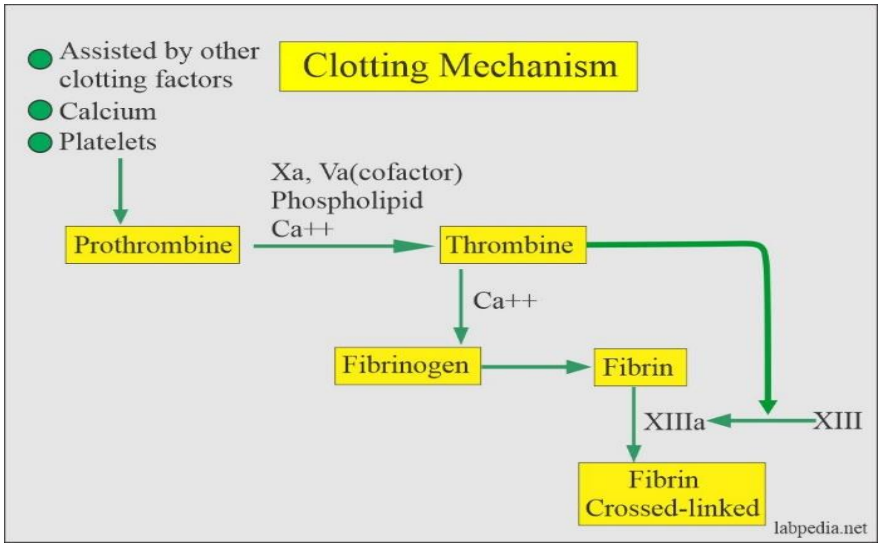

Fig 2- Blood clotting mechanism[7]

Table 1. Total number of individuals in different Mizaj group

Mizaj	Number of Individuals
Damvi	23
Balghami	14
Safravi	19
Saudavi	6
Total	62

Table 2. Mean & standard deviation of Clotting Time in different Mizaj group

MIZAJ	Mean Clotting Time ± SD
DAMVI	125.21±25.02
BALGHAMI	148.57±25.07
SAFRAVI	121.57±21.15
SAUDAVI	133.22±27.62

Table 3. One-way ANOVA for Clotting Time

Source of Variation	SS	Df	MS	P-value	F
Between Groups	14276.962	3	4758.987	0.0001	8.861
Within Groups	31150.458	58	537.007		
Total	45427.419	61			