Correlation Ship between Some Hematological Parameters and Smoking for Students

Manar Kareem Alquraishy[1], Alia Hussein Al-Mousawi[1], Ahmed Adnan AL-Khafagi[2]

[1]Assit.Lec. Lect. , Department of Analytical Techniques, University of AlKafeel, Alnajaf Alashraf, Iraq,
[3] Lect. Ph.D analytical Chemistry – Collage of Health and Medical Technique – Al-Furate Al-Awsat Technical University, Iraq

Abstract

This study including collected 172 blood sample from AL-Kafeel University college, these samples including 102 sample to male and 70 sample for female in which students samples were 53 for smoker and 119 non-smoker , to evaluate some of parameters such as ABO , RH , blood pressure and clotting time .

The results showed blood group A^+ was more frequent which represent 33.7 % followed by O^+ blood group which represent 25.6% while B^- was the last ,in other results displayed AB^- and RH^+ was more frequent than RH^- . Systolic and diastolic pressure examined was demonstrated there were mild hypertension in blood pressure between samples of studied, while result gloating time was exhibited range 30 sec to 3 minute .

Keywords: *blood group, duration of smoking, Blood pressure and Clotting time*

Introduction

Blood pressure is a cardiovascular measurement with dynamic characteristics that can be influenced by a number of internal and external factors. Hypertension is classified as either primary or secondary. It is primary when no medical cause can be found to explain the raised blood pressure. This type represents between 90 and 95% of hypertension cases[(1)]. Secondary hypertension represents approximately 10% of all hypertension cases. Identifiable underlying causes of secondary hypertension are kidney disease, renal hyperaldosteronism, and pheochromocytoma. Secondary hypertension has specific therapy; it is potentially curable and often distinguishable from primary one on clinical grounds[(2)]. The term high blood pressure mean each blood pressure above 120/80 mm Hg. High blood pressure was known as the "silent killer" due to the large destruction caused to the blood vessels [(3)] ,whereas hypertension refers only to pressures of 140/90 mmHg and above[(4)].

Corresponding author:
Ahmed Adnan AL-Khafagi
a.a.2761987@gmail.com

A systolic blood pressure of fewer than (90) millimeters of mercury (mm Hg) or diastolic of less than 60 mm Hg was usually considered to be hypotension[(5)].

The blood pressure involves two numbers. The top number indicates the force of shrinkage of the heart's main section, the left ventricle, and the lower number agrees with the resistance to blood flow in the arteries[(6)] .There are convinced risk factors that we have no control over for instance: genetics, age, sex and race according to Casey and Benson, (2006).

The antigens of the ABO blood group system (A, B and H determinants) are complex carbohydrate molecules expressed on red blood cells and on a variety of other cell lines and tissues [(7)].

Smoking is an important cardiovascular disease risk factor, but the mechanisms linking smoking to blood pressure are poorly understood[(8)] .

Materials and Method

Sample collection

This study was involve collection of 172 blood

sample of Al-Kafeel university students, then some of tests was accomplished.

Blood pressure determination:

Check that the patient's arm is not restricted by any tight clothing. Support the arm with a pillow, ensuring that it is level with the person's heart (midst Ernst level). than ,Wrap the BP cuff around the patient's bare arm. The cuff should be positioned 2-3cm above the brachial artery , Ask the patient not to talk during the procedure. Locate the radial pulse. Inflate the BP cuff by pumping the cuff bulb, until the radial pulse can no longer be felt. Note the reading on the dial. This figure is the estimated systolic pressure, Deflate the BP cuff completely and wait for 15-30 seconds. Inflate the cuff again to 20-30mmHg above the predicted systolic BP.

Clotting time Procedure:

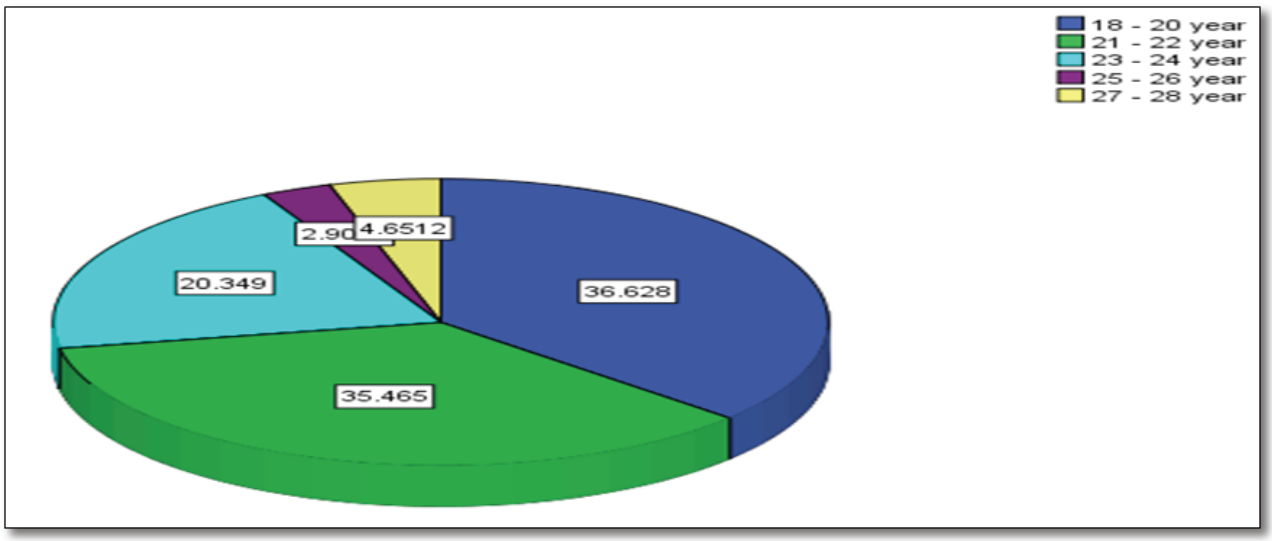
Slim the finger with spirit than allow the spirit to dry, Pierced the finger by lancet ,remove the first drop of blood, Squeeze the finger to obtain a larger drop of blood and fill the capillary tube with blood, The capillary tubes are sealed plastic and immersed in water bath at 37 centigrade After one minute start breaking small pieces of the capillary tube every30 second until a fibrin thread is seen between the two broken ends, By these methods the normal clotting time is 5 to 10 minutes at 37co

Blood group Procedure :

A clean and dry glass slide was divided into two sections by using a glass marking pencil. The sections were labeled as anti-A and anti-B to recognize the antisera, Place one drop from anti-A serum and one drop from anti-B serum in the center of the corresponding section of the slide. Mix antiserum with blood by using a separate corner of a slide for each section over an area about 1 inch in diameter. By tipping the slide forwards and backwards, examine for agglutination after exactly two minutes .

Results and Discussion

The figure(1) show the percentage of the sample by age, where the percentage of age group 18-20 years was a highest percentage which represent 36.6% followed by the age group 21-22 years, where it reached 35.5% followed by the age group. Followed by the age group 21-22 years and amounted to 35.5% followed by the age group 23-24 years, where it reached 20.3%, followed by the age group 27-28 years, reaching 4.7%.



The figure(1) shows the percentage of the sample by age .

This study was proved that the blood type that more frequently was A+ , followed by O+. While the least frequently was B- and AB-. And the Rh + was more frequently than Rh- this result agreed with[9].

Table (1) the distribution of Rh

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A+	58	33.7	33.7	33.7
	B+	38	22.1	22.1	55.8
	AB+	17	9.9	9.9	65.7
	O+	44	25.6	25.6	91.3
	A-	5	2.9	2.9	94.2
	B-	2	1.2	1.2	95.3
	AB-	2	1.2	1.2	96.5
	O-	6	3.5	3.5	100.0
	Total	172	100.0	100.0	

Table and figure (2) shows the relationship of blood clotting with age coagulation period 30 sec. was the highest percentage in the age group 18-20 years, where it reached 6.3%. The frequency of 1min was in the age group 25-26, where it reached 20%. And the period of 1.5m, which reached the highest percentage in the age group 21-22 years. And the period of 2m was the highest proportion in the age group 18-20 years. And the period of 2.5m was the highest percentage in the age group 27-28 years. The period of 3m was the highest percentage in the age group 27-28. In other study Blood coagulation capacity rises with age in healthy individuals, seemingly because of increases in the plasma concentration of most procoagulant factors. This phenomenon may play an important role in the advancing age–associated increase of cardiovascular diseases and thrombosis [10].

Table (2) shows the relationship of blood clotting with age

age group			Frequency	Percent	Valid Percent	Cumulative Percent
18 - 20 year	Valid	30 sec	4	6.3	6.3	6.3
		1 min	8	12.7	12.7	19.0
		1.5 min	10	15.9	15.9	34.9
		2 min	30	47.6	47.6	82.5
		2.5 min	4	6.3	6.3	88.9
		3 min	7	11.1	11.1	100.0
		Total	63	100.0	100.0	
21 - 22 year	Valid	30 sec	3	4.9	4.9	4.9
		1 min	11	18.0	18.0	23.0
		1.5 min	11	18.0	18.0	41.0
		2 min	23	37.7	37.7	78.7
		2.5 min	6	9.8	9.8	88.5
		3 min	7	11.5	11.5	100.0
		Total	61	100.0	100.0	

***Cont.*. Table (2) shows the relationship of blood clotting with age**

23 - 24 year	Valid	30 sec	1	2.9	2.9	2.9
		1 min	3	8.6	8.6	11.4
		1.5 min	5	14.3	14.3	25.7
		2 min	13	37.1	37.1	62.9
		2.5 min	8	22.9	22.9	85.7
		3 min	5	14.3	14.3	100.0
		Total	35	100.0	100.0	
25 - 26 year	Valid	1 min	1	20.0	20.0	20.0
		2 min	2	40.0	40.0	60.0
		2.5 min	1	20.0	20.0	80.0
		3 min	1	20.0	20.0	100.0
		Total	5	100.0	100.0	
27 - 28 year	Valid	2 min	3	37.5	37.5	37.5
		2.5 min	3	37.5	37.5	75.0
		3 min	2	25.0	25.0	100.0
		Total	8	100.0	100.0	

Table and figure(3)shows the relationship of coagulation to sex ,where the period of coagulation 30.sce was higher in females, where it reached 5.7%. At the same time, the percentage of females was high at 15.7%. to 1.5min, it was 17.1% In the period of 2 min, the percentage of females was highest, reaching 50.0% At 2.5%, the percentage of male was higher at 16.7% and at 3 min the percentage of male was higher at 18.6.

Table(3) shows the relationship between coagulation and sex

Gender			Frequency	Percent	Valid Percent	Cumulative Percent
Male	Valid	30 sec	4	3.9	3.9	3.9
		1 min	12	11.8	11.8	15.7
		1.5 min	14	13.7	13.7	29.4
		2 min	36	35.3	35.3	64.7
		2.5 min	17	16.7	16.7	81.4
		3 min	19	18.6	18.6	100.0
		Total	102	100.0	100.0	
Female	Valid	30 sec	4	5.7	5.7	5.7
		1 min	11	15.7	15.7	21.4
		1.5 min	12	17.1	17.1	38.6
		2 min	35	50.0	50.0	88.6
		2.5 min	5	7.1	7.1	95.7
		3 min	3	4.3	4.3	100.0
		Total	70	100.0	100.0	

Table and figure (4) relationship between the coagulation and smoking where the duration of coagulation 30sce, where it reached the highest proportion of non-smokers, where it reached 5.0%. The highest rate was 1min in smokers (17.0%). The ratio of 1.5min was the highest rate for non-smokers, at 16.8%. The ratio of 2min was the highest percentage of non-smokers, reaching 44.5%.The rate of 2.5min was the highest in smokers, reaching 17.0%. and during the period of 3 min where it reached the highest proportion of smokers, reaching 17.0

The effect of smoking strength on the degree of damage of coagulation cascade motionless remains uncertain, while effects of cigarette smoking on the normal hemostasis thru influencing the coagulation pathways[11].

Table (4) relationship between the coagulation and smoking

smoking status			Frequency	Percent	Valid Percent	Cumulative Percent
Smoker	Valid	30 sec	2	3.8	3.8	3.8
		1 min	9	17.0	17.0	20.8
		1.5 min	6	11.3	11.3	32.1
		2 min	18	34.0	34.0	66.0
		2.5 min	9	17.0	17.0	83.0
		3 min	9	17.0	17.0	100.0
		Total	53	100.0	100.0	
non smoker	Valid	30 sec	6	5.0	5.0	5.0
		1 min	14	11.8	11.8	16.8
		1.5 min	20	16.8	16.8	33.6
		2 min	53	44.5	44.5	78.2
		2.5 min	13	10.9	10.9	89.1
		3 min	13	10.9	10.9	100.0
		Total	119	100.0	100.0	

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

References

1. Carretero O A, Oparil S. Essential hypertension. Part I: definition and etiology. Circulation, 2000; 101(3):329–335.
2. Mayo M. Foundation for Medical Education and Research on Secondary Hypertension, McGraw-Hill, London, UK, 2008.
3. Tortora, GJ ,Derrickson B. Principles of Anatomy and Physiology.11th Edition. United States of America. John Wiley &Sons,Inc. 2006.
4. Casey A , Benson, H. The Harvard Medical School Guide. Lowering your blood pressure. United States of America. The McGraw Hill Companies. 2006.
5. Hylands M, Moller MH, Asfar P, Toma A, Frenette, AJ, Beaudoin N, Belley-Côté É, D'Aragon F, Laake JH, Siemieniuk RA, Charbonney E, Lauzier F, Kwong J, Rochwerg B, Vandvik PO, Guyatt G, Lamontagne F. "A systematic review of vasopressor blood pressure targets in critically ill adults with hypotension". Canadian journal of anaesthesia . 2017; 64 (7): 703–715.
6. Sinatra ST, Roberts JC ,Zucker M. Reverse Heart Disease Now. Stop Deadly Cardiovascular Plaque before it's too late. The newest cardiology breakthrough to halt arterial disease and high blood pressure, prevent heart attack, and reverse heart failure. New Jersey. John Wiley & Sons Inc. 2007.
7. Franchini, M, Bonfanti C. Evolutionary aspects of ABO blood group in humans. Clinica chimica acta. 2015; 444, 66-71.
8. Li G, Wang H, Wang K, Wang W, Dong F, Qian Y, Pan L. The association between smoking and blood pressure in men: a cross-sectional study. BMC Public Health. 2017;17(1): 797.
9. Al-Bazzy WJ, Al-Mosawi HK , Al-Saffi AH . Correlation ship between blood pressure and coagulation time with blood group. Karbalaa Jor. 2005(1).
10. Wilkerson WR, Sane DC. Aging and thrombosis. In Seminars in thrombosis and hemostasis. 2002 ; 28(06) :555-568.
11. Sandhya M, Satyanarayana U, Mohanty S, Basalingappa DR,. Impact of chronic cigarette smoking on platelet aggregation and coagulation profile in apparently healthy male smokers. International journal of clinical and experimental physiology, 2015;2(2): 128-133.