



THE PERCENTAGE OF (ABO) BLOOD GROUPS IN IRAQI PARTICIPANTS WITH DIFFERENT PERIODONTAL DISEASES

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ABSTRACT

Many studies show the correlation between the ABO blood groups and different systemic diseases. The correlation between the ABO blood group and periodontal diseases were improved in other studies. Here is a study aimed to measure the percentage of ABO blood groups in Iraqi participants with different form of periodontal diseases. 150 Iraqi participants were enrolled in this study they were systemic healthy and divided into three groups, GI consist of 50 participants with healthy periodontium considered as control group, GII consist of 50 participants with plaque induced gingivitis, GIII consist of participants with chronic periodontitis. Plaque Index (PLI) and Gingival Index (GI) of each participant were measured. Blood samples were taken to identify the (ABO) blood groups. This study describes blood group percentage for each group, For GI the percentage of blood group was (28%, 32%, 24%, and 16%) for A, B, O, and AB respectively. For GII the percentage was (28% of type A blood group, 20 % of B blood group, 40% for O, 12% for AB blood group. For GIII the percentage of blood group was (12%, 20%, 60%, 8%) for A, B, O and AB respectively. Participants with the blood group O are more aprons to periodontal diseases, while those with AB blood group are less apron to periodontal diseases

KEY WORDS: ABO blood groups, gingivitis, periodontitis.

INTRODUCTION

Periodontal diseases are considered as multifactorial diseases affecting a large population. The primary etiology for periodontal diseases is the dental plaque. Gingivitis considered as reversible periodontal disease with inflammation limited to gingival epithelium and connective tissue without attachment loss while periodontitis involved irreversible destruction of the periodontal tissue with permanent loss of attachment. Severity of periodontal diseases differ from individual to another with comparable oral hygiene, genetic factor and the immune host response considered as important risk factors interpreting the variety in severity^[1]. Karl Landsteiner in 1900^[2] was first described ABO blood groups based on the absence or presence of certain antigens on the human red blood cell (RBC) membrane. Blood type is classified as group A, B, O, or AB depending on whether the RBC membranes contain antigen A, antigen B, neither antigen, or both antigens, respectively^[3]. ABO blood grouping importance in blood organ transplantation, transfusion, And have influence on other physiological characteristics^[4]. For example, group A has been associated with increased risks of gallstones, colitis, and certain tumor types^[5-7], whereas non-O blood groups have been associated with cardiovascular diseases^[8-10], including atherosclerosis and ischemic heart disease^[9-11]. Weber and Pastern^[12] were the first to study the association of ABO blood group with periodontal disease,. Kaslick *et al*^[13] studied the association of ABO blood group and aggressive periodontitis . They found

significantly less patients with blood group O and more patients with blood group B.

In South India a study done on 1220 subjects concluded that blood group O formed a higher percentage in the periodontitis group. Blood group A formed a significantly higher percentage in the gingivitis group and the blood group AB showed the least percentage of periodontal diseases.⁽¹⁴⁾

MATERIALS & METHODS:

These studies were conducted in the college of dentistry, university of Baghdad. 150 participants were enrolled in the study of an age ranged between (30-45) and they divided according to its periodontal health into three groups; Diagnosis of cases depend on the classification of American Academy of periodontology in 1999⁽¹⁵⁾

1. Group (1) G1; 50 participants with healthy periodontium
- 2.Group (2) G2; 50 participants with plaque induced gingivitis
3. Group (3) G3; 50 participants with chronic periodontitis

Exclusion criteria:

1. Participants with any systemic diseases affecting the periodontal health status
2. Smoker
3. Patients taking antibiotic in the last month or other medication affecting the periodontal health status

Periodontal examination: for each participants we measure the PLI^[16] and GI^[17] each patients should have at least 20 teeth.

Blood examination:

Blood samples were collected using sterile disposable lancet and finger prick method. The blood grouping was done for each participant using slide agglutination method (visual method) after obtaining the consent form from each subject^[1].

RESULTS

Tables (1) describe mean and standard deviation of PLI and GI of the three groups. Highest mean was found in

Group III. Table (2) describe the blood group percentage for each group, For GI the percentage of blood group was (28%, 32%, 24%, and 16%) for A, B, O, and AB respectively. For GII the percentage was (28% of type A blood group, 20 % of B blood group, 40% for O, 12% for AB blood group. For GIII the percentage of blood group was (12%, 20%, 60%, 8%) for A, B, O and AB respectively.

TABLE 1: describe mean and standard deviation of PLI, GI of the three groups

Groups	PLI	GI
	Mean± SD	Mean ±SD
GI	0.98±0.26	0.99±0.16
GII	1.34±0.21	1.33±0.15
GIII	1.30±0.19	1.29±0.14

TABLE 2: demonstrate the blood group percentage for each group in the study

Groups	Blood group percentage			
	A%	B%	AB%	O%
GI	28%	32%	16%	24%
GII	28%	20%	12%	40%
GIII	12%	20%	8%	60%

DISCUSSION

Periodontal diseases are considered to be ecogenetic diseases with multifactorial nature. The main cause of periodontal diseases is the bacterial dental plaque. Also a wide range of background factors such as sex, age, education, economic status, oral hygiene habits, genetic factor and smoking habits have been considered as a risk factors for the occurrence of periodontal diseases^[18-20]. The tissue localization of the histo-blood group antigens has shown that the antigens in the tissues correspond to the erythrocyte blood group, but the tissue expression is dependent on the secretor status of the individual. Secretor status is secretion of blood group antigens ABO (H), which may be a factor influencing the development of systemic oral diseases in the stratified epithelium^[21]. This study showed the percentage of each blood group in participants with healthy periodontium, gingivitis and chronic periodontitis. Both in gingivitis and chronic periodontitis higher percentage of blood group where belong to O blood group. While the B blood group represent the higher percentage in the group with the healthy periodontium. Demir *et al.*^[22] found that different ABO blood groups may show significant differences in the rates of colonization of a number of periodontal pathogens that are the main etiologic agents of periodontal diseases. These results were agree with study done by Pradhan *et al.*^[23] they reported that the blood group A predominated in healthy periodontium and blood groups AB and O showed more in patients with diseased periodontium. While disagree with result of other study There was an increased prevalence of subjects with blood groups O and AB with healthy periodontium, while blood groups B and A showed inclination toward diseased periodontium^[1]. This association can be due to different blood group antigens acting as receptors for the infectious agents associated with periodontal disease. This broad correlation between ABO blood group and periodontal disease points

toward susceptibility of subjects with certain blood groups - to periodontal disease.

It is difficult to elaborate a hypothesis on why subjects with certain type of blood group are found in higher frequency in healthy, gingivitis, and periodontitis groups, and also in many grades of periodontal involvement. However, occurrence of gingivitis and periodontitis is the result of many factors and the probable genetic factor demonstrates a small facet of multifactorial etiology of this disease. Also most of these studies are carried out on a small group of participants.

REFERENCES

- [1]. Gurpur Prakash Pai, Mundoor Manjunath Dayakar, Mulki Shaila, Anitha Dayakar. Correlation between “ABO” blood group phenotypes and periodontal disease: Prevalence in south Kanara district, Karnataka state, India. J Indian Soc Periodontol. 2012 Oct-Dec; 16(4): 519–523.
- [2]. Chaudri, S. Concise Medical physiology. 2nd ed. Calcutta: National central book. 2003.
- [3]. Demir, T., Tezel, A., Orbak, R., Eltas, A., Kara, C., Kavrut, F: The effect of ABO blood types on periodontal status. Eur J Dent.2007;1, 139–143
- [4]. Skripal, I.G.: ABO system of blood groups in people and their resistance to certain infectious diseases (prognosis). Mikrobiol. Z. 1996 58, 102–108.
- [5]. Jesch, U., Endler, P.C., Wulkersdorfer, B., Spranger, H: ABO blood group. Related investigations and their association with defined pathologies. Scientific World Journal 2007;7, 1151–1154
- [6]. Hamper, K., Caselitz, J., Seifert, G., Seitz, R., Poschmann, A: The occurrence of blood group substances (A, B, H, Le-a, Le-b) in salivary glands and salivary gland tumors. An immunohistochemical investigation. J Oral Pathol 1986;15, 334–338.

- [7]. Henderson, J., Seagroatt, V., Goldacre, M: Ovarian cancer and ABO blood groups. *J Epidemiol Community Health*1993; 47, 287–289
- [8]. Skaik. Y.A.: ABO blood groups and myocardial infarction among Palestinians. *Ann Card Anaesth* 2009 ;12, 173–174
- [9]. Biswas, J., Islam, M.A., Rudra, S., Haque, M.A., Bhuiyan, Z.R., Husain, M., Mamun, A.A.: Relationship between blood groups and coronary artery disease. *Mymensingh Med J*2008; 17, S22–S27
- [10]. Nydegger, U.E., Wuillemin, W.A., Julmy, F., Meyer, B.J., Carrel, T.P.: Association of ABO histo-blood group B allele with myocardial infarction. *Eur J Immunogenet* 2003;30, 201–206
- [11]. Mahajan, N.M., Kohad, R.M. Association between ABO blood groups and periodontal diseases. *JISP*. 1998; 1:62–3.
- [12]. Stakishaitis, D.V., Ivashkiavichene, L.I., Narvilene, A.M.: Atherosclerosis of the coronary arteries and the blood group in the population of Lithuania]. *Vrach Delo* 1991;8, 55–57
- [13]. Kaslick, R.S., Chanes, A.I., Tuckman, M.A., Kaufman, B. Investigation of periodontosis with periodontitis: Literature survey and findings based on ABO blood groups. *J Periodontol*. 1971;42:420–7
- [14]. Koregol, A.C., Raghavendra, M., Nainegali, S., Kalburgi, N., Varma, S. ABO blood groups and Rhesus factor: An exploring link to periodontal diseases. *Indian J Dent Res*. 2010; 21:364–8.
- [15]. American Academy of Periodontology (AAP). 1999. Severity of chronic periodontitis. *Annals of Periodontology*. P. 38
- [16]. Silness, J., Løe, H. Correlation between oral hygiene and periodontal condition. *Acta Odontol Scand*, 1964; 22, 121-35.2
- [17]. Løe, H. The Gingival Index, the Plaque Index and the Retention Index Systems. *J Periodontol*; 1967. 38(6): 610-16.
- [18]. Lindhe, J., Karring, T., Lang, N.P. *Clinical periodontology and implant dentistry*, Blackwell Munksgaard. 4. 2003.
- [19]. Newman, M.G., Takei, H.H., Carranza, F.A. *Clinical Periodontology*. 9. W.B.Saunders Co.; Philadelphia, London, New York, St Loise, Sydney, Toronto: 2002.
- [20]. Kinane, D.F. Causation and pathogenesis of periodontal disease. *Periodontol* 2000. 2001;25:8–20.
- [21]. Campi, C., Escovich, L., Valdés, V., Garcva Borrás, S., Racca, L., Racca A, Secretor status and ABH antigens expression in patients with oral lesions. *Med Oral Patol Oral Cir Bucal*. 2007;12:E431–4.
- [22]. Demir, T., Uslu, H., Orbak, R., Altoparlak, U., Ayyildiz, A. Effects of different blood groups on the reproduction of periodontal pocket bacteria. *Int Dent J*. 2009; 59:83–6.
- [23]. Pradhan, A.C., Chawla, T.N., Samuel, K.C., Pradhan, S. The relationship between periodontal disease and blood groups and secretor status. *J Periodontal Res*. 1971 ;6 :294–300.