



Study of the Effect of the Smoking on Blood Proteins in Diyala Province

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Abstract

After the widespread phenomenon of smoking in all societies, cultures and age groups, smoking hookah, a social phenomenon common among different members of society, has recently spread. The purpose of this study was to find out how smoking affects blood proteins. Place of collection of Diyala University sample the level of full blood protein was determined by the serums of 20 smokers and all age groups and compared to the serum of 20-25 from male non-smokers and according to the results of the tests conducted showed a clear rise and "means" in the level of blood protein in people who smoke at a rate (1.500+ 6.180) compared to non-smokers who had a protein level (1.00+4.160) at (0.01) >P level of albumin as measured and recorded. Smokers had (1,400+ 3.50) fewer album levels than non-smokers compared to (3,400 + 0.600) for non-smokers, which may be due to the role of albumin as an extracellular antioxidant. The results also revealed that smokers have a higher level of Globulins (1.408+3.53) than non-smokers (1.345 = 1.700), indicating that the high total protein in smokers is due to the high rate of Globulins , which shows that smoking has a negative effect on blood proteins, causing imbalances in body function and eventually leading to chronic diseases and death if smoking continues for a long time.

Keywords: Smoking, Blood proteins, Globulins



دراسة تأثير التدخين على بروتينات الدم في محافظة ديالى

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الخلاصة

بعد انتشار ظاهرة التدخين على نطاق واسع في جميع المجتمعات والثقافات والفئات العمرية، انتشرت مؤخرا ظاهرة تدخين الاركيلة، وهي ظاهرة اجتماعية شائعة بين مختلف أفراد المجتمع. كان الغرض من هذه الدراسة هو معرفة كيف يؤثر التدخين على بروتينات الدم. مكان جمع العينات جامعة ديالى حيث تم تحديد مستوى بروتين الدم الكامل من خلال أمصال 20 مدخنا ولجميع الفئات العمرية ومقارنة بمصال 20-25 من ذكور غير المدخنين ووفقا لنتائج التحاليل التي أجريت أظهرت ارتفاعا واضحا و"معنونا" في مستوى بروتين الدم لدى الأشخاص الذين يدخنون بمعدل (6.180 +1.500) مقارنة بغير المدخنين الذين كان لديهم مستوى بروتين (4.160+ 1.00) عند P (0.01) المستوى من الألبومين كما تم قياسه وتسجيله. كان لدى المدخنين مستويات ألبومين أقل من غير المدخنين بنسبة 3.50 + 1,400 مقارنة ب(0.600 + 3,400) لغير المدخنين ، والتي قد تكون بسبب دور الألبومين كمضاد للأكسدة خارج الخلية. كما كشفت النتائج أن المدخنين لديهم مستوى أعلى من الغلوبين (3.53+1.408) من غير المدخنين (1.700 = 1.345)، مما يشير إلى أن ارتفاع البروتين الكلي لدى المدخنين يرجع إلى ارتفاع معدل الغلوبين، وهذا يبين إلى أن التدخين له تأثير سلبي على بروتينات الدم، مما يسبب اختلالات في وظائف الجسم ويؤدي في النهاية إلى أمراض مزمنة والوفاة إذا استمر التدخين لفترة طويلة.

الكلمات المفتاحية: التدخين، بروتينات الدم، الغلوبين

Introduction

Blood proteins, also called plasma proteins, are proteins found in blood plasma. They serve many different functions, including the transfer of fats, hormones, vitamins and minerals in the activity and functioning of the immune system. Other blood proteins act as enzymes, complementary ingredients, protein enzyme inhibitors or quinine precursors. Contrary to popular belief, hemoglobin's is not a protein in the blood, because it is transmitted within red blood cells, not in the blood serum [1]. Albumin in the blood accounts for 55% of blood



proteins and is a major contributor to maintaining tumor pressure in plasma and helps as a carrier transport fat and steroid hormones. Globulin makes up 38% of blood proteins, transport ions, hormones and fats that help with immune function. Fibrinogen consists of 7% of blood proteins. Converting fibrinogen into insoluble fibrin is essential for blood clotting. The remaining plasma proteins (1%) are regulatory proteins, such as enzymes, primary enzymes, and hormones. All blood proteins are manufactured in the liver except gamma Globulins [2]. Due to the importance of blood proteins in regulating body functions, the rise or decrease in protein concentrations causes a clear imbalance in body function and one of the factors leading to higher or lower proteins is smoking [3]. Smoking is a practice in which tobacco is most commonly burned and smoke is tasted and inhaled [4, 5, 6]. Where the World Health Organization classified smoking as a chronic disease and is also considered an infectious disease that can destroy every part of the body [7]. Tobacco is a Nicotiana plant from the Solanaceae family, and many studies have shown that smoking gives smokers a sense of comfort and relaxation by reducing appetite and increasing metabolism [8]. The harmful effects of tobacco consumption can be derived from various chemicals in smoke, including polycyclic aromatic hydrocarbons, nickel, arsenic and many other substances [1]. Chronic diseases caused by smoking in early times contribute to disability and fatigue and smoking increases the risk of heart disease, vascular disease and atherosclerosis as well as stroke [9]. Elevated levels of CRP, or reactive oxygen species protein, are associated with an increased risk of lung cancer and colorectal and breast cancer in heavy smokers. A number of studies have shown elevated levels of white blood cells as well as CRP and another acute phase protein, fibrinogen, in smokers. Pre-diagnostic blood samples from ever-smokers who subsequently developed lung cancer were found to be high in several cancer biomarkers, suggesting this panel of biomarkers might be highly useful for smoking-induced lung cancer risk assessment [10, 11, 12]. The aim of the study was assessed the harmful effects of smoking on blood proteins for healthy People

Materials & Methods

Blood samples were collected at the University of Diyala, where they were taken from males with an average age of 20-25 people who smoke and do not smoke by following the usual blood withdrawal method where the person's hand is pulled by the tourniquet and the hand is held to



complete the process of clearly the veins. Perform the withdrawal process using a syringe by pricking it in one of the veins and withdrawing the required amount. Then, the sample was transferred to the special tube with marking on the tube for each sample that contains the information of the smoker or non-smoker, as well as the name of the person, and then the samples required to conduct an albumin examination on them inside the centrifuge. This is to separate the components of the blood (serum) from the blood cells and plasma. After the blood components have been separated, the serum was pull and isolates it in a special tube. Thus, for all the samples required, the serum was placed inside Fuji film device to analyze the sample and read the ratio of albumin protein in this sample.

Statistical analysis

The SPSS application, version 26 for Windows, was used to conduct all statistical analyses. The mean and standard deviation of variables were shown using descriptive analysis. Student T-Test was used to assess the significance of the difference in mean values [4].

Results & Discussion

The current study sample included two groups, the first group included a group of 20 male smokers, while the second group included a non-smoker group of 20 non-smokers of males and the two groups were compared in terms of full protein content with blood as well as albumin and Globulins e.

The results shown in table (2) showed a clear and "moral" rise in the blood protein level in people who smoked at a rate of (6.180+1.500) compared to non-smokers who recorded a protein level decrease of (6.180+1.500) compared to non-smokers who recorded a protein level decrease by a rate of (1.00+4.160) at (0.01) >P. The results showed a clear increase in the level of total blood protein by (180.1.500+6) for smokers compared to non-smokers and by (4.160+1000), while there was a decrease in the level of albumin by (3.50+1.400) compared to non-smokers (3.400+600). The decrease in albumin in smokers may be due to the role of albumin as an extracellular antioxidant, where albumin accounts for up to I of the total condition of antioxidants in plasma generating free radicals through immediate attacks of the albumin molecule itself, so the radical interaction continues on the surface of the albumin and causes



damage" to the albumin molecule. The results also showed a high level of Globulins in smokers by (1.408+3.53) compared to non-smokers by (1.700+1.345) and the rise in total protein may be due to the high percentage of Globulins in smokers. Therefore, it's expected that the functions of albumin in smokers will be lower than normal when compared with non-smokers, the necessary measurement and identification of proteins in serum samples is the first step towards the discovery of human diseases, so the change in the concentration of total protein in the blood is an unspecified indicator of the identification of the disease. Low albumin concentration in the smoking group is offset by a rise in globulin concentration that may be the main reason for increased total protein concentration. These results were consistent with the results of the researcher [13]. Where the researcher showed the high level of blood protein in 27 smokers of the age of (20-60) years and the current research compared them with 25 non-smokers of the same ages, and the researcher showed the dangerous effect of continuing smoking for a long time.

Table 2: Showing levels (total protein + albumin + Globulin) in the blood of the group of smokers compared to the non-smoker group.

| Study Group | Smokers Group (n= 20) | Non- Smokers Group (n=20) | p- Value |
|----------------------------|--------------------------|---------------------------------|----------|
| Total Serum Protein(gm/dl) | 6.180+1.500 | 4.160+1.00 | <0.001 |
| Serum Albumin (gm/dl) | 3.50+1.400 | 3.400+0.600 | <0.05 |
| Serum Globulin (gm/dl) | 3.53+1.408 | 1.700+1.345 | <0.001 |

The results show the negative effect of smoking on the levels of blood proteins in the serums of smokers compared to non-smokers.

These results were also in agreement with the results of the researcher [14, 15], which showed an increase in globulin level in smokers due to an increase in the synthesis of inflammatory cytokines, interleukins and C-reactive protein. Also indicated that the imbalance between low albumin and high Globulins in smokers compared to non-smokers causes serious diseases in the future "by increasing the smoking period for its effect on the concentration of total protein in the blood and thus its effect on body functions" [16, 17,18].



Conclusions

Smoking has a negative effect on blood proteins, causing imbalances in body function and eventually leading to chronic diseases and death if smoking continues for a long time. Smokers had (1,400+ 3.50) fewer albumin levels compared to non-smokers. The results also revealed that smokers have a higher level of Globulins. Because blood proteins are so important in regulating body functions, an increase or decrease in protein concentrations causes a clear imbalance in body function, and smoking is one of the factors that causes higher or lower protein levels. Both serum amylase activity and protein levels are affected by hookah smoking. This research aims to prove the hypothesis that hookah has a negative impact on human health so far. In the meantime, other biochemical parameters should be determined in the future. Finally, I advise every smoker to stop smoking because he harms himself and the people around him. Some smokers can achieve long term smoking cessation through willpower alone [18].

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