International Journal of Research in Health and Allied Sciences
Journal home page: www.ijrhas.com
Official Publication of "Society for Scientific Research and Studies" [Regd.]
ISSN: 2455-7803

ORIGINAL RESEARCH

Alteration of immunoglobulin level in smokers- A clinical study

Akriti Mahajan

MDS, Oral Medicine & Radiology, Private consultant, Jammu Kashmir

ABSTRACT:
Background: The present study was conducted to assess immunoglobulins levels in smokers. **Materials & Methods:** The present study was conducted on 65 subjects of both gender. Equal number of controls was also included. For serum immunoglobulins estimation about 2.5 ml blood was collected from antecubital vein in all subjects. Separated serum was collected in separate container and serum level of IgG and IgA was estimated by automated Nephelometry method. **Results:** Group I (smokers) comprised of 65 patients and group II (control) comprised 65 healthy subjects. The mean level of IgG was 14.32 in group I and 7.15 in group II. IgA was 3.63 in group I and 1.41 in group II. The difference was significant (P< 0.05). **Conclusion:** Authors found raised level of IgG and IgA level in smokers as compared to control healthy subjects.
Key words: Immunoglobulins, Smokers, IgA

Received: 29 July, 2019 Revised: 5 August, 2019 Accepted: 16 August, 2019

Corresponding author: Dr. Akriti Mahajan, MDS, Oral Medicine & Radiology, Private consultant, Jammu Kashmir.

This article may be cited as: Mahajan A. Alteration of immunoglobulin levels in smokers- A clinical study. Int J Res Health Allied Sci 2019; 5(4):73-75.

INTRODUCTION

Smoking is injurious to oral as well as for general health. The most common side effect of tobacco on oral cavity is the formation of pre cancerous lesions and conditions. Pre cancerous lesions are defined as morphologically altered tissue in which cancer is most likely to develop than its apparently normal counterpart. Pre cancerous conditions are defined as generalized state of body associated with significantly increased risk of cancer.[2] Leukoplakia, erythroplakia and palatal changes associated with reverse smoking are examples of pre cancerous lesions and systematic lupus erythematosus, oral syphilis, oral lichen planus, are examples of Pre cancerous conditions.[3]

Immunoglobulins are proteins of the animal origin endowed with known antibody activity and for certain other proteins related to them by chemical structure. Immunoglobulins are synthesized by plasma cells and to some extent by lymphocytes also. All antibodies are immunoglobulins, but all immunoglobulins may not be antibodies. Immunoglobulins constitute 20–25% of the total serum proteins. Among five classes, IgA and IgG show significant increase in count.[5] The immunoglobulins responsible for the protection are IgA and IgG. Secretory IgA (SIgA) constitutes the predominant immunoglobulin isotype in secretions, including saliva. It is considered to be the first line of defense of the host against pathogens, which colonize or invade surfaces bathed by external secretions. The present study was conducted to assess immunoglobulins levels in smokers.

MATERIALS & METHODS

The present study was conducted in the department of Oral Medicine & Radiology. It comprised of 65 subjects of both gender. Equal number of controls was also included. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained from institutional ethical committee.

General information such as name, age, gender, tobacco habit etc. was recorded. Subjects were divided into 2 groups. Group I comprised of 65 smokers of both genders and group II comprised of sex matched control.

For serum immunoglobulins estimation about 2.5 ml blood was collected from antecubital vein in all subjects. Separated serum was collected in separate container and serum level of IgG and IgA was estimated by automated Nephelometry method. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I shows that group I (smokers) comprised of 65

patients and group II (control) comprised 65 healthy subjects.

Table II, Graph I shows that the mean level of IgG was 14.32 in group I and 7.15 in group II. IgA was 3.63 in group I and 1.41 in group II. The difference was significant (P< 0.05).

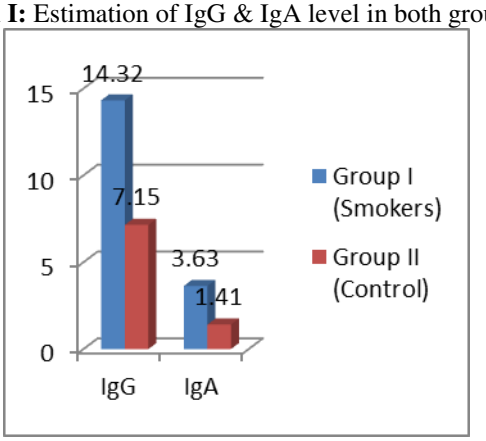
Table I: Distribution of subjects

Total- 130	
Group I (Smokers)	**Group II (Healthy)**
65	65

Table II: Estimation of IgG & IgA level in both groups

Ig	Group I (Smokers)	Group II (Control)	P value
IgG	14.32	7.15	0.01
IgA	3.63	1.41	0.02

Graph I: Estimation of IgG & IgA level in both groups



DISCUSSION

Cigarette smoking alters the immunoglobulin profile of saliva. Smoking impairs T-cell immunoregulation of B-cell differentiation and maturation thus leading to a decrease in SIgA levels. Smokers have increased polymorphonuclear neutrophil counts, decreased natural killer cell activity, an increased total T-cell numbers with a decrease in the T helper/suppressor cell ratio in heavy smokers leading to decreased immunoglobulin A levels. Low immunoglobulin levels are important predisposing factor in the development of infections associated with smoking, such as chronic bronchitis. The habit of tobacco smoking is largely associated with appearance of white lesions in oral cavity. The immunoglobulins are greatly affected in patients with history of smoking or with leukoplakia. It affects a wide range of immunological functions in human and experimental animals including both humoral and cell mediated immune responses.[6] The present study was conducted to assess immunoglobulins levels in smokers.

In this study, group I (smokers) comprised of 65 patients and group II (control) comprised 65 healthy subjects. In a previous study, immunoglobulins, C3, C4 and IL-8 concentrations in serum smokers and non-smokers were analyzed. Authors suggested that nicotine activates dendritic cell and augments their capacity to stimulate T cell proliferation and cytokine secretion. We observed that the mean level of IgG was 14.32 in group I and 7.15 in group II. IgA was 3.63 in group I and 1.41 in group II. Bennet et al[8] found that the mean salivary immunoglobulin A level in control group was 0.20 Grams/litre and in smokers the mean salivary immunoglobulin A level was 0.13 Grams/ litre. In patients with recurrent aphthous ulcers mean salivary immunoglobulin A level was 0.31 Grams / litre. The mean salivary immunoglobulin A levels showed a decreasing trend from controls to smokers. These results were highly significant for values between control groups to smokers.

Norhagen et al[9] stated that antibodies to antigens in humidifier water were detected by double immune-diffision in 30 of 63 (47-6%) persons who were exposed to aerosols from a water humidification unit in a cigar plant, whereas no antibodies could be detected in 49 unexposed blood donors. The presence of antibodies could not be related to fever or pulmonary symptoms (cough, expectoration, dyspnoe). Antibodies were found in 14 of 15 nonsmokers and in only 13 (31 7%) of 41 smokers (P < 0 001), and the titres were highest in nonsmokers. Serum IgG and IgA levels were higher in nonsmokers than in smokers, and the variances within the groups were significantly different. The mean serum IgM values were not significantly different in the two groups. The higher mean IgG level in smokers as compared to controls also reflects a degree of secondary infection since IgG is the principal antibody in secondary antibody response. It may be suggested that continuous exposure to components of cigarette has stimulatory effects on immunoglobulin production, thus the increased levels of immunoglobulins.[10]

CONCLUSION

Authors found raised level of IgG and IgA level in smokers as compared to control healthy subjects.

REFERENCES

1. Frial G. Studying of immunoglobulins, C3, C4 and IL-8 concentrations in serum smokers and non-smokers. J Kerbala Univ 2008; 6:79-86.
2. Patidar KA, Parwani RN, Wanjari SP. Correlation of salivary and serum IgG, IgA levels with total protein in oral submucous fibrosis. J Oral Sci 2011; 53:97-102.
3. Bains SK, Bhatia A, Kaur M. Prevalence of tobacco usage & its deleterious effects among study population. Int J Res Health Allied Scie. 2017; 3 (5): 67-69.
4. Marcotte H, Lavoie MC. Oral Microbial Ecology and the role of salivary immunoglobulin A. Microbiol Mol Biol Rev. 1998;62:71–109.
5. Al-Ghamdi HS1, Anil S. Serum antibody levels in smoker and non-smoker saudi subjects with chronic periodontitis. J Periodontol. 2007 Jun;78(6):1043-50.
6. McMillan SA, Douglas JP, Archbold GP, McCrum EE, Evans AE. Effect of low to moderate levels of smoking and

alcohol consumption on serum immunoglobulin concentrations. J Clin Pathol. 1997;50:819–22.
7. Prajapati KJ, Chawda JG. Estimation of major immunoglobulins in smokers and gutkha chewers. J Oral Maxillofac Pathol 2016; 20:219-23.
8. Bennet RK, Reade CP. Salivary immunoglobulin A levels in normal subjects, tobacco smokers, and patients with smoking. Oral Surg. 1982;53:461–3.
9. Norhagen Engstrom G, Engstrom PE. Effects of tobacco smoking on salivary immu noglobulin levels in immunodeficiency. Eur J Oral Sci. 1998;106:986–91.
10. Ananthanarayan R, Panikar C.K. Jayaram. Textbook of Microbiology. 7th ed. India: Orient Longman Pvt Limited; 2005.