

Original Article

Assessment of Serum Lipid Profile in Patients with Oral Precancerous Disorders: A Comparative Study

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ABSTRACT:

Background: Precancerous disorders of oral mucosa are the pathologic entities that have malignant transformation risk at different ratios. Results from the past literature in assessment of malignant disorders have shown that various substances alter quantitatively in the serum during tumor development and are referred to as tumor markers. Hence; we assess the alterations occurring in serum lipid profile of the subjects with premalignant disorders of the oral cavity. **Materials & methods:** The present study included assessment of serum lipid profile of the patients with oral precancerous disorders. A total of 50 patients were included in the present study. Patients with oral submucous fibrosis and oral leukoplakia were categorized as affected by premalignant disorders. Age and gender matched 50 healthy subjects were included in the study group. All the patients were called in the morning and fasting blood samples were obtained under septic conditions. All the blood samples were sent to pathology department for the estimation of serum lipid profile. All the results were recorded in Microsoft excel sheet and were assessed by SPSS software. **Results:** Mean serum lipid profile of the patients of the study group were significantly lower than subjects of the control group. **Conclusion:** Premalignant changes in the oral cavity also produce alterations in the mean serum lipid profile of the patients.

Key words: Lipid, Oral Premalignant, Serum.

Received: 21 March 2018

Revised: 16 May 2018

Accepted: 27 June 2018

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This article may be cited as: Kaur M, Sood P. Assessment of Serum Lipid Profile in Patients with Oral Precancerous Disorders: A Comparative Study. J Adv Med Dent Sci Res 2018;6(9):8-11.

INTRODUCTION

Precancerous disorders of oral mucosa are the pathologic entities that have malignant transformation risk at different ratios. Clinically, these diseases might sometimes mimic each other.¹ Thus, biopsy is the confirmatory test for diagnosis. In early stages, histopathological findings are distinctive, but if malignant transformation occurs, identical histological features with oral carcinoma are seen.² Results from the past literature in assessment of malignant disorders have shown that various substances alter quantitatively in the serum during tumor development and are referred to as tumor markers. So, if the biochemical changes occur even before frank cancer has occurred, we can predict even in oral precancerous lesions and conditions

whether a particular individual is at risk or not. Cholesterol is an amphipathic lipid and it is an essential structural component of all cell membranes and of the outer layer of plasma lipoproteins.³⁻⁵

Free radicals, resulting from excessive consumption of tobacco, alcohol and areca nut, cause lipid peroxidation, which in turn affects various cellular vital activities including growth, differentiation and gene expression.⁶⁻⁸ Hence; we planned the present study to assess the alterations occurring in serum lipid profile of the subjects with premalignant disorders of the oral cavity.

MATERIALS & METHODS

The present study was carried out in the department of oral pathology of the dental institute and it included assessment of serum lipid profile of the patients with oral precancerous disorders. A total of 50 patients were included in the present study. Patients with oral submucous fibrosis and oral leukoplakia were categorized as affected by premalignant disorders. Patients with history of any other systemic illness and any known drug allergy were excluded from the present study. Age and gender matched 50 healthy subjects were included in the study group. Thorough clinical examination of all the subjects was carried out. Detailed history of all the subjects was taken in relation to the type, frequency and duration of the tobacco and areca nut habits. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. Biopsy samples were obtained from all the patients of the study group for confirming the diagnosis. All the patients were called in the morning and fasting blood samples were obtained under septic conditions. All the blood samples were sent to pathology department for the estimation of serum lipid profile. In the laboratory, spectrophotometry was used for assessment of serum triglycerides (TG), Total cholesterol (TC), High density lipoproteins (HDL), Low

density lipoproteins (LDL) and Very low density lipoproteins (VLDL) levels. All the results were recorded in Microsoft excel sheet and were assessed by SPSS software. Chi- square test was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

In the present study, we assessed a total of 100 subjects, among which, 50 were healthy controls and the remaining 50 were affected with premalignant disorders. Mean age of the subjects of the study group and the control group was 45.6 years and 44.5 years respectively. There were 32 males in study group and 30 males in the control group as shown in **Table 1**. Mean TG levels among the subjects of the study group and the control group was 132.7 and 189.2 mg/dL respectively. Mean TC levels among the subjects of the study group and the control group was 178.8 and 208.4 mg/dL respectively. Mean HDL levels among the subjects of the study group and the control group was 52.6 and 72.8 mg/dL respectively. Mean TG levels, TC levels, HDL and VLDL levels of the patients of the study group were significantly lower than subjects of the control group (**P-value < 0.05**) as shown in **Table 2**.

Table 1: Comparison of demographic details of the subjects

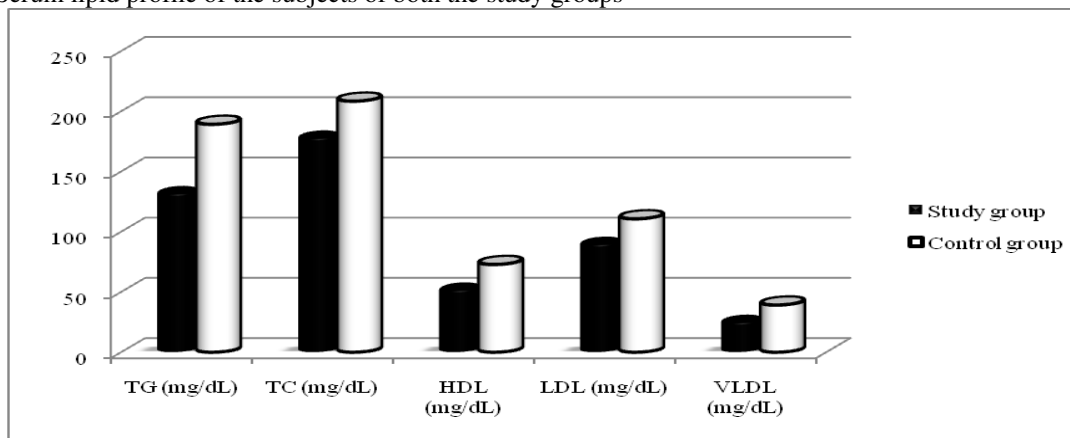
| Parameter | | Study group | Control group |
|------------------|--------|-------------|---------------|
| Total subjects | | 50 | 50 |
| Mean age (years) | | 45.6 | 44.5 |
| Gender | Male | 32 | 30 |
| | Female | 18 | 20 |

Table 2: Comparison of serum lipid profile

| Serum lipid Parameter | Study group | Control group | P- value |
|-----------------------|-------------|---------------|----------|
| TG (mg/dL) | 132.7 | 189.2 | 0.02* |
| TC(mg/dL) | 178.8 | 208.4 | 0.01* |
| HDL(mg/dL) | 52.6 | 72.8 | 0.03* |
| LDL(mg/dL) | 90.6 | 110.7 | 0.02* |
| VLDL(mg/dL) | 25.8 | 39.1 | 0.02* |

*: Significant

Graph 1: Serum lipid profile of the subjects of both the study groups



DISCUSSION

It is a well-known fact that alterations occurring in the molecular and biochemical levels plays significant role in the occurrence of oral cancer. Along with these changes, alterations occurring in the epithelial tissue, premalignant changes are also known to be responsible for occurrence of oral cancer. Oral precancerous lesions can only be diagnosed histologically, although present as a spectrum of epithelial changes, rather than distinct categories. The World Health Organization in 2005 graded precancerous changes into mild, moderate, severe and carcinoma in situ.⁹

¹⁰In the present study, we assessed a total of 100 subjects, among which, 50 were healthy controls and the remaining 50 were affected with premalignant disorders. Mean age of the subjects of the study group and the control group was 45.6 years and 44.5 years respectively. Ganavi BS et al compared the serum cholesterol, triglycerides and lipoprotein levels between patients of leukoplakia, OSCC and age matched healthy control group. The study group comprised of selected 30 individuals which included 10 each of histopathologically confirmed OSCC, leukoplakia and healthy controls. Oral squamous cell carcinoma patients demonstrated significantly lower mean serum cholesterol level than the control group. The mean cholesterol level in leukoplakia patients was lower than that of control group but higher than that of the OSCC group with no statistical significance. Convenience, universal availability, patient compatibility and simplicity being the merits of serum lipid profile make it a feasible adjunctive prognosticator in leukoplakic patients.¹¹

In the present study, mean TG levels among the subjects of the study group and the control group was 132.7 and 189.2 mg/dL respectively. Mean TC levels among the subjects of the study group and the control group was 178.8 and 208.4 mg/dL respectively. Mean HDL levels among the subjects of the study group and the control group was 52.6 and 72.8 mg/dL respectively. Mean TG levels, TC levels, HDL and VLDL levels of the patients of the study group were significantly lower than subjects of the control group. Ajai K et al estimated the serum lipids in patients with Oral Submucous Fibrosis in India. The study was conducted in 45 clinically and histopathologically diagnosed cases of OSMF and 45 age and sex matched controls. The serum lipid levels were significantly lower in the patients with OSMF than in the controls. When the values were compared between different disease stages, the maximum reduction of lipids was evident for stage 3 OSMF. From the present results, it is evident that the level of serum lipids decreases with progression of the disease. From these findings, it appeared that the decrease in the lipid levels may be considered as a useful marker in the early diagnosis of oral premalignant condition like OSMF.¹² Lohe VK et al correlated the decreased cholesterol levels in Oral cancer, Oral precancer and in tobacco abuse. Total Cholesterol (TC), High Density Lipoproteins (HDL), Very Low

Density Lipoproteins (VLDL), Low Density Lipoproteins (LDL) and Triglyceride (Tri) were estimated in 210 subjects. Out of these 210 subjects, 70 subjects were histopathologically confirmed Oral Cancer, 70 subjects were histopathologically confirmed Oral precancer (OPC) and 70, age and sex matched, healthy subjects who are not having Oral Cancer, Oral precancer and who had no history of any major illness in the past. These groups were subdivided into: Subjects with No Habit of Tobacco (NHT) and Subjects With Habit of Tobacco (WHT). There was significant decrease in TC, HDL, VLDL, and triglyceride in Oral Cancer group; and significant decrease in TC, and HDL in Oral precancer group as compared to Control. Mean serum lipid profile levels were not significantly different in subjects between NHT and WHT. There is an inverse relationship between serum lipid profile and Oral Cancer and Oral precancer.¹³

CONCLUSION

From the above results, the authors concluded that premalignant changes in the oral cavity also produced alterations in the mean serum lipid profile of the patients. However; further research is recommended.

REFERENCES

1. Thomas G, Hashibe M, Jacob BJ, Ramadas K, Mathew B, Sankaranarayanan R, Zhang ZF. Risk factors for multiple oral premalignant lesions. *Int J Cancer*. 2003;107:285–291.
2. Phookan J, Saikia KP. A clinicopathological study of the premalignant conditions of oral cavity. *Indian J Otolaryngol Head Neck Surg*. 1998;50:246–249.
3. Ho PS, Chen PL, Warnakulasuriya S, et al. Malignant transformation of oral potentially malignant disorders in males: a retrospective cohort study. *BMC Cancer*. 2009;9:260–267.
4. VK Lohe, SS Degwekar, Bhowate RR, RP Kadu, SB Dangore. Evaluation of correlation of serum lipid profile in patients with oral cancer and precancer and its association with tobacco abuse. *J Oral Pathol Med*. 2010;39:141–148.
5. Guillaud M, Zhang L, Poh C, et al. Potential use of quantitative tissue phenotype to predict malignant risk for oral premalignant lesions. *Cancer Res*. 2008;68 9:3099–3107.
6. Vlková B, Stanko P, Minárik G, Tóthová L, Szemes T, Baňasová L, Novotňáková D, Hodosy J, Celec P. Salivary markers of oxidative stress in patients with oral premalignant lesions. *Arch Oral Biol*. 2012;57:1651–1656
7. JG Chawda, SS Jain, HR Patel, N Chaduvula, K Patel. The relationship between serum lipid levels and the risk of oral cancer. *Indian J Med Paediatr Onc*. 2011;32(1):34–37.
8. Barnes L, Eveson JW, Reichart P, et al. World health organization. Classification of tumours. Pathology and genetics of head and neck tumours. Lyon; IARC Press; 2005. pp. 283–328.
9. Greenberg MS, Glick M, Ship JA, editors. 11th ed. Hamilton: BC Decker Inc; 2008. Oral Cancer, Burkett's Oral Medicine; p. 170.
10. Lindenblatt Rde C, Martinez GL, Silva LE, Faria PS, Camisasca DR, Lourenço Sde Q. Oral squamous cell

- carcinoma grading systems — Analysis of the best survival predictor. *J Oral Pathol Med.* 2012;41:34–9.
11. Ganavi BS1, Patil S2, Rao RS3. Evaluation of serum lipids and lipoproteins as prognosticators in leukoplakia. *J Contemp Dent Pract.* 2014 May 1;15(3):294-9.
 12. Ajai K1, Panat SR2, Aggarwal A3, Agarwal N3, Upadhyay N3, Joshi A1. Estimation of serum lipids in patients with Oral Submucous Fibrosis in India. *J ClinExp Dent.* 2014 Jul 1;6(3):e237-42. doi: 10.4317/jced.51327. eCollection 2014 Jul.
 13. Lohe VK1, Degwekar SS, Bhowate RR, Kadu RP, Dangore SB. Evaluation of correlation of serum lipid profile in patients with oral cancer and precancer and its association with tobacco abuse. *J Oral Pathol Med.* 2010 Feb;39(2):141-8. doi: 10.1111/j.1600-0714.2009.00828.x. Epub 2009 Dec 7.

Source of support: Nil

Conflict of interest: None declared

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