

Original Research

Comparison of uric acid levels in oral leukoplakia and oral cancer patients

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ABSTRACT:

Background: Oral squamous cell carcinoma (OSCC) comprises 92–95% of all oral cancers. Leukoplakia reveals hyperkeratosis variably associated with the underlying epithelial hyperplasia. Hence; the present study was conducted for comparing the serum uric acid levels among oral leukoplakia patients and oral cancer patients. **Materials & Methods:** A total of 20 OSCC patients and 20 oral leukoplakia patients were enrolled. Thorough oral examination was carried out. Description of the lesions was separately recorded. All the patients were recalled in the morning and blood samples were obtained. All the samples were sent to laboratory for assessment of serum uric acid levels. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Mean uric levels among the patients of the oral leukoplakia group and OSCC group were 4.96 mg/dL and 3.84 mg/dL respectively. Significant results were obtained while comparing the results statistically. **Conclusion:** Serum uric acid levels are significantly altered during the invasive process of oral premalignant disorders.

Key words: Uric acid, Oral Leukoplakia, Oral Cancer

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INTRODUCTION

Cancer is the second most common cause of death after heart diseases in developed countries, and the third leading cause of mortality following heart and diarrheal diseases in developing countries. Oral squamous cell carcinoma (OSCC) comprises 92–95% of all oral cancers. It is noteworthy that many oral squamous cell carcinomas develop from potentially malignant disorders (PMDs). Correct diagnosis and timely treatment of PMDs may help prevent malignant transformation in oral lesions. Lack of awareness about signs and symptoms of oral PMDs among general population and even physicians are believed to be responsible for the diagnostic delay of these entities. Oral Leukoplakia is one oral PMD.¹⁻³ Leukoplakia reveals hyperkeratosis variably associated with the underlying epithelial hyperplasia. The chance that oral leukoplakia will convert into oral carcinoma is reported to be approximately 20%.

Toxicity by oxygen radicals has been suggested as an important cause of cancer. Oxygen radicals and other oxidants are toxic mainly because of their ability to initiate the chain reaction of lipid peroxidation. Epidemiological studies have revealed that low levels of essential antioxidants in circulation are associated with an increased risk of cancer. The possible protective action of many of the natural antioxidants that are found in biological fluids and tissues has been the subject of intense investigation. These protective mechanisms are now recognized as anti-carcinogenic and even having the ability to increase lifespan. Recent findings suggest that examination of specific cancers in relation to serum uric acid levels may be worthwhile.⁴⁻⁷ Hence; the present study was conducted for comparing the serum uric acid levels among oral leukoplakia patients and oral cancer patients.

MATERIALS & METHODS

The present study was conducted for comparing the serum uric acid levels among oral leukoplakia patients and oral cancer patients. A total of 20 OSCC patients and 20 oral leukoplakia patients were enrolled. Thorough oral examination was carried out. Description of the lesions was separately recorded. All the patients were recalled in the morning and blood samples were obtained. All the samples were sent to laboratory for assessment of serum uric acid levels. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Mann-Whitney U test was used for evaluation of level of significance. P- value of less than 0.05 was taken as significant.

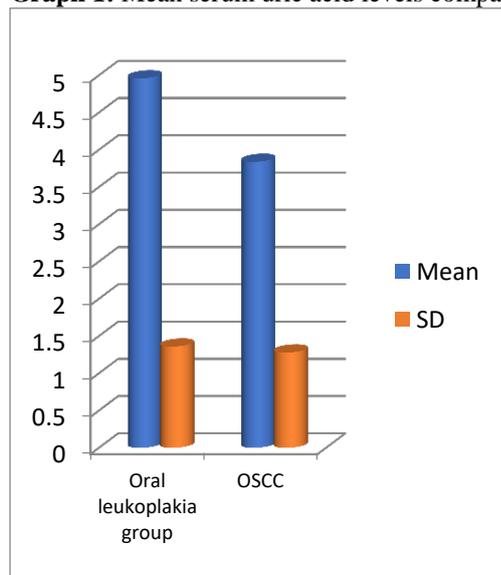
RESULTS

A total of 20 OSCC patients and 20 oral leukoplakia patients were enrolled. Patients of the OSCC group and oral leukoplakia group had a mean age of 47.3 years and 43.9 years respectively. There were 15 males and 5 females in the OSCC group while there were 12 males and 8 females in the oral leukoplakia group respectively. Mean uric levels among the patients of the oral leukoplakia group and OSCC group were 4.96 mg/dL and 3.84 mg/dL respectively. Significant results were obtained while comparing the results statistically.

Table 1: Mean serum uric acid levels comparison

Uric acid levels (mg/dL)	Oral leukoplakia group	OSCC	p- value
Mean	4.96	3.84	0.00
SD	1.36	1.28	(Significant)

Graph 1: Mean serum uric acid levels comparison



DISCUSSION

The clinical concept of malignant transformation in oral mucosa has been proposed for more than 100

years. WHO also classified PMDs into two subgroups as follows: a) precancerous lesion, a benign lesion with morphologically altered tissue, which has a greater than normal risk of transforming into malignancy; b) precancerous condition, a disease or patients' habit that does not necessarily alter the clinical appearance of local tissues but is associated with a greater than normal risk of precancerous lesion or cancer development in that tissue. Uric acid has been demonstrated to be an important antioxidant and a free radical scavenger in humans. It is one of the major radical-trapping antioxidants in plasma and is reported to protect the erythrocyte membrane against lipid peroxidation. Uric acid interacts with peroxynitrite to form a stable nitric oxide donor, thus promoting vasodilatation and reducing the potential for peroxynitrite-induced oxidative damage. Thus, uric acid could be expected to protect against oxidative stresses.⁷⁻¹⁰ Hence; the present study was conducted for comparing the serum uric acid levels among oral leukoplakia patients and oral cancer patients.

A total of 20 OSCC patients and 20 oral leukoplakia patients were enrolled. Patients of the OSCC group and oral leukoplakia group had a mean age of 47.3 years and 43.9 years respectively. There were 15 males and 5 females in the OSCC group while there were 12 males and 8 females in the oral leukoplakia group respectively. Mean uric levels among the patients of the oral leukoplakia group and OSCC group were 4.96 mg/dL and 3.84 mg/dL respectively. Tiwari P et al estimated serum and salivary albumin and uric acid levels in healthy individuals, oral sub mucous fibrosis and oral squamous cell carcinoma patients. Study comprised of three groups as follows: Group I: Comprised of 10 healthy individuals. Group II: 20 otherwise healthy and consenting patients with Oral Submucous Fibrosis, Group III: 20 otherwise healthy and consenting Oral Squamous Cell Carcinoma patients. Venous blood was drawn and Unstimulated whole saliva was collected after the clinical diagnosis followed by biochemical estimation of serum and salivary albumin and uric acid with the help of Semiautomatic Analyzer. Inter comparison of serum albumin and uric acid levels between all the three groups revealed that the difference was statistically significant, indicating that serum albumin and uric acid levels decreased in Oral Submucous Fibrosis and Oral Squamous Cell Carcinoma compared to healthy individuals. Salivary albumin levels significantly increased in Oral Submucous Fibrosis and Oral Squamous Cell Carcinoma cases compared to healthy individuals. Whereas salivary uric acid levels significantly decreased in Oral Submucous Fibrosis and Oral Squamous Cell Carcinoma cases compared to healthy individuals.¹⁰

In the present study, significant results were obtained while comparing the results statistically. Yadav KD et al assessed the associations between the serum uric

acid levels and oral leukoplakia (OL), submucous fibrosis (OSMF) and squamous cell carcinoma (OSCC), and to correlate these with the clinical and histopathological features of these lesions. Fifty-two patients with oral potentially malignant disorders (OPMD) (25 OL and 27 OSMF cases) and 33 OSCC patients with complete clinical and histopathological characteristics were included. A healthy control group was also investigated. The serum uric acid concentration was assessed using the uricase method from a blood sample without hemolysis. The level means of serum uric acid in the OL, OSMF and OSCC patients were 3.86 ± 1.31 , 5.65 ± 0.85 and 4.99 ± 1.34 mg/dL, respectively, compared to 5.16 ± 0.97 mg/dL in the healthy controls. The serum uric acid levels were reduced in the OL and OSCC patients but they were increased in the OSMF patients when compared to the healthy controls. No significant differences were seen in the clinical and histopathological features of the OL and OSMF patients.¹¹

CONCLUSION

Serum uric acid levels are significantly altered during the invasive process of oral premalignant disorders.

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