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Research Article

LEVEL OF SERUM CREATINE PHOSPHOKINASE IN ORAL LICHENPLANUS - A BIOCHEMICAL STUDY

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ABSTRACT

Introduction:- Oral Lichen Planus is a chronic autoimmune, mucocutaneous disease of unknown origin. It is premalignant condition which has poentency for malignant transformation. Intraorally it affects mainly in buccal mucosa. Women are more affected. and has classical clinical signs and symptoms. The disease is caused by an abnormal cell-mediated immune response.

Material & Methods- Out patients visiting the department of Oral Medicine and Radiology, Coorg Institute of Dental Sciences, Virajpet in the age range of 30-50 years old males. 25 cases and 25 controls. Proper selection of subjects were done using certain inclusion criteria. Lsions were biopsied and were subject to histopatological examination. Serum cretinin was estimated in blood samples and the findings were recoded.

Results:- In comparing the values the cases showed increase in all values when compared to healthy subjectsthe study could not establish a stistical significance.

Conclusions:- A biomarker can be used for potentially malignant disorders to know their progression.

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INTRODUCTION

Oral Lichen Planus (OLP) is a chronic autoimmune, mucocutaneous disease of unknown origin and was first described by Wilson in 1869. It affects the oral mucosa, skin, genital mucosa, scalp, and nails mainly in the middle aged person with a female predominance. Out of the total world population only 1 to 2 % is affected with this and 0.1% to 1.5% being Indian prevalence. Rarely, OLP is seen in children¹. Out of the many schools of thought mainly the abnormal T-cell-mediated immune response in which basal epithelial cells are recognized as foreign because of changes in the antigencity of their cell surface has been mostly explained. The cause of this immune-mediated basal cell damage is unknown. Several types of OLP have been described, the 2 main type being reticular and erosive OLP². Intraorally, the sites are buccal mucosa, tongue, and gingiva is commonly involved. The lesion presents itself with a well-recognized clinical signs and symptoms. The symptoms may range from mild discomfort to a severe burning sensation. Oral lesions mainly affect buccal mucosa bilaterally and present as white striations (Whickham striae), white papule, white plaques, white papules, erythema (mucosal atrophy), erosions (shallow ulcers), or blisters. About 10% of

patients with OLP have disease confined to the gingiva, other areas merely uncommon though it cannot be avoided. Greater malignant potential has been found for erosive type and found that the occurrence of squamous cell carcinoma ranged from 0.4% to 2.0% per 5 years observation period¹. WHO has classified OLP as a pre-malignant condition. And renamed them in to potentially malignant disorders. But malignant changes are not yet known. Oral squamous cell carcinoma (OSCC) is one of the most common cancers in the world. With poor survival, although there are different treatment regimes OSCC can develop from apparently normal epithelium or pre-cancerous lesions with a host-related factors playing a key role in diseases progression.

One of these host factors is the Matrix Metaloproteinases (MMPs) which are often up-regulated in groups forming activation cascades both in inflammatory and malignant diseases. And has been documented in case of head and neck carcinomas and also suggested that it may be a prognostic biomarker in cancer³ In a study done by N.Eija *et al* showed that an elevation in the MMP showed an increase in serum creatinine though not in oral cancer⁴. However a study by Spoorthy *et al* had taken CPK as the marker and found a positive correlation in oral leukoplakia patients⁵. Also in our

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previous study with CPK in oral sub mucous patient s showed a statistical significance⁶.

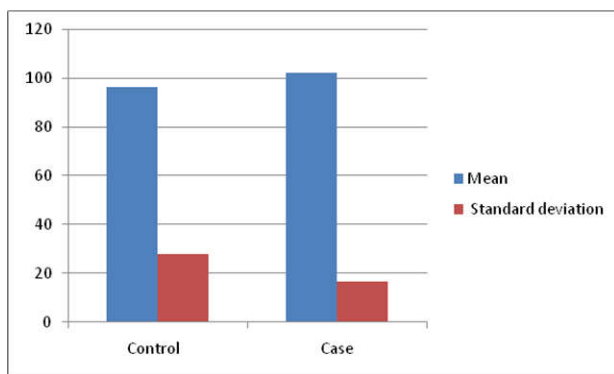
METHODS AND MATERIAL

Out patients visiting the department of Oral Medicine and Radiology, Coorg Institute of Dental Sciences, Virajpet in the age range of 30-50 years old males. The lesion was subjected to histopathological examination and blood samples were collected and sent for biochemical analysis. All the demographic details were recorded. 25 Patients were selected after through clinical examination. A detailed case history was taken along with description of the lesion on the buccal mucosa. Only classical case of oral lichenplanus was included. The lesion was subjected to biopsy and histopathological examination. All the necessary institutional proceedings were met and informed consent was taken.

Inclusion criteria – All male patients of age 30-50 yrs having no habits were selected and patient willing for the study and treatment thereafter. Whereas the Exclusion criteria were; Physically and mentally disabled and Patient with history systemic illness and patients not willing for biopsy.

RESULT

Student t test is used. The present study compromised of 25 cases and 25 healthy subjects. All subjects were males. Cases was selected on the basis of certain inclusion criteria. All the cases had classical signs and symptoms of oral lichen planus with extraoral lesions. The values were compared with that of controls In comparing the values the cases showed increase in all values when compared to healthy subjects. The mean in control was 97.8 whereas as in cases it was 103.7. The age and cpk in the cases showed a value of 40.0 whereas controls showed 98.7. It was observed that as the age increased the values also increased.



Mean and standard deviation

| Group | Number | Mean | Standard deviation |
|---------|--------|-------|--------------------|
| Control | 25 | 97.8 | 28.6 |
| Case | 25 | 103.7 | 17.7 |

Corelation between age and cpk

| Variable | Mean | Standard deviation |
|-----------|------|--------------------|
| Age | 40.1 | 5.55 |
| CPK value | 98.7 | 21.56 |

DISCUSSION

Oral squamous cell carcinoma (OSCC) OF HEAD AND NECK is one of the most common cancers in the world^{3,6,7}.

OLP turning oral cancer is a debatable topic. Some authors agree with the possible malignant potential of OLP, while others do not. The overall malignant transformation rate of OLP is estimated to be 1–2%. The buccal mucosa showed the most dysplastic changes when compared to other sites. Persistent chronic inflammatory condition favours the local environment to give rise to cytokine based alterations Which may further induce genetic alterations of epithelial cells to progress to malignancy. Such alteration gives rise to loss of heterozygosis (LOH) at tumor suppressor gene loci, increased DNA content etc, making the tissue more prone to malignant changes⁸. Early detection of potentially malignant disorders can prevent malignant transformation to certain extent. There are several studies done regarding the early detection methods of potentially malignant disorders namely vital staining, histopathology, and detecting biomarkers⁶. The aim of this study was to evaluate the significance of creatine phosphokinase in oral L P patients and to compare it with healthy subjects.

Oral lichen planus (OLP) is one of the most common diseases of the oral mucosa, through ht its autoimmune nature of pathophysiology it remains submerged until a great deal of damage has occurred to the oral mucosa and strats affecting the quality of life of the patient so an early detection is warrented. Eventhough clinically it can be diagnosed, the severity cannot be assessed, or the amount of tiisue cannot be assessed. Histopaththology being the golden thumb rule to suggest the dysplastic changes there are cases where a biopsy cannot be performed.

So an alternative method of assessing the progression of lesion can be established using bodily fluids. Tissue damage can be assessed in the form of muscle weakness or damage. CPK is an enzyme present in muscle, which is release during it the extent of t Biomarkers are used for different diagnostic purposes. An enzyme like CPK can provide us with stuts of the surrounding muscle layer in the buccal mucosa, there by revealing the progress of the disease^{6,12}. The significance of potentially malignant disorders like oral leukoplakia, oral submucous fibrosis showed statically significance in a study done by Spoorthy *et al*⁵. In a study done by Ravi *et al* found appositve correlation between creatinie phosphokinase and potentially malignant disorders⁹. Joseph *et al* did their study on colon cancer patients to find out the significance of cretine phosphokinase and got a positive correlation¹⁰. However a study done by Arthur showed the alteration of creatine phosphokinase level in a marathon runners as it could be related to rhabdomyolysis which is due to over use of the muscle.¹¹ On the basis of ourown previous study we have designed a new study using OLP subjects. The use of cpk as biomarkers are well documented in different studies. a stuidy done by Deepak naragg *et al* showed a change in cpk but could not establish a statical significance. Similarly our study showed some changes in values between the case and control. The mean and standard deviation was 97.8 and 28 respectively in healthy subjects in case it was 103 and 17. This showed that some amount of tiisue damage has ocured and it is progressing slowly. The significance of biomarkers in muscle damage is mentioned in a study done by Brancaccio *et al* and the author recommends to use these biomarkers for muscle stress, and

damage caused due to various etiological factors. But study done by Pratik Rupakar, showed a possible correlation between cpk and oral cancer. Taking in to view that these are potentially malignant disorders this study is noted the author explains the use of cpk and its role in oral cancer. He has defined a significant correlation between this enzyme and oral cancer. The gross difference between the values in case and subjects can be explained with regards to the severity of the lesion and other humoral condition of the subjects. This can be substantiated by the above said study¹⁴. The age also showed some variations in values. The older cases showed more increased value when compared to younger age group, even though group was not divided based on age. The sample size can be said as one main limitation in our study.

Determining creatinine as a part of biochemical assessment, may be of proactive intervention for high-risk groups. It is therefore, suggested that the biochemical analysis can be helpful in mass screening of the OSMF patients.

CONCLUSION

A biochemical method using a biomarker can be thought of an alternative to regular biopsy diagnostic purposes.

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