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Original Research

Assessment of Salivary Zinc level in Oral Lichen Planus patients

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Abstract

Background: Lichen planus is a common mucocutaneous disease. The present study assessed salivary zinc level in patients with oral lichen planus. **Materials & Methods:** 62 cases of oral lichen planus and equal number of controls was also recruited. Salivary zinc level was analyzed by inductively coupled mass spectrometry (ICP- MS). The results were expressed in µg/L. **Results:** Group I patients had 48 females and 14 males and group II had 50 females and 12 males. The mean salivary zinc level in group I was 164.8 µg/L and in group II was 272.4 µg/L. The difference was significant (P< 0.05). **Conclusion:** Salivary zinc level was elevated in patients with oral lichen planus as compared to healthy subjects.

Key words: Oral lichen planus, Inductively coupled mass spectrometry, Zinc

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INTRODUCTION

Lichen planus is a common mucocutaneous disease. It was first described by Wilson in 1869 and is thought to affect 0.5–1% of the world's population. The condition can affect either the skin or mucosa or both.[1] About half of the patients with skin lesions have oral lesions, whereas about 25% present with oral lesions alone. Cutaneous lesions

typically present as small (2 mm) pruritic, white to violaceous flat-topped papules, which can increase in size to as much as 3 cm. They often occur bilaterally on the flexor surfaces of the extremities.[2] Oral lichen planus is a chronic disease that can persist in some patients for a long time. In contrast to cutaneous lichen planus, the oral form may persist for up to 25 years. Oral lesions may coexist with lesions of the genital mucous membranes or with lesions of cutaneous lichen planus.[5] It affects woman more often than men in a ratio 2:3.[3]

The etiology of this high incidence is not fully known. The high incidence was attributed to several factors such as chewing, smoking and viral infections. Whatever may be the causative factors, very little information is available on the biochemical and immunological derangements. The role of certain trace metals, especially zinc in the pathology of various diseases has been the subject of a number of comprehensive reviews.[4] Zinc and copper have been the most extensively studied of the trace elements in patients with oral lichen planus, malignant disease and these elements in serum has been found to be reliable parameter as a diagnostic and prognostic index in case of craniofacial tumors. Recent technological advances have made saliva as a tool for the diagnosis of many things; among them are hormone imbalances, liver function, immunodeficiency and even cancer.[5] The present study assessed salivary zinc level in patients with oral lichen planus.

MATERIALS & METHODS

The present study was conducted in the department of Oral Pathology. It consisted of 62 cases of clinically and histopathologically confirmed cases of oral lichen planus. Equal number of control was also recruited. All were informed regarding the study and their consent in the form of written form was taken. Ethical approval was also obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Group I patients were cases oral lichen planus and group II patients were healthy control subjects. Each subject was asked to accumulate saliva in the mouth for 2 min and then to spit in sterilisable plastic vials. The samples were centrifuged at 3,000 rpm at 4°C for 5 min. Each sample was diluted fivefold in 10 ml/L nitric acid, and the trace elements were analyzed by inductively coupled mass spectrometry (ICP- MS). The results were expressed in µg/L. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

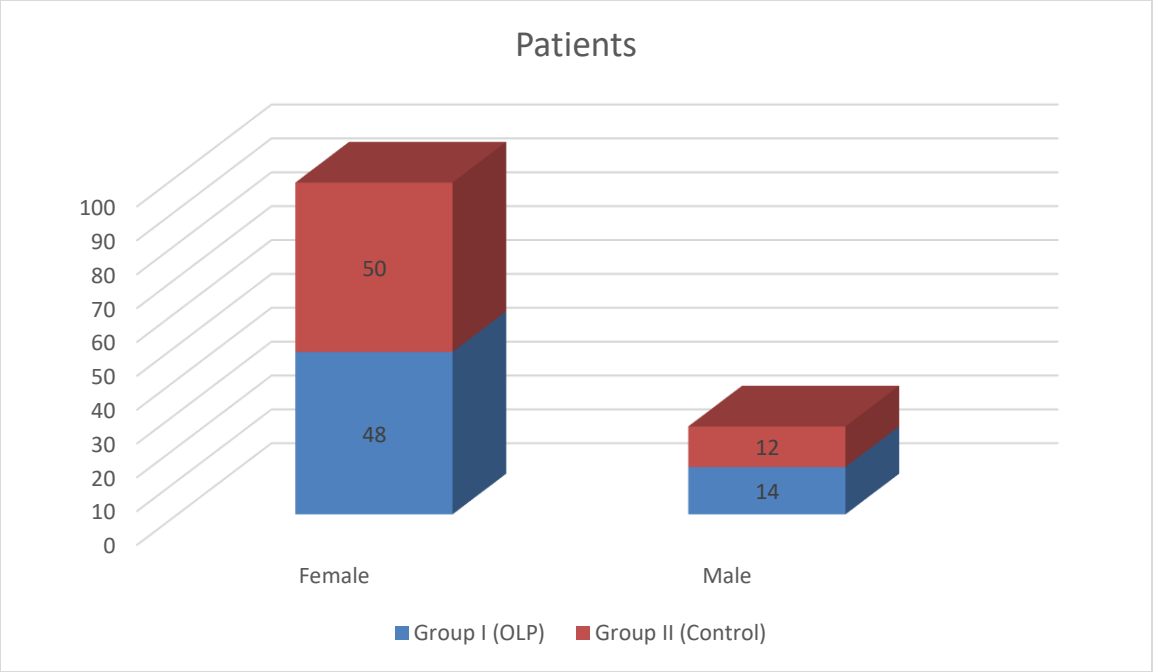
Groups	**Group I (OLP)**	**Group II (Control)**
Female	48	50
Male	14	12

Table I: Distribution of patients

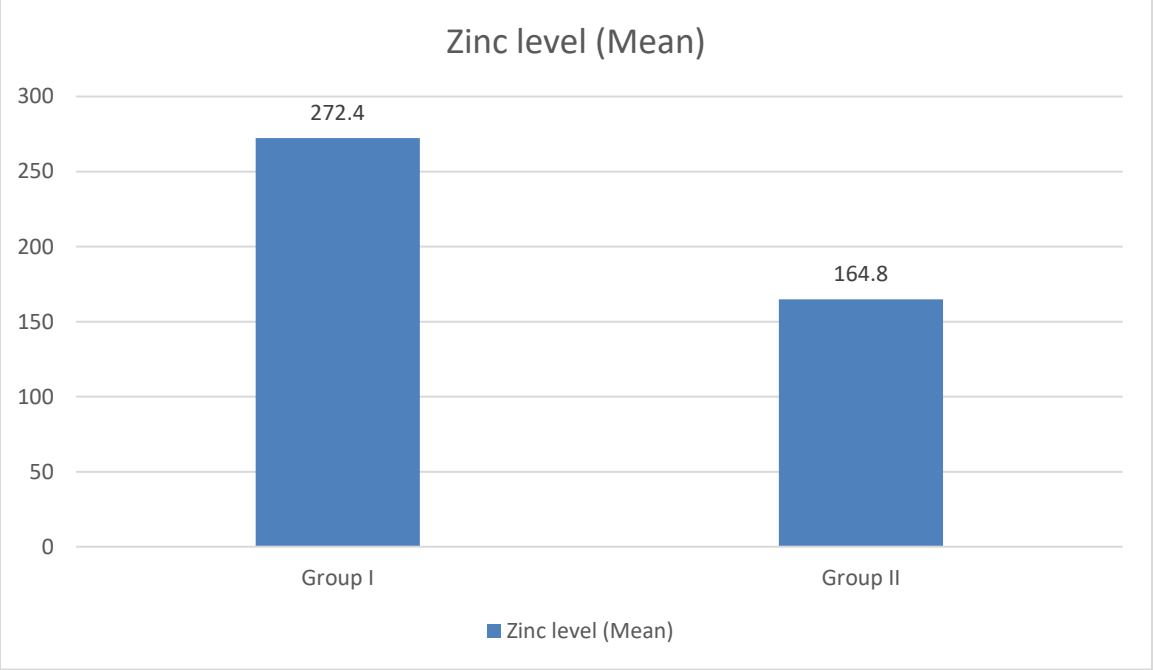
Table I shows that group I patients had 48 females and 14 males and group II had 50 females and 12 males.

Groups	**Zinc level (Mean)**	**P value**
Group I	272.4	**0.01**
Group II	164.8	

Table II: Assessment of salivary zinc level



Graph I: Distribution of patients



Graph II: Assessment of salivary zinc level

Table II, graph II shows that mean salivary zinc level in group I was 272.4 μg/L and in group II was 164.8 μg/L. The difference was significant ($p< 0.05$).

DISCUSSION

Oral lichen planus may present anywhere in the oral cavity. The buccal mucosa, tongue and gingiva are the most common sites, whereas palatal lesions are uncommon. They are usually symmetrical and bilateral lesions or multiple lesions in the mouth. Andreasen divided oral lichen planus into six types: reticular, papular, plaque-like, erosive, atrophic, and bullous. The reticular, papular and plaque-like forms are usually painless and appear clinically as white keratotic lesions.[6] The erosive, atrophic and bullous forms are often associated with a burning sensation and in many cases can cause severe pain. In the oral cavity, zinc is found in saliva, dental plaque and in the hydroxyapatite of the dental enamel. It contributes to healthy teeth formation, and is used in mouth rinses and toothpaste due to its important role in the prevention of plaque and dental calculus formation.[7] Zinc also contributes to the reduction of halitosis in the mouth. It has been implicated in the composition of dental biomaterials and orthodontic materials, due to its properties for enhancing immunity, as well as its effects on cell division and skeletal development. Many studies reported that these trace elements play a major role as either inhibitory or causative agent of cancer. Several workers studied the copper and zinc levels in the serum, plasma and tissue of premalignant and malignant lesions of oral cavity and head and neck neoplasm's.[8,9] The present study assessed salivary zinc level in patients with oral lichen planus.

In this study, group I patients had 48 females and 14 males and group II had 50 females and 12 males. Ayinampudi et al[10] evaluated the levels of copper and zinc and copper/zinc ratio in saliva of premalignant and malignant lesions of oral cavity. The levels of copper and zinc were estimated in the saliva of 5 patients with oral submucous fibrosis, 5 patients with oral leukoplakia, 5 patients with oral lichen planus and 10 patients with oral squamous cell carcinoma of oral cavity using inductively coupled mass spectrometry (ICP- MS). The values were compared with 6 normal age and sex matched control subjects. There was significant difference of the mean salivary copper and zinc levels of premalignant and malignant lesions when compared to the normal controls. In oral cancer patients there was significant difference in the copper levels according the histodifferentiaton in squamous cell carcinoma. Within the premalignant group the copper levels were more in the oral sub mucous fibrosis when compared to the leukoplakia and lichen planus. Copper zinc ratio decreased in premalignant and malignant group when compared to the normal group. Saliva may be used as a potential diagnostic tool, which can be efficiently employed to evaluate the copper and zinc levels in pre malignant and malignant lesions of oral cavity.

We found that mean salivary zinc level in group I was 164.8 μg/L and in group II was 272.4 μg/L. Toke et al[11] found increased level of serum copper and zinc in patients with head and neck cancer. The results in the present study also showed significant increase in the copper and zinc levels in squamous cell carcinoma, when compared to normal control group. Bloniarz et al[12] compared the copper, zinc levels in saliva of patients with oral cancer to the control group

and observed that these elements were significantly higher in the case group when compared to controls. The limitation of the study is small sample size and short follow up.

CONCLUSION

Authors found that salivary zinc level was elevated in oral lichen planus patients as compared to controls.

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