ORIGINAL RESEARCH

Comparative evaluation of Serum Fucose Levels in oral Leukoplakia patients and Oral Cancer Patients

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ABSTRACT:
Background: Oral premalignancy is considered as an intermediate stage. Serum fucose levels are raised in different groups of malignancies including oral cancer. Hence; the present study was undertaken for assessing and comparing Serum Fucose Levels in oral Leukoplakia patients and Oral Cancer Patients. **Materials & methods:** A total of 25 oral leukoplakia patients and 25 oral cancer patients were included in the present study. Blood samples were obtained from all the patients and were sent to the central laboratory for assessment of serum fucose 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. **Results:** Mean serum fucose levels among the oral leukoplakia patients was found to be 9.12 mg/dL while mean serum fucose levels among oral cancer patients was found to be 14.12 mg/dL. On comparing, it was observed that mean serum fucose levels of the patients of the oral cancer group was significantly higher in comparison to the patients of the oral leukoplakia group. **Conclusion:** Alterations in serum fucose levels do occur significantly in oral cancer patients in comparison to oral leukoplakia patients.
Key words: Fucose, Oral leukoplakia, Serum

INTRODUCTION

Oral premalignancy is considered as an intermediate stage. It is classified as into two broad straplines, premalignant lesions and premalignant conditions. The premalignant lesion is defined as "a morphologically reformed tissue in which oral cancer is more likely to occur than in its seemingly normal counterpart." An example is a leukoplakia. A premalignant condition is defined as "a generalized state associated with a significantly increased risk of cancer."[1-3]
Serum fucose levels are raised in different groups of malignancies including oral cancer. In association with clinical diagnostic procedures, serum levo-fucose (L-fucose) levels can be used as an effective biochemical indicator in oral cancer in monitoring recurrences and effectiveness or response to treatment.[4,5]
Hence; under the light of above mentioned data, the present study was undertaken for assessing and comparing Serum Fucose Levels in oral Leukoplakia patients and Oral Cancer Patients.

MATERIALS & METHODS

The present study was conducted with the aim of assessing and comparing Serum Fucose Levels in oral Leukoplakia patients and Oral Cancer Patients. A total of 25 oral leukoplakia patients and 25 oral cancer patients were included in the present study. Exclusion criteria for the present study included:

- Patients with history of any other systemic illness,
- Patients with any known drug allergy,
- Diabetic and hypertensive patients

Complete demographic and clinical details of all the patients were obtained. Detailed habit history and past medical history of all the patients was also recorded. After obtaining the informed consent, blood samples were obtained from all the patients and were sent to the central laboratory for assessment of serum fucose 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, analysis of a total of 25 oral leukoplakia patients and 25 oral cancer patients was done. Mean age of the patients of the oral leukoplakia group and oral cancer group was found to be 48.5 years and 46.8 years respectively. There were 15 males and 10 females in the oral leukoplakia group and 16 males and 9 females in the oral cancer group.

Table 1: Demographic data

Parameter		Oral leukoplakia group	Oral cancer group
Mean age (years)		48.5	46.8
Gender	Males	15	16
	Females	10	9

Table 2: Comparison of serum fucose levels

Parameter	Oral leukoplakia group	Oral cancer group	p- value
Serum fucose levels (mg/dL)	9.12	14.12	0.00 (Significant)

In the present study, mean serum fucose levels among the oral leukoplakia patients was found to be 9.12 mg/dL while mean serum fucose levels among oral cancer patients was found to be 14.12 mg/dL. On comparing, it was observed that mean serum fucose levels of the patients of the oral cancer group was significantly higher in comparison to the patients of the oral leukoplakia group.

DISCUSSION

Oral leukoplakia, being a predominantly white change of the oral mucosa, is the most common potentially (pre)malignant lesion. It is a relatively rare disease with an estimated prevalence of less than 1%. Men and women are more or less equally affected. Oral leukoplakia rarely occurs in the first two decades of life and is much more common in tobacco users than in non-tobacco users.[6, 7] Leukoplakia may occur everywhere in the oral cavity and is often asymptomatic otherwise. The clinical diagnosis is primarily based on visual inspection and manual palpation. There are no other useful diagnostic aids for the clinical diagnosis.[8] Recently, the knowledge about cancer biomarkers has increased, and numerous studies have been carried out regarding these. This has paved the way for improving the management of cancer patients by enhancing the accuracy of detection and efficacy of treatment. Understanding the relevance of biomarkers before using them is very important for diagnosis, treatment, and proper follow-up.[6]

In the present study, analysis of a total of 25 oral leukoplakia patients and 25 oral cancer patients was done. Mean age of the patients of the oral leukoplakia group and oral cancer group was found to be 48.5 years and 46.8 years respectively. There were 15 males and 10 females in the oral leukoplakia group and 16 males and 9 females in the oral cancer group. Rai NP et al ascertained the role of serum fucose as a biomarker for early detection of oral cancer and to compare serum fucose levels in healthy controls, leukoplakia and oral cancer patients. The study included 60 (100.0%) subjects, who were grouped as 20 (33.3%) control subjects, 20 (33.3%) squamous cell carcinoma patients and 20 (33.3%) leukoplakia patients. Fucose estimation was done using UV-visible spectrophotometry based on the method as adopted by Winzler using cysteine reagent. Results showed a high significance in serum fucose in oral squamous cell carcinoma (OSCC) and leukoplakia subjects compared to normal controls. There was a gradual increase in the values noted from control to leukoplakia and to squamous cell carcinoma. Estimation of serum fucose may be a reliable marker and can be used as an effective diagnostic biomarker in oral squamous cell carcinoma patients.[9]

In the present study, mean serum fucose levels among the oral leukoplakia patients was found to be 9.12 mg/dL while mean serum fucose levels among oral cancer patients was found to be 14.12 mg/dL. On comparing, it was observed that mean serum fucose levels of the patients of the oral cancer group was significantly higher in comparison to the patients of the oral leukoplakia group. Parwani RN et al ascertained the role of serum fucose as a biomarker and to correlate with other studies for its effective clinical application. The study was carried out on 67 subjects, including 14 healthy individuals and 53 oral squamous cell carcinoma cases. The serum fucose level estimation was done based on the method as adopted by Winzler using cysteine reagent. Serum fucose levels were independent of age and sex. However, there was significant increase in mean serum fucose level of oral squamous cell carcinoma patients compared with healthy controls. The results correlated well with other studies. Serum fucose can be used as an effective diagnostic biomarker in oral squamous cell carcinoma patients.[10] Chang PY et al assessed the association and prognostic value of serum inflammation markers in patients with leukoplakia and oral cavity cancer. Nine inflammation-associated markers were investigated in 46 patients with leukoplakia, 151 patients with untreated oral cavity squamous cell carcinoma (OSCC), and 111 age- and gender-matched healthy controls using enzyme-linked immunosorbent assay. All examined markers had decreased in relapse-free patients following treatment. However, in patients with relapse, interleukin-6, CRP, and serum amyloid A remained at elevated levels. Statistical analysis showed that patients with CRP $\geqq 2$ mg/L and E-selectin $\geqq 85$ ng/mL at baseline had highest probability of relapse (odds ratio=3.029, p<0.05). The results indicated that inflammation plays a crucial role in the pathogenesis process of OSCC.

CONCLUSION

From the above results, the authors concluded that alterations in serum fucose levels do occur significantly

in oral cancer patients in comparison to oral leukoplakia patients. However; further studies are recommended.

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