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ESTIMATION OF HEMOGLOBIN LEVELS IN PATIENTS WITH ORAL POTENTIALLY MALIGNANT DISORDERS- A CASE CONTROL STUDY

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ABSTRACT

INTRODUCTION

A precancerous lesion is a morphologically altered tissue in which oral cancer is more likely to occur than in its apparently normal counterpart.A precancerous condition is a generalized state associated with a significantly increased risk of cancer.The most prevalent oral mucosal conditions with a high rate of malignant transformation are oral leukoplakia, oral submucous fibrosis, and oral erythroplakia. Clinically, there are six different subtypes of oral lichen planus, including papular, reticular, plaque-like, atrophic, erosive, and bullous types. This condition is one of the potentially cancerous conditions. In comparison to other subtypes, atrophic and erosive subtypes have a higher probability of malignant transformation. Despite numerous etiological studies, the exact cause of almost all of these diseases is still unknown.

MATERIALS AND METHODS

The hemoglobin levels of patients in the outpatient ward of Oral Medicine and Radiology department, Saveetha Dental College are assessed in this study. The test group contains patients who have oral premalignant lesions such as Oral Lichen Planus, Oral Leukoplakia and Oral Submucous Fibrosis which is 50 patients.The control group contains patients who does not have any systemic disorders which is 50 patients.The results are tabulated and cross verified for any biases. The results are then entered into SPSS software for data analysis.

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RESULTS AND DISCUSSION

The results obtained from the study are presented as statistical barcharts.The comparison between the hemoglobin levels of the control group and the test group are evaluated.From the given data,the hemoglobin levels of the control group is significantly lower than the control group.

CONCLUSION

From the above results,the data was analyzed and concluded that the patients who have oral premalignant lesions have significantly lower hemoglobin levels than the patients with no specific lesions.Thus they can be used as a prognostic tool in the diagnosis patients who are at risk of premalignant lesions

INTRODUCTION

Precancerous lesions of the oral mucosa, sometimes referred to as possibly malignant conditions in recent years, are a category of illnesses that need to be identified early. The most prevalent oral mucosal conditions with a high rate of malignant transformation are oral leukoplakia, oral submucous fibrosis, and oral erythroplakia. Clinically, there are six different subtypes of oral lichen planus, including papular, reticular, plaque-like, atrophic, erosive, and bullous types. This condition is one of the potentially cancerous conditions. In comparison to other subtypes, atrophic and erosive subtypes have a higher probability of malignant transformation. Despite numerous etiological studies, the exact cause of almost all of these diseases is still unknown. Etiologic factors may vary geographically.The most commonly mentioned potential causes are using tobacco products, consuming alcohol, chewing areca nut-containing betel quid, and exposure to sunlight. Because they may progress to severe dysplasia and even carcinoma in situ and/or squamous cell carcinoma in advanced stages, early diagnosis is crucial and can even save lives. Despite various therapies, treatment outcomes for the majority of diseases are not satisfactory. Although surgical intervention is the most common form of treatment, corticosteroids, calcineurin inhibitors, and retinoids are common topical and systemic treatment options.

It was suggested to adopt the word "possibly malignant disorders" to avoid terminological ambiguity in a 2005 World Health Organization workshop on the terminology, definitions, and classifications of oral lesions having a propensity to malignant transformation.Additional possibly cancerous conditions for oral carcinoma include actinic cheilitis, immune insufficiency, and a few other inherited conditions include xeroderma pigmentosum and Fanconi's anemia. Different oral premalignant lesions were noted in 70 of 320 individuals with lower or moderate socioeconomic group in a clinicopathological investigation in a study.Leukoplakia was the most prevalent premalignant condition (20.65% of patients), while lichen planus and OSMF were reported in an equal number of patients (0.62% each). Precancerous lesions of the oral mucosa have an unknown etiology. The

emergence of potentially cancerous oral disorders is significantly influenced by some risk factors, including alcohol use, smoking, and chewing tobacco. Smoking tobacco may increase the risk of developing oral leukoplakia, OSMF, and erythroplakia, whereas chewing tobacco increases those risks. Alcohol consumption may raise the risk of oral leukoplakia by 1.5 times, OSMF by 2 times, and erythroplakia by 3 times. While drinking alcohol and chewing tobacco may be risk factors for multiple oral premalignant lesions, found no evidence for these associations.The likelihood of several oral premalignant lesions was not linked to smoking. The etiopathogenesis of precancerous lesions of the oral mucosa has been discussed in a number of studies. Salivary thiobarbituric acid reactive compounds and advanced glycation endproducts were found to be considerably greater in patients than in controls, when investigated for saliva markers of oxidative stress. reported that salivary advanced oxidation protein products, vascular endothelial growth factor, sialyltransferase, and neuraminidase did not show any discernible variations. Patients' total antioxidant capacity and superoxide dismutase expression were lower than those of age-matched controls. When looked into the expression of CK8 and CK18 in conditions that could be cancerous, such as oral leukoplakia, OSMF, and oral squamous cell carcinoma, they found that it was statistically significantly higher than in controls.In some studies, the expression of ABCG2 and podoplanin in oral erythroplakia is correlated with the emergence of oral cancer. Premalignant oral erythroplakia has a significant incidence of p53 mutations. It has been hypothesized that the human papilloma virus (HPV) contributes to the etiopathogenesis of precancerous lesions of the oral mucosa. In certain study findings, there was no statistically significant difference between the precancer group and controls in terms of salivary IL-8 concentrations.

It's crucial to find premalignant lesions and mouth cancer early on. The use of various modalities, such as oral cavity examination, supravital staining, oral cytology, and optical technologies, such as spectroscopy, fluorescence spectroscopy, elastic scattering (reflectance) spectroscopy, Raman spectroscopy, fluorescence imaging, optical coherence tomography, narrow-band imaging, and multimodal optical imaging, is therefore possible.The following factors should be taken into account when determining how crucial early diagnosis is symptomatic and/or non-symptomatic non-healing lesions of the oral mucosa, a history of smoking, using chewing tobacco, drinking alcohol, using drugs, having oral HPV infections, advanced age, immunodeficiency, having a genetic condition and having poor oral hygiene.The aim of this study is to compare and assess the hemoglobin levels in patients who have premalignant lesions and healthy individuals.

MATERIALS AND METHODS

The hemoglobin levels of patients in the outpatient ward of Oral Medicine and Radiology department, Saveetha Dental College are assessed in this study, which means the patients assessed in this study are all of a similar ethnicity. The test group contains patients who have oral premalignant lesions such as Oral Lichen Planus, Oral Leukoplakia and Oral Submucous Fibrosis which is 30 patients.The control group contains patients who does not have any systemic disorders which is 30 patients, total number of patients came out to be 60 patients. The results are tabulated and cross verified for any biases. The results are then entered into SPSS software, Chi square analysis was done and the data was further depicted in the form of bar graphs.

RESULTS

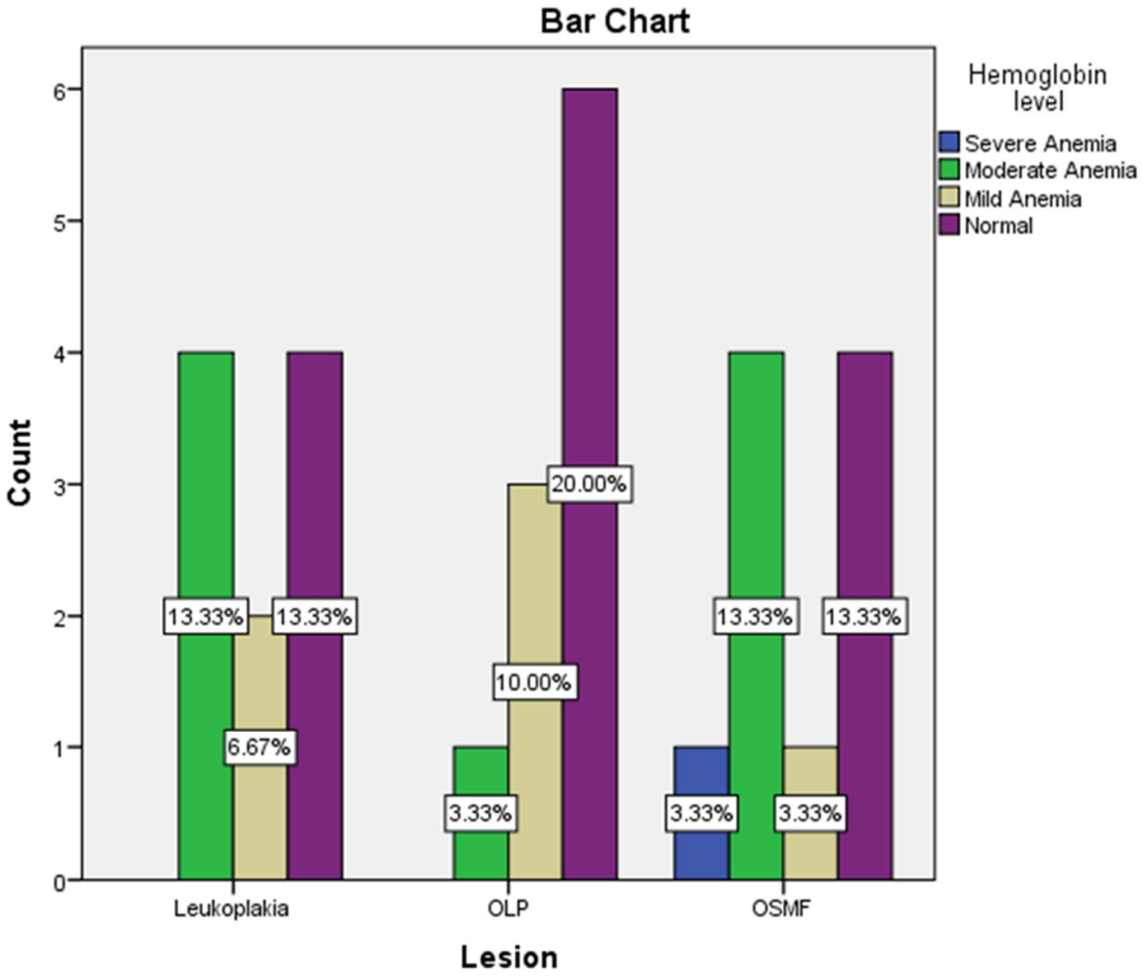

Fig.1: The above figure shows a bar graph of the distribution of hemoglobin levels of patients with various OPMD. The data was divided into mild, moderate and severe anemia and normal

levels of hemoglobin. X axis represents the oral premalignant lesions in the study and Y axis represents the number of patients having anemia in the test group.Blue represents severe form of anemia, which is hemoglobin level between 6.5-8g/dl, Green depicts moderate form of anemia, which is hemoglobin level between 8-10g/dl, Beige is mild anemia that ranges between 10-12 g/dl and Purple is the normal level of hemoglobin that is between 12-16g/dl. In patients with leukoplakia, 13.3% of the patients were found to have moderate anemia, while 6.67% of the patients had mild anemia and the remaining 13.3% of the patients had a healthy level of hemoglobin. Whereas in patients with oral lichen planus, only 3.33% of the patients had moderate anemia and 10% of the patients had mild anemia and the remaining 20% of the patients had healthy levels of hemoglobin. Finally, in patients with OSMF, 3.33% of the patients had severe anemia, 13.33% of the patients had moderate levels of anemia, 3.33% had mild anemia.

DISCUSSION

The above graph shows the distribution of hemoglobin levels in patients having Oral Lichen Planus, OSMF and Oral Leukoplakia. The data was divided into mild, moderate and severe anemia and normal levels of hemoglobin after performing Chi square analysis. The results of the study has been depicted in the form of bar graphs as shown in Fig.1, where blue represents severe form of anemia, which is hemoglobin level between 6.5-8g/dl, green depicts moderate form of anemia, which is hemoglobin level between 8-10g/dl, beige is mild anemia that ranges between 10-12 g/dl and purple is the normal level of hemoglobin that is between 12-16g/dl In Fig.1, among patients with leukoplakia,, 13.3% of the patients were found to have moderate anemia, while 6.67% of the patients had mild anemia and the remaining 13.3% of the patients had a healthy level of hemoglobin. Whereas in patients with oral lichen planus, only 3.33% of the patients had moderate anemia and 10% of the patients had mild anemia and the remaining 20% of the patients had healthy levels of hemoglobin. Finally, in patients with OSMF, 3.33% of the patients had severe anemia, 13.33% of the patients had moderate levels of anemia, 3.33% had mild anemia and the remaining patients had healthy levels of hemoglobin.(1)

From the data comparison , it is seen that the patients with oral premalignant lesions have a significant decrease in hemoglobin levels than the control group which contains healthy individuals. Moreover this study also shows that patients with Oral Submucous Fibrosis were more prone to severe forms of anemia while patients with other forms of lesions were less likely to present with anemia. Burning sensation, vesiculation, and ulceration of the oral mucosa create a situation where it is difficult to consume the typical food, which results in inadequate nutrition. (2)

Due to nutritional depletion, iron and vitamin B complex deficiency as well as other trace element deficiencies may cause anemia and impaired cell-mediated immunity, which in turn promotes the lamina propria's underlying pathogenic response. Anemia may be further

exacerbated by insufficient food intake after a lesion has been clearly established by fibrosis and trismus.Although OSMF and iron deficiency anemia are distinct diseases, OSMF's clinical symptoms, such as blanching, a burning feeling, and difficulty swallowing, resemble those of iron deficiency anemia. Epithelial atrophy arises histologically as a result of a qualitative and quantitative deficiency in the oxygen and nutritional perfusion of the lamina propria and the underlying mucous membrane. Malignancy results from the influence of soluble irritants on the atrophic epithelium that eventually follows. Therefore, this boundary still exists, necessitating additional in-depth research to clarify the relationship between OSMF and iron deficiency as well as the validity of serum iron levels in different stages of OSMF as a sign of malignant transformation. The limitations of this study includes limited data sampling. Thus, further studies are required to solidify the association between the presence of anemia in patients with oral premalignant lesions for the early diagnosis of lesions.Our team has extensive knowledge and research experience that has translate into high quality publications(3–12)

CONCLUSION

From the above data and responses, it is seen that the hemoglobin levels are lowered in case of patients who are having oral premalignant lesions.

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