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Assessment of hemoglobin and iron levels in oral submucous fibrosis patients

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ABSTRACT

Oral Hydrophysical Fibrosis (OSMF or OSF) is a long, complicated term of the oral cavity, a symptom of progressive fibrosis of the juxta-epithelial inflammatory reaction and subcoccous tissue. Oral hydro-fibrosis (OSMF) is the long-term debilitating disease of the oral cavity, which has the probiotic probability and vague pathogenesis. 30 OSMF patients and 30 healthy individuals from the OPD of Saveetha Dental College. Serum samples were analyzed for the parameters status analysis by using BC 2300 MINDRAY HAEMATOLOGY analyzer. There is a significant decrease in Haemoglobin ($p < 0.001$) and Iron ($P < 0.001$) in OSMF patients when compared with healthy controls. Our findings suggest that prolonged or highly affected OSMF patients can develop anemia and other problems related to nutritional imbalance related to iron influenced metabolisms.



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INTRODUCTION

Oral submucous fibrosis (OSMF or OSF) is a chronic, complex, condition of the oral cavity, characterized by the juxta-epithelial inflammatory reaction and progressive fibrosis of the submucosal tissues in the process of collagen synthesis. Oral submucous fibrosis (OSMF) is a chronic debilitating disease of the oral cavity having premalignant potential and unclear pathogenesis. (Patil BM *et al.*, 2017). Early detection of oral cancer or cancer assistance in the management of the disease and increasing detection and survival rates. Oral Subcutaneous Fibrosis (OSMF) is a premalignant condition with potential malignant behaviour with the symptom

of the epithelial fibrosis of the mouth cavity. In the collagen synthesis process, iron is used, reduced by the hydroxylation of proline and lysine, which reduces serum iron levels. Oral submarine fibrosis (OSMF) has gained considerable attention in recent years due to the weak and resistant nature of the past (Sharma A *et al.*, 2017).

In the past decades, dental researchers have had high evidence of several reasons for OSMF (Gandhi P *et al.*, 2017). In 1952, Schwartz had already been disputed about the situation for the first time. Capsicin, spicy food, nutritional deficiency, defective iron metabolism, collagen metabolic disorder and genetic predisposition, along with other local irritants (Yadav A *et al.*, 2015). The anemia of iron deficiency and the OSMF association is very small in literature. Here, a report of a 58-year-old case has been found to be the primary cause of iron deficiency anemia along with IMF in patients we submitted. (Haider SM *et al.*, 2000) Oral dabbles fibrosis (OSMF) is a worldwide threat to public health. Identification of biomarkers is a necessary diagnosis and treatment (Ceena DE *et al.*, 2009).

The expression of proteins suggests that various cellular signalling pathways are involved in the fibrosis process and suggests that protein

molecules play an important role in the diagnosis of the OSMF. (Zain RB *et al.*, 2000) There is a great deal of attention in identifying the exceptional situation such as iron, such as trace element, oral cancer and OSMF, because these conditions have changed significantly. (Merchant A *et al.*, 2001)

MATERIALS AND METHODS

60 subjects were selected from the outpatient department of Saveetha Dental College and Hospitals. They were divided into two groups.

Group I (Control group) – Normal healthy individuals – 30 in numbers

Group II (Study group) – OSMF patients – 30 in numbers

Inclusion Criteria

1. Normal healthy individuals
2. OSMF Patients

Exclusion Criteria

1. Subjects with systemic diseases like Diabetes Mellitus, CVD, Hypertension and endocrine disorders.
2. Known case of anemia
3. Immunocompromised persons

Sample collection and procedure

After obtaining the informed consent from the subjects, 5 ml of venous sample was collected and 2ml was distributed in EDTA collection tube for hemoglobin analysis by using BC 2300 MINDRAY HAEMATOLOGY analyzer. 3ml was distributed in plain collection tube for serum separation. Then it was centrifuged in 2500rpm for 10 minutes and the serum was separated. Then the serum was analyzed for estimating the iron (TIBC) by Ferrozine/MgCO₃, Method.

RESULTS AND DISCUSSION

Table 1: Results of Oral submucous fibrosis

Parameters	Control	OSMF	p-value
Hb (g/dl)	14.14 ± 1.92	7.64 ± 2.04	P < 0.0001
Iron (µg/dl)	115.78 + 24.52	81.12 + 16.17	P < 0.0001

This research is done by taking 2 groups of individuals one is the control group and the other is the study group.

This study implies that the mean value of the hemoglobin level of group 1st is 14.14 and the SD for the same is 1.92 and the iron level in control group in mean is 115.78 and SD is 24.52. The p-value for the control group is 0.0001. The 2nd group is OSMF for mean hemoglobin level is 7.64 and SD

is 2.04 and the mean iron level is 81.12 and SD is 16.17. The p-value for the OSMF group is 0.0001.

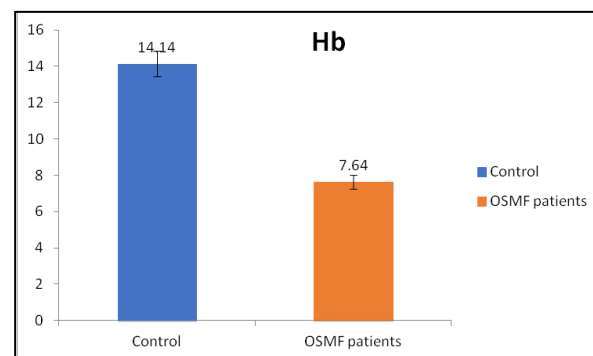


Figure 1: Level of hemoglobin in OSMF and control groups

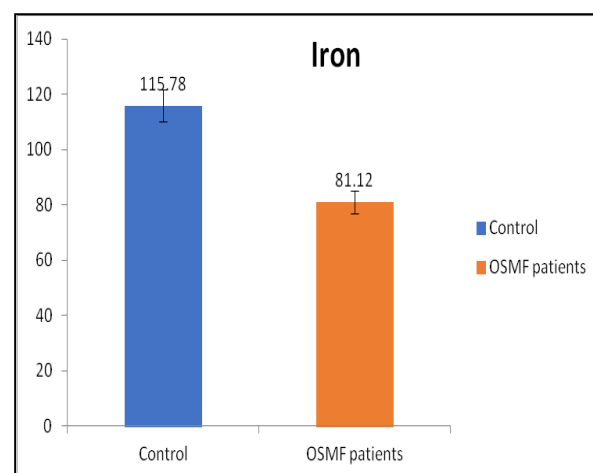


Figure 2: Levels of Iron in OSMF and control groups

In this study, we measured the level of hemoglobin and iron in OSMF patients, which had very harmful effects on the cells, to determine the level of OSMF in patients. The determination of the hemoglobin concentration analyzed the oxidant status of the OSMF patients. We found lower hemoglobin and iron levels in OSMF group.

In the present study, there was a statistically highly significant decrease ($p < 0.001$) in the mean serum hemoglobin and iron level in OSMF than the control group. This systemic decrease in hemoglobin and iron activity may be due to loss of blood in the oral cavity in OSMF patients which makes them cause anemia which eventually would decrease in the amount of hemoglobin and iron in the blood. Also, decreased the hemoglobin activity has been shown to influence the cell functions by decreasing the levels of the second messenger cGMP.

CONCLUSION

Our findings suggest that prolonged or highly affected OSMF patients can develop anemia and other problems related to nutritional imbalance related to iron influenced metabolisms, early

screening of these parameters may help to treat patient therapeutically.

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