

## ORIGINAL ARTICLE

# ROLE OF HAEMATOLOGICAL PROFILE IN ORAL SUB MUCOUS FIBROSIS: A CLINICAL STUDY

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### ABSTRACT:

**Background:** Oral submucous fibrosis (OSMF) is a chronic disease with obscure etiopathogenesis. Several studies have been conducted regarding this disease, but the biochemical aspects have yet to be explored thoroughly. Therefore, we studied the haematological status in OSMF. **Materials and methods:** A total of 40 patients were selected for the study. They were clinically divided into early and advanced OSMF. Haematological status was analysed. Statistical analysis was done by Student's t-test. **Results:** There was no change in the cell count, whereas increases in eosinophil number, and erythrocyte sedimentation rate were observed. **Conclusion:** The change in the haematological picture might correlate with the progression of the disease.

**Key words:** Oral submucous fibrosis, MCH, MCHC  
**Key words:** Adenomatoid odontogenic tumor, Hamartoma, Neoplasm

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This article may be cited as: Narang D, Rathod V, Shishodiya S, Sur J, Khan F, Jain R, Mohan V, Kulkarni V. Role of Haematological Profile in Oral Sub Mucous Fibrosis: A Clinical Study. J Adv Med Dent Scie Res 2015;3(4):6-8.

### INTRODUCTION:

Oral Submucous fibrosis (OSMF) is a precancerous condition. Since the last decade, there has been constant rise in OSMF in India. This rise in OSMF in India has been attributed to the increased consumption of areca nut, containing detectable levels of trace elements like copper, zinc, iron and magnesium.<sup>1</sup>

Various nutritional deficiencies, primarily of iron and vitamins, are also implicated in the etiology of OSMF. Iron plays a vital role in the overall integrity of epithelia of digestive tract and is essential for normal enzymatic functions. OSMF is also regarded as an Asian version of sideropenic dysphagia, wherein chronic iron deficiency leads to mucosal susceptibility to various irritants.<sup>2</sup>

Therefore, nutritional deficiencies like that of iron, Vitamin B-12, and folate can affect the integrity of

the oral mucosa. Previous studies indicate significant hematological abnormalities associated with OSMF, including an increased blood sedimentation rate, and a decrease in serum iron and an increase in total iron binding capacity.<sup>3</sup> Taking in view the role of the haematological variation seen, the present study was undertaken to estimate the haematological profile in OSMF patients.

### MATERIALS AND METHODS

A hospital-based clinical study was conducted from 2014 to 2015 in 40 clinically diagnosed and histopathologically proven patients of OSMF (OSMF group) attending the Department of Oral Medicine and Radiology, Rungta Dental College Bhilai, Chattisgarh. Patients with habit of chewing areca nut or one of its commercial preparations, with the presence of burning sensation, inability to

consume spices, stiffness of buccal mucosa, vesicle formation, ulceration, and blanching of oral mucosa were included in the OSMF group. Patients with any systemic disease or any major illness, and habit of chewing only tobacco were excluded. The OSMF group was clinically staged into stage I and stage II as per the staging given by Pindborg.<sup>4</sup>

Twenty healthy individuals, matched for gender and age, without any history of habit of chewing areca and tobacco and any major illness in recent past were included as controls.

Five ml of fasting venous blood was collected and submitted for the estimation of hemoglobin levels by using Sahli's method and serum sample for serum levels of iron by using Ferrene method.<sup>5</sup> The digested serum samples were subjected to an analysis of the trace elements (copper, iron) by using atomic absorption spectrometry and a Differential Pulse Anodic Stripping Voltmeter (DPASV).<sup>1</sup>

## RESULTS

The data was subjected to a statistical analysis by using mean, standard deviation and the Student's unpaired 't'-test. There was no significant change in the RBC and WBC count in any stage of the disease between patients and controls. There was also a very high increase in the eosinophil count in early and advanced OSMF patients compared with the control group value. Similarly, there was a marked increase ( $p<0.001$ ) in the ESR in both patient groups. There was a decrease in the hemoglobin level in early OSMF patients and a highly significant decrease advanced OSMF patients when their levels were compared to the control ones.

**Table 1:** Showing Mean and SD for RBC, WBC, ESR, Hb, MCV, MCH, MCHC and PCV for early and advanced OSMF cases and normal control

Group I (Early OSMF)	Group II (Advanced OSMF)	Normal control
<b>Red Cell Count (X 10<sup>6</sup>/µl blood)</b>	<b>5.20±.9 (NS)</b>	<b>5.45±1.8 (NS)</b>
<b>White Cell Count (X 10<sup>3</sup>/µl blood)</b>	<b>6.25±2.0 (NS)</b>	<b>8.00±1.4 (NS)</b>
<b>Eosinophil (per mm<sup>3</sup>)</b>	<b>450±33 ***</b>	<b>609±38.2 ***</b>
<b>ESR (mm/h)</b>	<b>7.0±1.8 ***</b>	<b>15±3.2 ***</b>
<b>Hb (g/dl)</b>	<b>13.9±1.5 ***</b>	<b>13.4±1.8 ***</b>
<b>MCV (µm<sup>3</sup> / red cell)</b>	<b>80.2±4.5 ***</b>	<b>90.2±4.2</b>
<b>MCH (pg/RBC)</b>	<b>26.5±2.4 ***</b>	<b>24.5±2.3 ***</b>
<b>MCHC (g/dl RBC)</b>	<b>34.2±2.5 ***</b>	<b>27.5±1.8 ***</b>
<b>PCV (%)</b>	<b>41.1±4.5 (NS)</b>	<b>49.1±2.2 (NS)</b>

Values are expressed as the mean  $\pm$  SD for 20 patients in each group. Group I and Group II were compared with normal control group. NS: Non Significant. \*\*\*  $p<0.001$

There was no significant change in PCV value between any patient group and the control. There was a significant decrease in the MCV in groups I and II patients and a significant decrease ( $p<0.001$ ) in the MCH level in all groups of OSMF as compared with the control value. The MCHC showed a significant decrease in early OSMF cases and a highly significant decrease was observed in advanced OSMF patients. There was a highly significant decrease ( $p<0.001$ ) in the serum iron level in both early and advanced OSMF patients when compared with normal controls.

## DISCUSSION

OSMF is a chronic, insidious oral mucosal condition that occurs predominantly among Indians and occasionally in other Asians. In the Indian continent alone, the statistics for OSMF is about 5 million people (0.5%) of the population.<sup>6</sup> Examination of the blood picture is performed in almost all patients with illness because of the importance of determining alterations that may be present in it.<sup>7</sup> The Non significant change in normal red cell count and white cell count agree with those of earlier studies.<sup>7,8</sup> Since OSMF is characterized by juxtaepithelial inflammatory reaction, the increased level of eosinophils may be due to inflammatory reactions, which are evident in OSMF patients.<sup>9</sup>

Decrease in hemoglobin levels indicate iron deficiency state. Our results were in correlation in previous studies with also recorded a decrease in Hb conc. in OSMF patients.<sup>7,10</sup>

The PCV in OSMF patients was normal. The PCV is the portion of blood occupied by erythrocytes and since the red cell count is normal in these patients, it explains the normal hematocrit value. The decrease in MCV suggests microcytic anemia. As the degree of iron deficiency increases, so is the Hb conc, and further MCV. Previous studies also indicate that most of the iron deficiency anemia cases are reported to display microcytosis.<sup>7,11</sup>

Our results showed a significant decrease in serum iron concentrations. This can be correlated as OSMF is basically a disorder of collagen metabolism. Hydroxyproline is an amino acid found only in collagen, which is incorporated in the hydroxylated form. This hydroxylation reaction requires ferrous iron and ascorbic acid. Utilization of iron, for the hydroxylation of proline and lysine, leads to decreased serum iron levels.<sup>5,12</sup> Bhattathiri et al.<sup>16</sup> showed a negative association of Hb, RBC and PCV with tumour size and hypothesized that this is most likely due to chronic RBC destruction which may be further tumour induced and the products of haemolysis promoting tumour growth.

Thus, lots of queries still persist, which calls upon for further extensive studies to understand the correlation between OSMF and haematological picture.

## CONCLUSION

The present study emphasizes on the assessment of the haematological status for patients with oral submucous fibrosis. Determining iron status is a part of biochemical assessment, which may be of proactive intervention for high-risk groups. It is suggested that the biochemical analysis can be helpful in mass screening of the OSMF patients. Further research work is required in this field to find out the exact role which these parameters play in the pathogenesis of OSMF.

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**Source of Support:** Nil

**Conflict of interest:** None declared