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Assessment of haematological parameters in patients with OSMF

Ettishree

Senior lecturer, Dept of Oral Pathology, Institute of Dental Sciences, Sehora, Jammu

Bela Mahajan

Prof and Head, Dept of Oral Pathology, Institute of Dental Sciences, Sehora, Jammu

Jasjit Kaur Sahota

Reader, Dept of Periodontology, Institute of Dental Sciences Sehora, Jammu
Corresponding author email: jasjitksahota@gmail.com

Abstract---Background: Oral submucous fibrosis (OSMF) is an insidious disease affecting any part of the oral cavity and predominantly occurs among Indians. The present study was conducted to assess haematological parameters in patients with OSMF. Materials & Methods: 46 patients of OSMF of both genders and 46 healthy control were selected. Five millilitres of fasting venous blood were obtained to calculate haemoglobin level using and Sahli's method and the ferrone system was used for serum iron levels measurement. The chemiluminescent microparticle intrinsic factor test was used to quantify vitamin B12 in human serum. Results: Group I had 26 males and 20 females and group II had 23 males and 23 females. The mean PCV (%) was 44.3 and 36.2, MCV (fl) was 87.4 and 70.2, MCH (g/dl) was 27.6 and 25.1, MCHC (g/dl) was 32.9 and 28.3, Hb (gm%) was 13.5 and 10.1, iron (mg/dl) was 120.4 and 46.8 and vitamin B12 (pg/Ml) was 426.2 and 226.8 in group II and group I respectively. The difference was significant ($P < 0.05$). Conclusion: All haematological factors was greatly reduced in OSMF patients.

Keywords---Sahli's method, oral submucous fibrosis, haematological parameters.

Introduction

Oral submucous fibrosis (OSMF) is an insidious disease affecting any part of the oral cavity and predominantly occurs among Indians, occasionally in other

Asiatics, and sporadically in Europeans¹. The early signs and symptoms are non-specific and are easily overlooked. Patients with advanced disease seek attention because of progressive restricted mouth opening. Certain clinical diagnostic criteria have been proposed, including oral mucosal blanching, which may be spotty, resulting in a marbled appearance, or a generalized opaque fibrotic appearance, and stiffness of the oral mucosa with trismus.²

The condition is progressive, and patients present with varied clinical presentation depending on the stage of the disease at the time of diagnosis.³ The most common presentations include intolerance to spicy food and rigidity of lip, tongue and palate leading to decreased mouth opening; restricted tongue movements; dysphagia and hearing impairment in the advanced stages. The trademark of the disease is submucosal fibrosis involving most parts of the oral cavity, pharynx and upper third of the oesophagus.⁴

Nutritional deficiencies, particularly iron and vitamin deficits, are thought to play a role in the pathogenesis of OSMF. Iron is necessary for the general integrity and health of the digestive tract's epithelia, as well as its contribution to appropriate enzymatic processes.⁵ OSMF is also thought to be an Asian form of sideropenic dysphagia, in which chronic iron deficiency causes mucosal sensitivity to irritants like chillies and areca nut products.⁶ The present study was conducted to assess haematological parameters in patients with OSMF.

Materials & Methods

The present study comprised of 46 patients of OSMF of both genders. The consent was obtained from all enrolled patients. Data such as name, age, gender etc. was recorded. Subjects were divided into two groups. Group I comprised of OSMF and group II had healthy control. A thorough oral examination was carried in all subjects of both groups. Five millilitres of fasting venous blood were obtained to calculate haemoglobin level using and Sahli's method and the ferrone system was used for serum iron levels measurement. The chemiluminescent microparticle intrinsic factor test was used to quantify vitamin B12 in human serum. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Groups	Group I	Group II
Status	OSMF	Control
M:F	26:20	23:23

Table I, graph I shows that group I had 26 males and 20 females and group II had 23 males and 23 females.

Graph I Distribution of patients

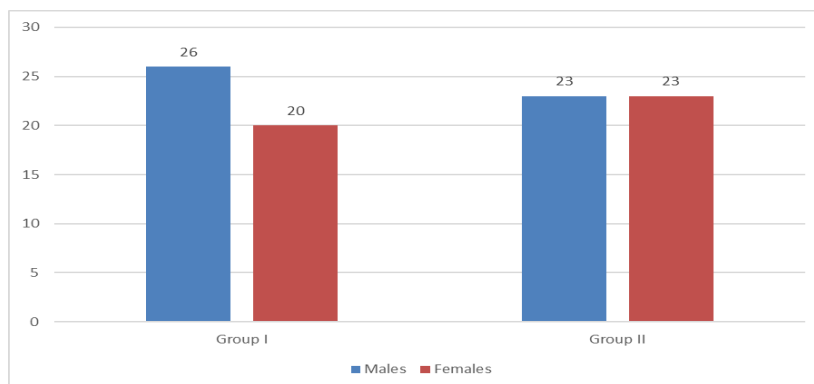
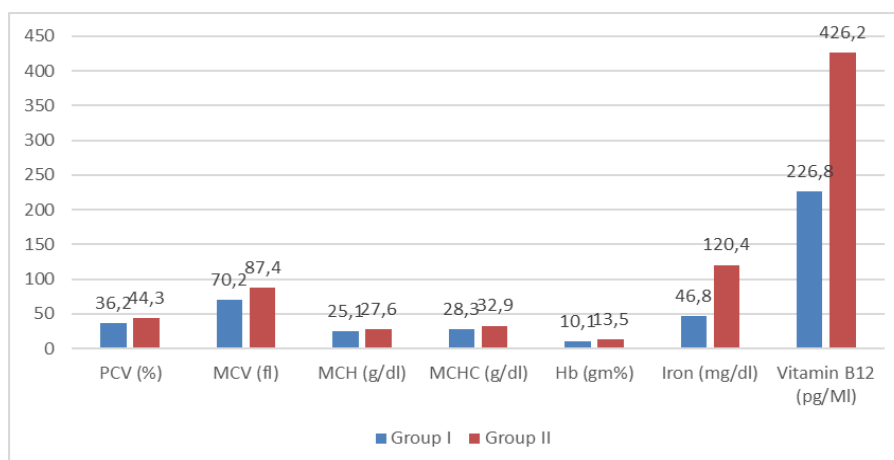


Table II Comparison of haematological profile

Haematological profile	Group I	Group II	P value
PCV (%)	36.2	44.3	0.05
MCV (fl)	70.2	87.4	0.02
MCH (g/dl)	25.1	27.6	0.05
MCHC (g/dl)	28.3	32.9	0.04
Hb (gm%)	10.1	13.5	0.02
Iron (mg/dl)	46.8	120.4	0.01
Vitamin B12 (pg/Ml)	226.8	426.2	0.001

Table II, graph II shows that mean PCV (%) was 44.3 and 36.2, MCV (fl) was 87.4 and 70.2, MCH (g/dl) was 27.6 and 25.1, MCHC (g/dl) was 32.9 and 28.3, Hb (gm%) was 13.5 and 10.1, iron (mg/dl) was 120.4 and 46.8 and vitamin B12 (pg/Ml) was 426.2 and 226.8 in group II and group I respectively. The difference was significant ($P < 0.05$).

Graph II Comparison of haematological profile



Discussion

OSMF affects all socioeconomic groups, and the aetiology is still uncertain.⁷ Even though chillies, smoking, malnutrition, iron deficiency, vitamin deficiency, and autoimmunity have been suggested, betel chewing has been repeatedly implicated in the aetiology of OSMF.⁸ OSMF has been well established as a precancerous lesion. Most of the oral cancer patients had a pre-existing mucosal lesion, mainly OSMF. However, the percentage of patients with OSMF who may expect to develop malignancy is not clearly established since this percentage varies from 2 to 30%.⁹ The association between OSMF and carcinoma may depend upon the greater vulnerability of the thinned atrophic epithelium to carcinogens, which may at first stimulate epithelial atypia, later hyperplasia, and finally frank neoplasia.¹⁰ The present study was conducted to assess haematological parameters in patients with OSMF.

We found that group I had 26 males and 20 females and group II had 23 males and 23 females. Patil et al¹¹ estimated hemoglobin (Hb) level, red cell indices (RCIs), serum iron level and Vitamin B12 level in patients with oral submucous fibrosis (OSMF) and to analyze the association of these parameters in different stages of OSMF. This case-control study comprised of 65 individuals, with 40 OSMF patients and 25 controls. Fasting blood samples were collected from both groups for hematological evaluation. The OSMF patients were in the age range of 21–67 years, with a mean age of 39.85 ± 10.42 years. The mean value of Hb of the control group was 14.24 ± 1.03 g/dL, whereas that of OSMF group was 11.18 ± 2.06 g/dL ($P < 0.001$). The mean value of the serum iron level of the control group was 119.67 ± 42.42 μ g/dL, whereas that of the OSMF group was 45.04 ± 10.41 μ g/dL ($P < 0.001$). The mean value of serum Vitamin B12 levels of the control group was 422.98 ± 112.57 μ g/dL, whereas that of the OSMF group was 211.78 ± 45.17 μ g/dL ($P < 0.001$). The RCIs including packed cell volume, mean corpuscular volume, mean corpuscular Hb (MCH) and MCH concentration were significantly reduced in OSMF cases. Iron deficiency was present in 38 patients among the study group and Vitamin B12 deficiency was present in 22 patients of the study group.

We found that the mean PCV (%) was 44.3 and 36.2, MCV (fl) was 87.4 and 70.2, MCH (g/dl) was 27.6 and 25.1, MCHC (g/dl) was 32.9 and 28.3, Hb (gm%) was 13.5 and 10.1, iron (mg/dl) was 120.4 and 46.8 and vitamin B12 (pg/ml) was 426.2 and 226.8 in group II and group I respectively. Manhas et al¹² determined the hematological profile in patients with Oral Submucous Fibrosis. The sample population was divided into two Category. Category A comprises of 60 individuals over the age of 20 with an areca nut habit and clinical complaints of burning symptoms and blanching of the oral mucosa, as well as a clinical diagnostic of OSMF. Category B is made up of 60 healthy patients (as control). When the two demographic groups were matched for age, the predominance of cases between the ages of 25 and 35 appeared to be statistically significant. The majority of patients had OSMF grades II and III. The results of an experimental t-test comparing the mean values of haematological parameters in the sample and control classes are shown in Table 3, and they were statistically significant ($p=0.0001$). The OSMF group had a mean Hb of 10.98 ± 1.98 g/dL, while the Category B had a mean Hb of 14.02 ± 2.33 g/dL ($p=0.001$). The Category B's mean

serum iron level was 121.22 ± 36.52 g/dL, while the OSMF group's was 45.12 ± 10.85 g/dL ($p=0.001$). The mean blood vitamin B12 levels in the Category B were 425.22 ± 87.25 g/dL, whereas those in the OSMF groups were 211.22 ± 38.66 g/dL ($p=0.001$).

Abidullah et al¹³ assessed the haematological profile in oral submucous fibrosis (OSMF) patients. The study's participants (100) were divided into two groups. Group I consisted of fifty areca nut chewers with complaints of burning sensations, blanching, and stiffness of the oral mucosa. Group II consisted of fifty healthy patients as controls. A haematological profile was estimated in all subjects. The control group had a mean haemoglobin (Hb) of 13.87 ± 1.26 g/dL, while the OSMF group had a mean Hb of 11.03 ± 2.16 g/dL ($P=0.001$). The mean serum iron level in the control group was 120.36 ± 41.22 g/dL, while it was 44.97 ± 13.45 g/dL in the OSMF group ($P=0.001$). The control group's mean serum vitamin B12 values were 424.77 ± 110.95 g/dL, while the OSMF group's was 210.11 ± 44.88 g/dL ($P=0.001$). In the research population, 47 patients had iron deficiency. The odds ratio (OR) was 28.11, which meant that the high prevalence of iron deficiency was predicted 28.11 times more often than in the control group. Low vitamin B12 levels may not be the fundamental cause of cancer, but they may collaborate with toxins, genetics, and environmental factors to accelerate the malignant transformation process. The small sample size is limitation of present study.

Conclusion

Authors found that all haematological factors was greatly reduced in OSMF patients.

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