Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.comdoi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 91.86

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

To determine the hematological profile in patients with Oral Submucous Fibrosis

[1]Andleeb Manhas, [2]Insha Showkat, [3]Shoborose Tantray, [4]Muzaffar Parray

[1]Senior Resident, SKIMS, Srinagar, Jammu and Kashmir, India;
[2]Senior Resident, SKIMS, Srinagar, Jammu and Kashmir, India;
[3]Senior lecturer Department of Oral And Maxillofacial Pathology Santosh Dental College and Hospital
[4]Resident, SKIMS, Srinagar, Jammu and Kashmir, India

ABSTRACT:
Aim: To determine the hematological profile in patients with Oral Submucous Fibrosis. **Methods:** 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). **Results:** The gender distribution in the OSMF and Category B is shown in Table 1. 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±1.98g/dL, while the Category B had a mean Hb of 14.02±2.33g/dL (p=0.001). The Category B's mean serum iron level was 121.22±36.52g/dL, while the OSMF group's was 45.12±10.85g/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).**Conclusions:**Iron status is examined as part of a biochemical examination as part of a preventative approach for persons who are at high risk. Biochemical testing has been proposed as a viable technique for screening OSMF patients on a large scale.
Keywords: OSMF, Hematological profile

Received: 19 February, 2022 Accepted: 25 March, 2022

Corresponding author: Andleeb Manhas, Senior Resident, SKIMS, Srinagar, Jammu and Kashmir, India

This article may be cited as: Manhas A, Showkat I, Tantray S, Parray M. To determine the hematological profile in patients with Oral Submucous Fibrosis. J Adv Med Dent Scie Res 2022;10(4):89-92.

INTRODUCTION

OSMF, or oral submucous fibrosis, was initially characterised in the early 1950s and is a potentially malignant condition that primarily affects persons of Asian heritage. It is a chronic progressive ailment whose clinical manifestation is determined by the stage of the disease at the time of discovery. The majority of patients appear with a spicy food intolerance as well as stiffness of the lip, tongue, and palate, resulting in variable degrees of limiting of mouth opening and tongue movement. The condition is distinguished by submucosal fibrosis, which affects the majority of the oral cavity, pharynx, and upper third of the oesophagus.

India, Bangladesh, Sri Lanka, Pakistan, Taiwan, Southern China, Polynesia, and Micronesia are the most affected. Several case studies of Asian immigration to the United Kingdom, South and East Africa have been published. There is a large variance in the prevalence of OSF among nations. [1] Areca nut chewing, dietary inadequacies, immunologic processes, and genetic susceptibility are all thought to be etiological factors that initiate the illness process. [2,3] 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. OSMF is also thought to be an Asian form of sideropenic dysphagia, in which chronic iron deficiency causes mucosal sensitivity to irritants like chilies and areca nut products. [4] Hemoglobin levels, particularly serum iron levels, are thought to be biochemical indications for nutritional evaluation.[5] Iron, Vitamin B-12, and folate deficiency can all have an impact on the oral mucosa's integrity.

OSMF has been linked to significant haematological abnormalities, including an increase in blood sedimentation rate, a drop in serum iron, and an increase in total iron binding capacity. [6]

MATERIALS AND METHODS

After obtaining ethical clearance from the institute, this study was carried out in the department of Oral Pathology. The sample population was divided into two groups. According to Arakeriet al.[7], 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). Individuals with stage IV OSMF or patients who had already been treated for OSMF were excluded from the research.

METHODOLOGY

Five millilitres of fasting venous blood were obtained, and Sahli's methodology was used to calculate haemoglobin and the Ferrone system was utilised to estimate serum iron levels. Using atomic absorption spectrometry and a differential pulse anodic stripping voltmeter, the samples were examined for trace elements (copper, iron) (DPASV). [8] The chemiluminescentmicroparticle intrinsic factor test was used to quantify vitamin B12 in human serum. [9]

STATISTICAL INVESTIGATION

IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA) is utilised for the statistical procedure. The significance level was set to $P \leq 0.05$.

RESULTS

The gender distribution in the OSMF and Category B is shown in Table 1. 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 (p = 0.014; control and study).

Table 1: Demographic profile of the participants

	Category B		Category A	
Sex	**N=60**	**%**	**N=60**	**%**
Male	35	58.33	26	43.33
Female	25	41.67	34	56.67
Age in years				
Below 25	10	16.67	7	11.67
25–35	27	45	30	50
35–45	15	25	13	21.67
Above 45	8	13.33	10	16.67
Mean age	33.87 ± 10.55 years.		36.41 ± 10.36years	

The majority of patients had OSMF grades II and III (Table 2). 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±1.98g/dL, while the Category B had a mean Hb of 14.02±2.33g/dL (p=0.001). The Category B's mean serum iron level was 121.22±36.52g/dL, while the OSMF group's was 45.12±10.85g/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).

Table 2: Grades of oral submucous fibrosis

Various grades of oral submucous fibrosis	Number of patients	Percentage
I	14	23.33
II	23	38.33
III	23	38.33

Table 3: Comparison of Category B and Category A by independent t-test

Parameters	Mean ± SD		P-value
	Category B	Category A	
Hb (g/dL)	14.02±2.33	10.98±1.98	<0.001
PCV	42.87±4.66	35.02±5.22	<0.001
MCV (fl)	86.98±5.87	70.12±7.85	<0.001
MCH	27.99±3.02	25.12±5.23	<0.001
MCHC	32.12±0.99	29.87±1.89	<0.01
Iron (mg/dL)	121.22±36.52	45.12±10.85	<0.001
Vitamin B12 (pg/Ml)	425.22±87.25	211.22±38.66	<0.001

Hb, packed cell volume, mean corpuscular volume, mean corpuscular Hb (MCH), and MCHC levels in OSMF stage III demonstrated a substantial relationship with serum iron levels (Pearson correlation values: 0.70, 0.64, 0.46, and 0.23, respectively). The research group contained 55 iron-deficient individuals, whereas the Category B had just 9. The odds ratio (OR) was 28.12, which means that iron deficiency was projected to occur 28.12 times more frequently in the Category A than in the Category B. Vitamin B12 deficiency was discovered in 35 patients in the Category A compared to 3 patients in the Category B, with the Category A having a greater rate of insufficiency than the Category B.

The average mouth openness of the 60 OSMF patients was 14.1. Every patient exhibited OSMF involvement in the soft palate, retromolar area, and buccal mucosa, with labial mucosa involvement in 40 patients (66.67%), floor of mouth involvement in 31 patients (51.67%), and tongue involvement in 23 individuals (38.33 percent). Twenty-two of the sixty OSMF patients had three-site engagement, twenty-four had four-site involvement, and ten had no involvement at all.

Table 4: The Category A and category B logistic regression analysis by haematological parameter

Parameters	Category B	Category A	OR	95% CI for OR		P-value
				Lower	Upper	
Hb (g/dL)						
Deficiency	12	51	0.93	0.12	6.24	0.98
Normal	48	9				
PCV						
Deficiency	3	27	2.72	0.17	50.97	0.55
Normal	57	33				
MCV (fl)						
Deficiency	7	51	3.13	0.23	43.78	0.44
Normal	53	9				
MCH						
Deficiency	15	39	0.23	0.04	1.94	0.17
Normal	45	21				
MCHC						
Deficiency	12	35	0.25	0.03	2.75	0.26
Normal	48	25				
Iron (mg/dL)						
Deficiency	9	55	28.12	1.13	687.75	0.047*
Normal	51	5				
Vitamin B12 (pg/Ml)						
Deficiency	3	35	3.88	0.43	43.37	0.29
Normal	57	25				

DISCUSSION

Oral submucous fibrosis (OSMF) is a chronic, insidious oral mucosal disorder that mostly affects Indians and, on rare occasions, other Asians. OSMF affects around 5 million persons (0.5 percent) of the population in India alone. The fast spread of the condition is attributed to a rise in the popularity of commercially made areca nut preparations (pan masala) in India, as well as an increase in the acceptance of this habit by young people due to simple availability, successful pricing modifications, and marketing efforts. Arakeri et al.[7]'s classification was selected because it assists in successfully categorising information, collecting facts, correct contact, prognosis, and making illness aspects simpler to grasp, which trainees and doctors can easily execute. It is a three-tiered framework that separates medicinal, surgical, and malignant illness therapy. OSMF patients showed lower blood iron, haemoglobin, and vitamin B12 levels than controls in this research. Similar results were obtained in other trials conducted across the world. [8-10]

Wang et al.[11] discovered that folic acid and vitamin B12 levels were decreased in OSMF patients. Wahiet al.[10] reported that the OSMF group had decreased amounts of vitamin B12 and vitamin C in their blood. In addition to these two findings, the present study looked at vitamin B12 and haematological markers. The RCIs were not examined in the majority of the trials.Iron is a necessary component of nucleic acids and collagen, as well as in the production and preservation of the oral mucosa.[9] Due to insufficient serum iron levels, iron deficiency anaemia (IDA) is characterised by weakness, achlorhydria, epithelial atrophy, loss of focus, irritability, dyspnea, and decreased memory.Dysphagia is caused by the existence of abnormal esophageal webs, which are prone to malignancy. OSMF is distinguished histopathologically by epithelial atrophy, thick corium, and increased collagen production. The

prevalence of IDA was greater in 55 OSMF patients (91.67%) than in stable controls.[12-15]Many experiments have yielded inconsistent results. Wahiet al.[10] discovered anaemia in 6% of male OSMF patients and 11% of female OSMF patients, however the incidence of anaemia in individuals did not differ substantially from controls.

Bhardwaj et al.[8] discovered a steady decrease in serum iron and haemoglobin levels in 120 individuals as they progressed from stage I OSMF to stage IV OSMF, which was also found in the current investigation. Our findings are consistent with those of Karthiket al.[16]OSMF produces iron insufficiency as a result of bad eating habits and burning sensations, making a regular diet hard to ingest and resulting in poor feeding. Several studies revealed situations in which IDA triggered the development of OSMF, which was treated orally with iron supplements and antioxidants. [8-10]In advanced cases, the deficit may be exacerbated by the influence of a poor diet due to insufficient food consumption. They also revealed that vitamin and iron deficiency, as well as malnutrition in the host, alter the lamina propria's inflammatory reparative response, leading in poor healing, scarification, and, finally, OSMF. Tobacco usage causes a lack of micronutrients.

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. It is significant in cancer prevention because of its role in DNA synthesis and repair. While the abnormalities may not be carcinogenic, they may raise the sensitivity of the behaviour of other carcinogens. [10,11] As a result, various problems arise, needing greater in-depth investigation. As a result, many concerns remain, necessitating additional extensive investigation to identify the link between OSMF and the haematological picture.

CONCLUSIONS

Iron status is examined as part of a biochemical examination as part of a preventative approach for persons who are at high risk. Biochemical testing has been proposed as a viable technique for screening OSMF patients on a large scale.

REFERENCES

1. Misra P., MisraV., Dwivedi M., and Gupta S.C., “Oesophag- ealsubepithelial fibrosis: an extension of oral submucosal fib- rosis,” Postgraduate Medical Journal.1998;74(878):733– 736
2. Cox S.C. and Walker D.M., “Oral submucous fibrosis. A re- view,” Australian Dental Journal.1996;41(5):294–299.
3. Kumar K.K., Saraswathi T.R., Ranganathan K., Devi M.U., and Elizabeth J., “Oral submucous fibrosis: a clinico- histopathological study in Chennai,” Indian Journal of Dental Research.2007;18(3):108–111.
4. Rajendran R., Vijayakumar T., and Vasudevan D.M., “An alternative pathogenetic pathway for oral submucous fibrosis (OSMF),” Medical Hypotheses.1989;30(1):35–37.
5. Khanna S., “Immunological and biochemical markers in oral carcinogenesis: the public health perspective,” International Journal of Environmental Research and Public Health.2008;5(5):418–422.
6. Rajendran R., “Oral submucous fibrosis,” Journal of Oral and Maxillofacial Pathology.2003; 7: 1–4.
7. Arakeri G, Thomas D, Aljabab AS, et al.: TFM classification and staging of oral submucous fibrosis: a new proposal. J Oral Pathol Med. 2018, 47:403-9
8. Bhardwaj D, Dinkar AD, Satoskar SK, Desai SR: Serum iron and haemoglobin estimation in oral submucousfibrosis and iron deficiency anaemia: a diagnostic approach. J ClinDiagn Res. 2016, 10:ZC54-8.10.7860/JCDR/2016/21481.9077
9. Kode MA, Karjodkar FR: Estimation of the serum and the salivary trace elements in OSMF patients . J ClinDiagn Res. 2013, 7:1215-8. 10.7860/JCDR/2013/5207.3023
10. Wahi PN, Kapur VL, Luthra UK, Srivastava MC: Submucous fibrosis of the oral cavity. 2. Studies on epidemiology. Bull World Health Organ. 1966, 35:793-9.
11. Wang YP, Wu YC, Cheng SJ, Chen HM, Sun A, Chang JY: High frequencies of vitamin B12 and folic acid deficiencies and gastric parietal cell antibody positivity in oral submucous fibrosis patients. J FormosMed Assoc. 2015, 114:813-9. 10.1016/j.jfma.2015.05.011
12. Tadakamadla J, Kumar S, GP M: Evaluation of serum copper and iron levels among oral submucous fibrosis patients. Med Oral Patol Oral Cir Bucal. 2011, 16:e870-3.10.4317/medoral.17083
13. Anuradha CD, Devi CS: Serum protein, ascorbic acid Iron tissue collagen in oral submucous fibrosis-a preliminary study. Indian J Med Res. 1993, 98:147-51.
14. Rajendran R, Vasudevan DM, Vijayakumar T: Serum levels of iron and proteins in oral submucous fibrosis (OSMF). Ann Dent. 1990, 49:23-5, 45.
15. Thakur M, Guttikonda VR: Estimation of hemoglobin, serum iron, total iron-binding capacity and serum ferritin levels in oral submucous fibrosis: a clinicopathological study. J Oral MaxillofacPathol. 2017, 21:30- 5. 10.4103/jomfp.JOMFP_131_15
16. Karthik H, Nair P, Gharote HP, Agarwal K, Ramamurthy Bhat G, KalyanpurRajaram D: Role of hemoglobin and serum iron in oral submucous fibrosis: a clinical study. ScientificWorldJournal. 2012, 2012:254013.