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Original Research Article

Prospective Study of Lipid Profile in Oral Sub-Mucosal Fibrosis in Different Age Groups of Jharkhand Population

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Conflict of interest: Nil

Abstract:

Background: Oral Submucosal fibrosis (OSMF) is a quite common disease in adults who chew areca and tobacco. Hence, severity or degrees of fibrosis have to be ruled out because it is a pre-cancerous symptom.

Methods: 90 (ninety) adult OSMF patients were studied. The lipid profile was carried out in all patients and compared with the normal (controlled) group. Fasting 3 Ml venous blood sample was collected under aseptic precautions in plane vial from every patient, and the lipid profile was studied.

Results: TC in OSMF was 134.3 (±8.6), 187.2 (±9.6) in the controlled group, and $p<0.001$. HDL profile was 28.2 (±4.8) in OSMF, 37.3 (±2.4) in the controlled group, and $p<0.001$. LDL level was 96.4 (± 4.4) in the OSMF group, 85.4 (± 16.4) in the controlled group, and 5.5 $p<0.001$. VLDL level was 16.8 (± 2.4) in OSMF, 39.4 (± 7.1) in controlled and $p<0.001$. TG level was 75.4 (± 10.2) in OSMF patients, 118.2 (± 18.4) in the controlled group, and $p<0.001$.

Conclusion: The variations in parameters of lipid profile and erythrocyte level had a poor prognosis in OSMF patients. ENT surgeons have to take preventive measures to reduce morbidity and mortality in such patients.

Keywords: OSMF, lipid profile, leucocyte pre-cancerous, Jamshedpur.

Introduction

According to a World Health Organization (WHO) report, there are > million OSMF patients globally. It is due to areca and tobacco chewing in young adults and in old age. Oral submucosal fibrosis (OSMF) is a chronic disease that produces scars, tissue fibrosis, and precancerous lesions. It frequently occurs in the buccal mucosa [1]. Pathological characteristics include chronic inflammation, excessive collagen deposition in the connective tissues below the oral mucosal epithelium, local inflammation in the lamina propria, or deep connective tissues, and degenerative changes in the muscles; this leads to OSMF [2].

Fibrosis is due to the increased synthesis of collagen and induces the production of free radicals and reactive oxygen species, which is responsible for the high rate of oxidation per oxidation of polyunsaturated fatty acids, which affects essential constituents of the cell membrane (3]. Because of lipid peroxidation, there is greater utilization of lipid for new membrane biogenesis [4]. Hence, an attempt is made to evaluate the lipid profile in OSMF patients. So that the severity of fibrosis can be predicted.

Material and Method

90 patients aged between 20 to 55 years regularly visited to ENT department of MGM Medical College Hospital, Jamshedpur were studied.

Inclusion Criteria: The patients diagnosed (confirmed) with oral sub-mucosal fibrosis, aged between 20 to 55 years, were selected to study.

Exclusion Criteria: Oral sub-mucosal fibrosis (OSMF) on radiotherapy or chemotherapy or underwent surgery for OSMF. Patients with diabetes mellitus (DM), hypertension (HTN), or a history of IHD or MI were excluded from the study.

Method: The same number, i.e., 90 normal (controlled) volunteers, were also selected for biochemical analysis to compare the variations in the lipid profile in OSMF patients. Fasting blood sample of 3 ml of venous blood was collected under aseptic precautions in a plain vial. It was allowed to clot,

and serum was separated by configuration. The lipid profile was analyzed by using an automated analyzer using the following method:

1. Triglycerides by enzymatic method using Glycerol 3-phosphate as substrate.
2. Total cholesterol by the cholesterol oxidisep-eroxidise method.
3. HDL cholesterol by precipitation (with phos-photungustic acid) method.
4. LDL cholesterol using the Friedwald formula.

LDL = TC-(HDL+TG/5)

The duration of the study was from May 2023 to April 2024.

Statistical analysis:

The parameters of the lipid profile were compared in both groups (controlled and OSMF) by applying t-test analysis was carried out in SPSS software. The ratio of male and female were 2:1.

Observation and Results

Table 1: Comparative study of lipid profile in OSMF and controlled (normal group)

- In the total count study, 134.3 (± 8.6) in the OSMF group and 187.2 (± 9.6) in the con-trolled group, the t test was 38.9 and p<0.001.
- In the HDL study, 28.2 (± 4.8) in the OSMF group and 37.3 (± 2.4) in the controlled group, t test was 16.08 and p<0.001.
- In LDL 96.4 (± 11.4) in the OSMF group and 85 (± 16.4) in the normal group, t test was 5.2 and p<0.001.
- In the VLDL study, 16.8 (± 2.4) in the OSMF group and 39.4 (± 7.2) in the controlled group, t test was 28.2 and p<0.001.
- In the T.G. study, 75.4 (± 10.2) in the OSMF study, and 118.2 (± 18.4) in the controlled group, t test was 19.3 and p<0.001.

Table 1: Comparative study of lipid profile in OSMF and controlled group

Lipid profile de-tails	OSMF Mean value ±SD (90)	Controlled group Mean value ±SD (90)	t test	P value
Total count (TC)	134.3 (±8.6)	187.2 (±9.6)	38.9	P<0.001
HDL	28.2 (±4.8)	37.3 (±2.4)	16.08	P<0.001
LDL	96.4 (±11.4)	85.4 (±16.4)	5.2	P<0.001
VLDL	16.8 (± 2.4)	39.4 (±7.2)	28.2	P<0.001
TG	75.4 (±10.2)	118.2 (±18.4)	19.3	P<0.001

(P<0.001 = p value is highly significant)

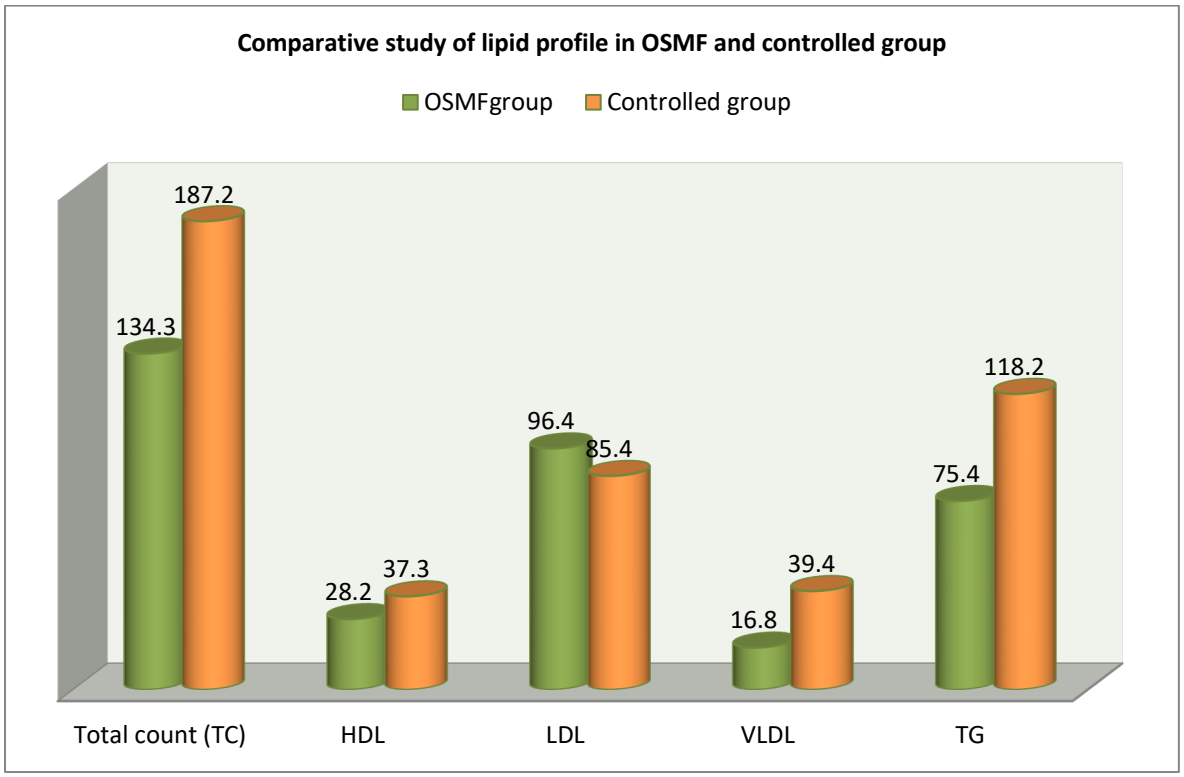

Figure 1: Comparative study of lipid profile in OSMF and controlled group

Discussion

Present a prospective study of the lipid profile in oral sub-mucosal fibrosis in the Jamshedpur population. In the comparative study of lipid profile in OSMF patients and controlled groups, All the parameters had significant p values ($p<0.001$). These findings were more or less in agreement with previous studies [5,6,7]. Chewing betel nut (areca), tobacco, and tobacco products are the main cause of OSMF [8]. The histopathology of OSMF had various epithelial alterations, rete-peg shapes, and sub-epithelial deposition of dense bands of collagen fibers. Epithelial alterations vary from atrophy with hyperplasia to hyperplasia or dysplasia. A shift in epithelial compliance in response to increased connective tissue fibrosis and degradation of lipids [9]. As lipids are essential for cell growth and the division of normal and abnormal tissues. Lipids maintain the activity of membrane-bound enzymes and the stabilization of the DNA helix.

It is hypothesized that the inverse association between cholesterol concentration and the incidence of fibrosis leads to (a) lower cholesterol values even before manifestation or detection of fibrosis, which may be the result of fibrosis, which may lead to malignancy; (b) lower cholesterol values may precede the enhancement of oral fibrosis, i.e., cholesterol serves as a marker for variables in the mucosal membrane of the buccal cavity; (c) A reduction in cholesterol values may precede the development of fibrosis, which has a bad prognosis [10]. Hence, changes in lipid profile might be treated as an early diagnosis of malignancy.

Moreover, in the present study, the majority of the patients belong to lower middle socio-economic status. Hence, variations in lipid profiles could be due to undernourished or malnourished patients, which lead to less immunity in the patients. It may enhance the high degree of fibrosis in the oral mucosa in tobacco chewers.

Summary and Conclusion

The present study of OSMF in the Kolhan belt of the Jamshedpur population had lower serum lipid status, which is a bad prognosis. As Kolhan are the tribal population, the majority of them are illiterate; hence, awareness of the hazards of tobacco and areca nut chewing is necessary to prevent irreversible fibrosis of the oral mucosa. But this study demands further histo-pathological, nutritional, genetic, and biochemical studies because the exact pathogenesis of OSMF is still unclear.

Limitation of study: Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest technique, we have limited findings and results.

This research paper was approved by the ethical committee of MGM Medical College Hospital, Jamshedpur – 831020

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