# A PROSPECTIVE AND OBSERVATIONAL STUDY TO ANALYZE THE ASSOCIATION OF LIPID PROFILE ABNORMALITY WITH DISEASE SEVERITY IN SEBORRHEIC DERMATITIS PATIENTS

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## ABSTRACT

**Objective:** The aim of the study was to evaluate the association of lipid profile abnormality and eborrheic dermatitis by analyzing the lipid profile; and to evaluate the association of lipid profile abnormality and severity of seborrheic dermatitis.

**Methods:** This prospective and observational study was conducted in the department of dermatology in Dr. D.Y. Patil University and Hospital, School of Medicine, Navi Mumbai. The diagnosed cases of Seborrheic Dermatitis were subjected to lipid profile examination. The demographic and disease profile was then compared among the patients with normal and abnormal lipid profile.

**Results:** A total of 30 seborrheic dermatitis patients were analyzed. Eighteen (60%) of the study participants were males. Serum triglyceride, LDL/HDL ratio, and cholesterol total/HDL ratio were found to be significantly associated with disease severity.

**Conclusion:** The study suggests a significant role of monitoring serum profile in the patients of seborrheic dermatitis.

**Keywords:** Seborrheic dermatitis, Metabolic syndrome, Lipid profile.

## INTRODUCTION

Seborrheic dermatitis (SD) is a commonly seen chronic inflammatory skin disease. It is an endogenous form of dermatitis mostly seen in individuals with hyperactive sebaceous glands. The distribution of seborrheic dermatitis is seen to be more distinctive than its morphology. Adults are affected more frequently by seborrheic dermatitis. Scalp and face are the usual sites involved, other seborrheic areas like paranasal, infra-labial folds, mid chest, mid back, and periumbilical areas can also be affected. The complexity of the condition can be reflected by the use of varying terms such as sebopsoriasis, seborrheic dermatitis, seborrheic eczema, dandruff, and pityriasiscapitis [1].

Despite been a recognized clinical entity for decades, a lot of controversy regarding the etiology and pathogenesis of seborrheic dermatitisremains standstill. The pathogenesis of the disease includes fungal colonization in the skin surface, sebaceous secretions, individual susceptibility, and interaction between all these factors. The etiological factors mainly held accountable are Malassezia furfur (overgrowth of yeast), genetic predisposition, and immunodeficiency. Malassezia furfur is a common skin commensal and its association with seborrheic dermatitisis dubious. There are two notions with reference to Malassezia furfur, some believe SD is caused by Malassezia furfur due to its response to antifungal treatment, on the other hand, others propose that it is incidental to a primary inflammatory dermatosis, resulting in increased cell turnover, scaling, and inflammation [2].

Seborrheic dermatitisis is a chronic inflammatory skin disease. Inflammation is also one of the essential components of metabolic syndrome. Many inflammatory cytokines play a critical role in this disease by highlighting its metabolic significance. It is often seen that metabolic syndrome is associated with lipid abnormality; especially toward the higher range [3]. There is increased sebum secretion in these individuals resulting in seborrheic dermatitis. Various studies have

found its association with obesity and diabetes [4,5]. The disease is an endocrinopathy, characterized by obesity, hypertension, dyslipidemia, and insulin resistance that play an important role in its metabolic syndrome pathophysiology. Metabolic syndrome has been associated with high morbidity and mortality. Among the dermatological diseases and disorders, psoriasis is best known to be correlated with metabolic syndrome [6]. Just like seborrheic dermatitis, psoriasis is also a chronic inflammatory disease and shares certain characteristics with each other [7].

Seborrheic dermatitis can last for several years through recurrence and remissions. Due to its chronic course and lack of definitive treatment, it affects the quality of life of the patients. The purpose of this study is to evaluate the association of lipid profile abnormality and seborrheic dermatitis, to find the association of lipid profile abnormality with the severity of the disease study and to investigate metabolic syndrome and find its correlation with the severity of the disease among seborrheic dermatitis patients.

## METHODS

This was a prospective study conducted in outpatient dermatology department of tertiary care teaching hospital, Navi-Mumbai. This study was conducted over a period of 2 months. The patients included in this study were the patient suffering from seborrheic dermatitis of all the age groups, belonging to either gender and willing to participate in the study voluntarily. The study was initiated after taking the approval from the Institutional Ethics Committee for biomedical and health research (registration number - 2019/104).

The sample size of the study is 30. The demographic data of the patients in the form of age and gender were collected. The disease-related data were collected, particularly duration of illness and grade of seborrheic dermatitis. Then, the patients' lipid profile was done and they were

grouped as normal or abnormal for each of the components of lipid profile, namely, cholesterol, triglycerides, low density lipoproteins (LDL), and high density lipoproteins (HDL).

### Statistical analysis

The demographic and disease-related data were recorded in Microsoft Excel. The data were analyzed using SPSS version 20. Then, demographic, grade of disease, duration of disease, and various component of lipid profile are analyzed. The normal and abnormal lipid profiles were correlated with seborrheic dermatitis disease severity. ANNOVA test was used to test any statistically significant difference in lipid levels in mild, moderate, or severe seborrheic dermatitis cases. $p < 0.05$ was considered statistically significant.

## RESULTS AND DISCUSSION

### Demographic details

In this study, we have included a total of 30 seborrheic dermatitis patients. The disease was more common in males 18 (60%). This male preponderance of the disease is documented in previous studies, but there are other studies which show contrary results [8-10]. The male preponderance of the disease may suggest some association of the disease with sex hormones particularly androgens.

The majority of the patients belonged to the age group 19–30 years – 19 (70%). The detailed distribution of gender and age is given in Table 1. This is similar to the findings of the study conducted by Schwartz *et al.* reported that seborrheic dermatitis can affect patients from infancy to old age. The condition most commonly occurs in infants within the first 3 months of life and in adults at 30–60 years of age. The average age of patients was 26.1 ± 13.8 years ranging from 12 to 66 years. This study did not include any patient > 60 years of age. The average disease duration was 2.8 ± 1.6 years ranging from 6 months to 6 years.

### Disease severity and lipid profile

The patients of seborrheic dermatitis were grouped into mild, moderate, and severe depending on the disease severity. The lipid profile of the patients was done. The parameters recorded were cholesterol, triglycerides, low density lipoproteins (LDL) and high density lipoproteins (HDL). LDL/HDL ratio and cholesterol total/HDL Ratio were also calculated. All these parameters were grouped into normal and abnormal depending on their levels.

Out of total 30 patients of seborrheic dermatitis in our study, 20 (66.6%) belonged to high level of disease and among them, 11 (36.6%) were from severe grade as shown in Table 2. This is in line with Abdulrahman *et al.* [11]

The mean and standard deviations (SD) of lipid parameters, namely, cholesterol, triglycerides, LDL (Low density lipoproteins), VLDL (Very low density lipoproteins), HDL (High density lipoproteins), LDL/HDL ratio, and cholesterol total/HDL ratio are shown in Table 3.

Among all the lipid profile parameters, serum triglyceride, LDL/HDL ratio, and cholesterol total/HDL ratio were found to be statistically significant with p values 0.04, 0.03, and 0.004, respectively. Hence, our study suggests the role of serum lipid levels with severity of seborrheic dermatitis. Since serum triglyceride levels are significantly different in the mild, moderate, and severe groups; this may point to the fact that dietary intake of fat may also have role in disease pathology.

Further studies with greater sample size and longer duration of study will be helpful to confirm these findings. Short duration of the study and limited sample size were the major limitations of the study. In our study, we could not get patients from infant age group because this study was conducted in tertiary care teaching hospital, so patient will approach to pediatric OPD.

**Table 1: Demographic details of the study participants**

|  | Number (%) |
|---|---|
| Gender |  |
| Male | 18 (60) |
| Female | 12 (40) |
| Age distribution (years) |  |
| ≤18 | 7 (23.3) |
| 19–30 | 19 (70) |
| 31–60 | 4 (6.7) |
| >60 | Nil |

Total number of patients (n)=30

**Table 2: Lipid profile of study participants depending on severity of seborrheic dermatitis (SD)**

| Severity of SD | Mild | Moderate | Severe | Total |
|---|---|---|---|---|
| Cholesterol |  |  |  |  |
| Abnormal | 2 (6.67%) | 2 (6.67%) | 3 (0.10%) | 7 (23.33%) |
| Normal | 7 (23.33%) | 8 (26.67%) | 8 (26.67%) | 23 (76.67%) |
| Triglycerides |  |  |  |  |
| Abnormal | 1 (3.33%) | 1 (3.33%) | 6 (20%) | 8 (26.67%) |
| Normal | 9 (30%) | 8 (26.67%) | 5 (16.67%) | 22 (73.33%) |
| LDL |  |  |  |  |
| Abnormal | 1 (3.33%) | 2 (6.67%) | 4 (13.33%) | 7 (23.33%) |
| Normal | 9 (30%) | 7 (23.33%) | 7 (23.33%) | 23 (76.67%) |
| HDL |  |  |  |  |
| Abnormal | 8 (26.67%) | 7 (23.33%) | 11 (36.67%) | 26 (86.67%) |
| Normal | 2 (6.67%) | 2 (6.67%) | 0 (0%) | 4 (13.33%) |

Total number of patients (n)=30.

**Table 3: Mean±SD of blood levels of lipid components in mild, moderate, and severe cases**

| Study parameter | Mild SD | Moderate SD | Severe SD |
|---|---|---|---|
| Total cholesterol | 162.77±29.40 | 177.76±29.45 | 196.86±34.60 |
| Triglycerides | 94.99±42.06 | 118.35±40.48 | 158.59±72.29 |
| HDL | 49.68±9.91 | 48.42±14.40 | 40.25±7.40 |
| LDL | 97.01±24.90 | 113.68±40.85 | 126.73±32.12 |
| VLDL | 20.19±7.55 | 23.87±8.07 | 29.90±14.71 |
| LDL/HDL Ratio | 2.02±0.73 | 2.54±1.22 | 3.19±0.83 |
| Cholesterol Total/ HDL Ratio | 3.38±0.93 | 3.87±1.13 | 4.99±1.04 |

*LDL: Low density lipoproteins, VLDL: Very low density lipoproteins, HDL: High density lipoproteins

Not many studies have been done in this field previously. Hence, our study will have a significant role in adding to the already existing knowledge in this pathophysiology of seborrheic dermatitis.

## CONCLUSION

Our study suggests a significant role of monitoring serum profile in the patients of seborrheic dermatitis. The disease severity is found to be related significantly with serum triglyceride, LDL/HDL ratio, and cholesterol total/HDL ratio.

## AUTHORS CONTRIBUTION

The authors confirm contribution to the paper as follows: Study conception and design: Dr. Sharmila Patil and Dr. Vaishali Thakare. Data collection: Aastha Menon, Hritika Sharma, and Tanusri Tetarbe. Analysis and interpretation of results: Dr. Lily Dubey.

## CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

## AUTHORS FUNDING

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