International Journal Dental and Medical Sciences Research
Volume 4, Issue 1, Jan-Feb 2022 pp 445-448 www.ijdmsrjournal.com ISSN: 2582-6018

A Prospective Study of Dermatological Manifestations in People with Obesity

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Submitted: 25-01-2022 Revised: 02-02-2022 Accepted: 08-02-2022

ABSTRACT

Introduction: Obesity is now widely considered as a major public health problem. It is considered to be a global epidemic. The prevalence of obesity has significantly increased among the Indian population over the past 30 years. Health care expenditures are significantly higher for overweight and obese individuals.

Materials and Methods: a cross sectional descriptive study was conducted at Department of Dermatology, Surabhi Institute of Medical sciences, Siddipeta from January 2021 to December 2021 (1 year). 100 adult patients of age group >15 (55 male and 45 female patients), satisfying the inclusion criteria, who attended the outpatient Department of Dermatology, Surabhi Institute of Medical sciences, Siddipeta from January 2021 to December 2021. Patients included in the study were classified into three groups based on their BMI: class 1 with BMI 30.0-34.9, class 2 with BMI 35.0-39.9, class 3 with BMI >40. A detailed history of the patients were taken. Morphology of skin lesions, sites of involvement, number of lesions were noted. A complete systemic and dermatological examination was carried out in all patients. Blood pressure was evaluated. Scraping for KOH mount, bacterial culture done when needed. Height was recorded in meters. Weight was recorded in kg. Waist circumference was recorded in centimeters.

Results: Sex distribution accord to the class of obesity in class I males are 6% and females are 7.5% in class II males are 9% and females are 5% in class III males are 3% and females are 5%. Table 2 illustrates distribution of skin conditions among study patients in the descending order of frequency. Acanthosis nigricans and skin tags were the most common. Table 3 demonstrates distribution of skin manifestation according to obesity class, all the skin conditions are predominant in class I obesity except psoriasis, varicose veins, stasis eczema which are predominant in class III obesity.

Conclusion: Life style modifications are the need of the hour in this era of obesity where more and more young children are growing up to be obese. Any treatment for these dermatological conditions must include measures to control obesity to be fruitful.

Key Words: Obesity, BMI, Acanthosis nigricans, skin tags.

I. INTRODUCTION

Obesity is now widely considered as a major public health problem. It is considered to be a global epidemic. The prevalence of obesity has significantly increased among the US population over the past 30 years. Health care expenditures are significantly higher for overweight and obese individuals.[1]

Obesity is defined as body mass index (BMI) of 30kg/m2 or more. Over the past 30 years its prevalence has increased significantly worldwide. Morbidity and mortality in obese population is significantly more than the normal weight individuals. Obesity carries a significant impact on psychological health, as well. It is indirectly labeled to anxiety, impaired social interaction and depression.[2]

Obesity is responsible for innumerable effects on the body, of which dermatological manifestations form a considerable part .It is found to alter the epidermal barrier of skin causing increased transepidermal water loss. It also affects the sebaceous glands, sweat glands and subcutaneous fat.[3]

Obesity is found to play a contributory role in various skin disorders like acrochordons, acanthosis nigricans, plantar hyperkeratosis, keratosis pilaris, striae, Dercums disease, lymphoedema and hirsuitism,. Many infectious and inflammatory conditions like acne, folliculitis, intertrigo, hidradenitis suppurativa, psoriasis and cellulitis have been proved to be aggravated by the co existence of obesity.[4]

Grading of obesity is done by various means of which body mass index (BMI) is the most commonly used method. Lipid profile alteration is one of the early markers of obesity which is indirectly associated with many dermatological

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Volume 4, Issue 1, Jan-Feb 2022 pp 445-448 www.ijdmsrjournal.com ISSN: 2582-6018

diseases like acne, rosaceae, hidradenitis suppurativa.[5]

The purpose of this study is to elucidate the various skin changes occurring in obese patients, to work up the obese patients with acanthosis nigricans and skin tags for the presence of metabolic syndrome and to study their association to leptin levels and insulin levels.

II. MATERIALS AND METHODS

Study design: cross sectional descriptive study
Study location: Department of Dermatology, Surabhi Institute of Medical sciences, Siddipeta.

Study duration: January 2021 to December 2021 (1 year).
100 adult patients of age group >15 (55 male and 45 female patients), satisfying the inclusion criteria, who attended the outpatient Department of Dermatology, Surabhi Institute of Medical sciences, Siddipeta from January 2021 to December 2021.

Inclusion criteria: All adult patients, of both sexes, who have a BMI > 30.0 and/or waist circumference > 90 cms in males and > 80 cms in females were included in the study.

Exclusion criteria: Patients with obesity due to congenital syndromes and age less than 15 years (pediatric age group) and non-consenting patients were excluded.
Patients included in the study were classified into three groups based on their BMI: class 1 with BMI 30.0-34.9, class 2 with BMI 35.0-39.9, class 3 with BMI >40. A detailed history of the patients were taken. Morphology of skin lesions, sites of involvement, number of lesions were noted. A complete systemic and dermatological examination was carried out in all patients. Blood pressure was evaluated. Scraping for KOH mount, bacterial culture done when needed. Height was recorded in meters. Weight was recorded in kg. Waist circumference was recorded in centimeters.

Statistical Analysis: Data was entered simultaneously into Microsoft excel worksheets designed and coded properly. The Data collected was analyzed using appropriate statistical tests, with the help of Epi-info version 3.5.1 and SPSS version 17. Chi-square and fisher exact tests have been used to test the significant association between the study parameters. A p value was considered to be statistically significant.

III. RESULTS

Gender	Class			Total
	Class I	Class II	Class III	
Male	22	20	13	55
Female	28	8	9	45
Total	50	28	22	100

Table 1: Gender distribution

Skin condition	Frequency	Percentage
Acanthosis Nigricans	82	82
Skin Tags	78	78
Dermatophyte infection	30	30
Fissure Feet	25	25
Striae Distensae	27	27
Psoriasis	26	26
Pyoderma	23	23
Intertrigo	20	20
Varicose veins	15	15
Seborrheic Dermatitis	12	12
Hand-feet Eczema	7	7
Stasis Eczema	6	6

Table 2: Distribution of Skin Conditions among Study Patients

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Skin condition	Class I	Class II	Class III	Total
Acanthosis Nigricans	36	28	18	82
Skin Tags	32	26	20	78
Dermatophyte infection	21	0	7	30
Fissure Feet	7	13	5	25
Striae Distensae	7	10	10	27
Psoriasis	5	7	14	26
Pyoderma	10	8	5	23
Intertrigo	7	7	6	20
Varicose veins	0	3	12	15
Seborrheic Dermatitis	8	2	2	12
Hand-feet Eczema	4	2	1	7
Stasis Eczema	0	0	6	6

Table 3: Distribution of Skin Manifestations According to Obesity-Class/BMI

Table 1 demonstrates sex distribution accord to the class of obesity in class I males are 6% and females are 7.5% in class II males are 9% and females are 5% in class III males are 3% and females are 5%. Table 2 illustrates distribution of skin conditions among study patients in the descending order of frequency. Acanthosis nigricans and skin tags were the most common. Table 3 demonstrates distribution of skin manifestation according to obesity class, all the skin conditions are predominant in class I obesity except psoriasis, varicose veins, stasis eczema which are predominant in class III obesity.

IV. DISCUSSION

In our study 50% of the male patients had grade I obesity, 28% had grade II obesity and 22 had grade III obesity. Among the female patients, 60% had grade I obesity, 20% had grade II obesity and 20% had grade III obesity.[6]

Dermatophyte infections (tinea corporis) were present in 30% patients. There was statistically significant association between dermatophyte infection and BMI (p= 0.021). Though association between BMI and dermatophyte infection is significant, probability of patients to have dermatophyte infection may not increase with BMI. (Chi-square test for linear trend P. value = 0.16044). There was statistically significant association between dermatophyte infection and sex (p=0.0012) with more female preponderance in our study. Dermatophyte Infections were more common in diabetics when compared to non-diabetics.[7,8]

Osteoarthritis was seen in 8% patients. The association between the various obesity classes and osteoarthritis was a statistically insignificant. (p value: 0.006). As BMI increases, probability of patients to have osteoarthritis significantly increase (Chi-square test for linear trend p value: 0.00814). There was no statistically significant association between osteoarthritis and sex of patients. (p= 0.110). Melasma was seen in 8% patients. Waist band eczema was seen in 6%. Stasis eczema seen in 6%. Acne vulgaris seen in 4%. Seborrheic keratosis seen in 2%. Lichen planus seen in 2%.8% had osteoarthritis.[9,10]

V. CONCLUSION

Various associated factors may alter the severity and presentations of many of these dermatoses. Severity of obesity can also be a major determinant in the process. Diabetes mellitus and lipid profile alterations may act in addition to obesity to alter the nature of these lesions. Diabetes was ruled out in the patients included in the study. Lipid profile alterations were noticed in 29% of all the cases. Understanding the Lipid profile changes and their disease associations can be very useful when it comes to treatment of these dermatoses. Treating the underlying pathology of lipid alterations can be helpful in controlling the skin condition.

Life style modifications are the need of the hour in this era of obesity where more and more young children are growing up to be obese. Any treatment for these dermatological conditions must include measures to control obesity to be fruitful.

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