Original Article

Dermatological manifestations in obese patients presenting in out patient department

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Objective: To determine the frequency of various skin manifestations in adult obese patients at a tertiary care dermatology unit.

Methodology: The study was conducted in the Dermatology out patients department (OPD) of Dow University Hospital, Karachi, Pakistan from March to August 2013. All obese patients (BMI≥25Kg/m^2) presenting with various skin problems were included in the study. Complete history including demographic details was recorded. Laboratory investigations included complete blood count, fasting and postprandial blood glucose levels, HbA1C, lipid profile and thyroid function tests. Hormonal profile & ultrasound of ovaries was performed where indicated.

Results: A total of 94 patients fulfilled the inclusion criteria. Various skin diseases seen were striae 51.1%, acanthosis nigricans 38.3%, acne 35.1%, skin tags 34.4%, intertrigo 22.6%, tinea cruris 20.2% and folliculitis 15.1%. Diabetes was seen in 28%, dyslipidemia in 7.2%, hypothyroidism in 14.2% while polycystic ovaries was diagnosed in 19.5% patients.

Conclusion: Obesity was associated with various skin conditions. Special attention should be given to obese patients, as some skin problems may point to an underlying systemic disease like diabetes, hypothyroidism or polycystic ovary syndrome. (Rawal Med J 2014;39:141-144).

Key Words: Obesity, dermatoses, diabetes, acanthosis nigricans.

INTRODUCTION

Obesity is a global health problem. More than 1.1 billion adults worldwide are overweight, 312 million are obese and at least 20 million children under the age of 5 years are overweight.[1] An estimated 115 million people suffer from obesity related problems in developing countries.[2] According to the National Health Survey of Pakistan (NHS 1990-1994) the prevalence of overweight (BMI≥23Kg/m^2) and obese adults (BMI≥25Kg/m^2) was 25.0% and 15.7% respectively.[3] Obesity results from both environmental and genetic factors.[4] A number of acute and chronic cardiovascular, metabolic, musculoskeletal endocrine diseases and malignancies are linked to obesity.

Skin is affected by obesity in a number of ways. It alters the skin barrier function, affecting sebum production and sweat gland function. It also affects micro and macrocirculation, collagen structure and function and wound healing. Obesity is associated with a number of skin manifestations such as acanthosis nigricans, keratosis pilaris, skin infections, acne, hirsutism and psoriasis.[5,6] There is scarcity of data regarding the frequency & spectrum of skin diseases among obese Pakistani individuals. Therefore, the aim of this study was to determine the frequency of various skin conditions in obese individuals.

METHODOLOGY

This cross sectional study was conducted in the Dermatology out patients department (OPD) of Dow University Hospital, Dow University of Health Sciences, Karachi, from March to August 2013. All adult obese patients (BMI≥25Kg/m^2) of both genders presenting with various dermatological problems were included in the study. Ethical

approval of the study was obtained from the hospital and an Informed Consent was taken from all subjects. Detailed histories including demographic details were obtained. A thorough general physical, systemic and skin examination was performed. Complete blood count, fasting and post prandial blood glucose levels, thyroid function tests, lipid profile, serum creatinine, liver function tests were performed in all patients. Hormonal profile including FSH, LH and ultrasound for polycystic ovaries was performed, where indicated.

Weight and height were recorded and BMI was calculated and BMI $\geq$25kg/m^2 was classified as obesity.[7] Hypertension was defined as blood pressure $\geq$ 130/85 mmHg. Data were analyzed using SPSS version 13.0.

RESULTS

A total of 94 (20 male, 74 female) obese patients were enrolled in the study. The age of participants ranged from 16-65 years (Table 1).

Table 1: Age distribution of study population.

Age group	Male N (%)	Female N (%)	Overall N (%)
16-25	6(22.2%)	21(77.8%)	27(100.0%)
26-35	5(23.8%)	16(76.2%)	21(100.0%)
36-45	5(25.0%)	15(75.0%)	20(100.0%)
46-55	3(16.7%)	15(83.3%)	18(100.0%)
≥56	0(0.0%)	7(100.0%)	7(100.0%)

Striae was the most common dermatoses, seen in 51(51.1%) patients followed by Acanthosis nigricans in 36(38.3%) and acne in 35(35.1%) of subjects (Table 2).

Table 2: Various skin manifestations seen.

Condition	n (%)
Acanthosisnigricans	36(38.3)
Xanthoma	11(11.8)
Skin tags	34(34.4)
Striae	51(51.1)
Tniea cruris	20(20.2)
Intertrigo	22(22.6)
Folliculitis	15(15.1)
Cellulitis	8(8.5)
Corns	14(14.9)
Acne	35(35.1)

Table 3: Co-morbidities among study subjects.

Condition	n (%)
Diabetes	28(28.9)
Hypertension	26(26.8
Dyslipidemia	7(7.2)
Polycystic ovary syndrome	19(19.5)
Hypothyroidism	14(14.2)

Frequency of various co-morbidities associated with obesity is shown in Table 3. Twenty eight (28.9%) patients were diabetic, 26(26.8%) hypertensive and several were diagnosed as polycystic ovary syndrome (Table 3).

DISCUSSION

The most common finding in our study was striae cutis distensae and acanthosis nigricans which is similar to those reported by other studies.[8,9] Acanthosis nigricans is a universally reported finding among obese subjects in various studies.[10-12] The reported prevalence of acanthosis is 74% in USA[10] and 76% in Brazil,[11] which is higher compared to 38% seen in our study. It is a marker of insulin resistance and may result from inappropriate simultaneous activation of distinct tyrosine kinase growth factor receptors due to excessive levels of circulating insulin.[12] It is commonly seen in association with polycystic ovary syndrome along with hirsutism and hyperandrogenism. Various studies have shown that the most effective treatment of acanthosis is weight loss, if it is associated with hyperinsulinemia and insulin resistance.[13]

The presence of striae cutis distensae is linked to obesity. The frequency of 51% in our study is higher compared to that reported in other studies, which showed a prevalence of 23.3% from Kuwait[9] and 0.8% from Egypt.[14] The etiology of striae is yet to be defined and at present the treatment options are limited and unsatisfactory.[15] Intertrigo was seen in 22% of our study subjects. This is comparable to some studies[9,12] but lower than 52% reported from Iraq.[16]

Presence of acne has been linked to being overweight. Several studies have now confirmed a

link between high BMI and acne.[17] The frequency of acne in our study was similar to other reported studies.[9,15] In obese persons, there is an overproduction of androgens (Testosterone and estrogen). Androgens are responsible for sebum production and its overproduction may lead to the development of acne. A recent study regarding weight and acne, after adjusting for age, puberty, gender and diet found that obese or overweight teenagers, especially young women were significantly more prone to develop acne compared to normal weight people.[18]

Hirsutism was seen in 12% of obese females. It is a sign of androgen excess and is frequently seen in patients with polycystic ovary syndrome. Fourteen obese patients were diagnosed as cases of PCOS, out of which 10 had hirsutism, acne and menstrual abnormalities. Studies have shown that hirsutism is linked to BMI irrespective of age and testosterone levels and the most effective treatment option is weight loss.[15,19] Xanthomas are commonly seen in hyperlipidemic patients and its frequency in our study was similar to other reported studies.[20] Some of these patients were not aware of the underlying systemic disease and were diagnosed due to their characteristic skin presentation.

CONCLUSION

Obesity is related to various skin problems and special attention should be given to the care of obese patients, as some skin problems may point to an underlying endocrinological and systemic diseases like diabetes, hypothyroidism and polycystic ovaries.

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