Skin - A Mirror Reflecting Underlying Obesity

Dr.K.Hanuma Naik Md,Vd(Std)[1,] Dr.S.Nageswarammamd,VD (STD)[2]

[1]Asst Prof In Dvl Dept, Gmc,Guntur.
[2]Prof&Hod, In Dvl Dept(Guntur Medical College, Ntruhs, Andhra Pradesh,India)

Abstract:
Introduction: *Obesity is a global problem, epidemic in some areas and on the rise in others. One of the most important, yet preventable health hazards worldwide. Obesity causes a multitude of skin changes, which gives us clue of underlying obesity. These include acanthosisnigricans, acrochordons, striae distensae, keratosis pilaris, adiposis dolorosa, increased infections .*
Aim: *To study the incidence of various dermatological manifestations seen in obese subjects and to correlate between the severity of obesity and skin changes.*
Materials and methods: *The present study was conducted for a period of one year in department of DVL, GGH, Guntur. Subjects with BMI of >30 were included, detailed history was taken and relevant investigations were done to rule out underlying cause for obesity.Observation and results: out of 20,200 patients 77 patients were obese with BMI of>30. Most common dermatological finding observed is acanthosis nigricans, with skin tags being the second most common finding with dermatophyte infections third most common.*
Conclusion: *obesity is a chronic health problem, with numerous complications that affect the skin. Dermatological manifestations of obesity range from annoying to incapacitating. Early recognition and prompt attention to these dermatoses is the corner stone of appropriate management.*
Keywords*: obesity, acanthosis nigricans, BMI, skin tags, dermatophyte infections*

I. Introduction

Obesity is the accumulation of excess of adipose tissue to an extent that impairs both physical and psychosocial health and well being. It is often neglected, indeed frequently it is not even thought of as a disease, but obesity is one of the most important, yet preventable health hazard. There is alarming increase in obesity in both developed and developing countries.

Obesity increases morbidity and mortality through its multiple effects on nearly every system of the body. It causes multitude of skin changes. Prevalence of obesity changes with age ,sex, socioeconomic status.

Age: Prevalence is increasing in children

Sex: more common among women.because women have more fat mass and less lean mass than men and relate to mens ability to deposit more lean than fat tissue when energy imbalance occurs with weight gain[.1]

Socioeconomic status: more among poor socio economic status. Recent trends show a shift in prevalence from higher to lower socio economic level.[2]

Etiopathogenesis: obesity has a multifactorial etiology, It is a result of genetic, environmental, behavioral. Physiological, social and cultural factors.[3]

Secondary causes of obesity are hypothyroidism, cushings syndrome, insuinoma, pcod, growth hormone deficiency, type 2 DM, pseudohypoparathyroidism, eating disorders, medications like OCP's and genetic syndromes.

Obesity and the skin: Obesity is associated with a number of dermatoses. It affects cutaneous sensation, temperature regulation, foot shape and vasculature.Acanthosis nigricans is the most common dermatological manifestation of obesity.It increases the incidence of cutaneous infections ,leg ulcerations,stasis pigmentation,lymphedema,plantar hyperkeratosis,striae etc.

II. Aims and Objectives

1.To study the incidence of various dermatological manifestations occurring in obese subjects.
2.To study the correlation between the severity of obesity and skin changes.
3.To compare the skin changes in male and female subjects with obesity.

III. Materials And Methods

The study period extended for one year. Patients attending to the DVL OPD, GGH, Guntur were enrolled in the study.The patients BMI was calculated by using the formula –weight in kilograms/height in square meters. Subjects who had a BMI of more than 30 were entered in to the study group.

Detailed history was taken and relevant investigations were done to rule out any underlying cause for obesity. Investigations done for all patients include complete urine examination, CBP,RBS,RFT,LFT, Thyroid function tests, USG abdomen.

The patients were divided into two groups based on their sex i.e male and female. Each group was again divided into three groups based on their BMI.

1. obese class 1: 30 to 34.99
2. obese class 2: 35 to 39.99
3. obese class 3: 40 and above

Each patient was examined clinically and skin changes were analysed to find most common changes, common site of involvement, any differences in the pattern between men and women, correlation between degree of obesity and severity of changes

IV. Observation And Results

Out of 20200 patients attended DVL op, 77 were obese with BMI of >30. Out of these 32patients had underlying systemic or endocrine cause.Remaining 45 patients with no detectable underlying cause were included in the study.On analyzing these 45 cases following results were obtained.

Table 1: Dermatological Findings In The Study Group

skin findings	males	females	total
Acanthosis nigricans	5	24	29
skin tags	4	17	21
striae distensae	3	8	11
Taenia infection	6	12	18
Erythrasma	2	6	8
Intertrigo	2	4	6
Folliculitis	2	4	6
varicose veins	1	4	5
keloids	0	2	2
Facial hypermelanosis	0	2	2
Melasma	0	2	2
Herpes genitalis	1	1	2
PMLE	0	1	1
Scabies	0	1	1
MC	1	0	1
Miliaria	0	1	1
LP	1	0	1
seborrheic keratosis	0	1	1
ACD	0	1	1
seborrheic dermatosis	0	1	1
pemphigus foliaceous	1	0	1
Teania versicolor	0	1	1
Amyloidosis	0	1	1

Sex ratio: Out of 45 cases 34 were females and 11 were males
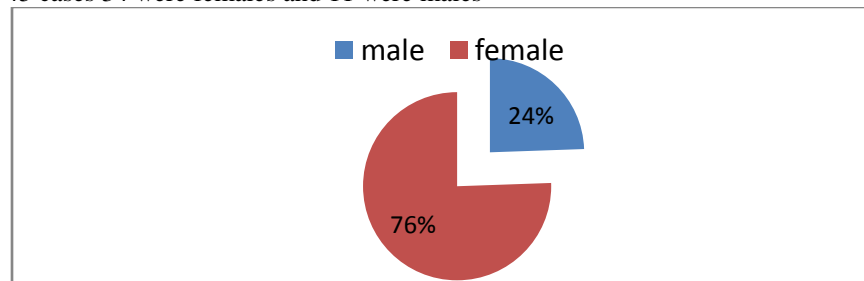
Table 1: Sex Distribution

Age distribution

Table 1: Age Distribution

	<20yrs	21-30yr	31-40yr	41-50yr	51-60yr	>61yrs
male	1	0	4	1	4	1
female	6	8	11	9	0	0
total	7	8	15	10	4	1
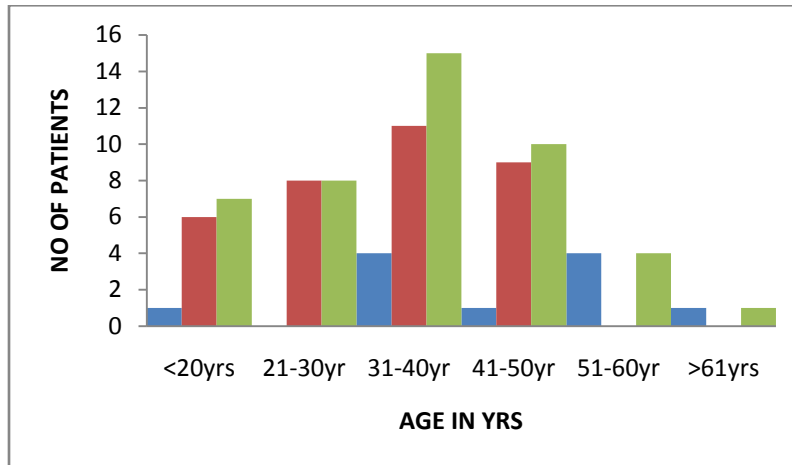
Figure 2 : Bar Diagram Showing Age Distribution

Table 3: Severity Of Obesity

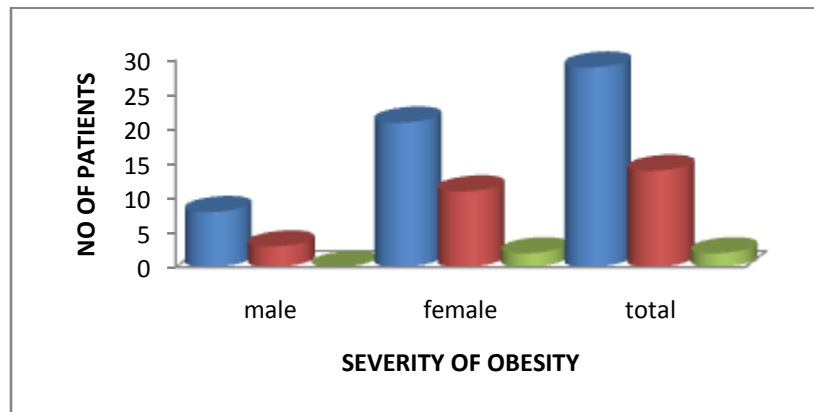| obesity grade	male	female	total
gr 1	8	21	29
gr 2	3	11	14
gr 3	0	2	2

Figure 3 : Showing Severity Grading

V. DISCUSSION

Incidence of obesity in the present study is 0.4 per 100 patients. It doesn't reflect the overall incidence in the population as the study group is very small. Male to female ratio is 1:3.09, this correlates with 2004 WHO statistics which state that obesity is 3 to 4 times more common in women compared to men. Commonest age group involved was 31 to 40 yrs. A positive family history was present in 60.66% of cases. Predominant sedentary life style was seen in 71.11% and 76.47% were females. This might be the cause for relatively more prevalence of obesity in women.

The most common dermatological finding observed in the study was acanthosis nigricans seen in 64.44%, similar to studies by Hud et al[,4] Garcia-Hidalgo et al[5]. the incidence of acanthosis nigricans increased with increasing BMI similar to Hud et al ,Katz et al[6] and Burke et al [7]studies. commonest site of involvement was neck(93.10%)

Skin tags were the second most Common finding seen in 46.66%.no positive relation was observed between BMI and occurrence of skin tags in this study. In most of the cases, skin tags occurred along with acanthosis nigricans.

Dermatophyte infections were the third most common finding with most common site being abdominal folds in females and trunk in males.Striae distensae was the next most common finding in this study which showed increase in prevalence with increasing body weight. The most common site was abdomen in females and shoulders in males.Erythrasma was the next commonest finding with common site being axilla in both sexes.

Intertrigo, bacterial infections, varicose veins were the next common findings being more common in females compared to women.

VI. **Conclusion**

Obesity is a chronic health problem, with numerous complications that affect the skin. Dermatological manifestations of obesity range from annoying to incapacitating. Early recognition and prompt attention to these dermatoses is the corner stone of appropriate management.

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