Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2017; 5(7B):2642-2645 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2017.v05i07.029

Original Research Article

Study of pathological consequences of obesity in asymptomatic obese patients

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Abstract: Obesity represents an important and defined medical disorder now a day, in fact it is being considered as an epidemic requiring effective measures for its prevention and management. We have conducted study to examine and investigate 100 asymptomatic and overtly normal looking obese subjects to find out prevalence of morbid pathological consequences of obesity like hypertension, diabetes mellitus, dyslipidemia, ischemic heart disease, cerebrovascular accident, osteoarthritis, gall stones (cholelithiasis) etc. In this study we have found that obesity is more prevalent in females than in males & currently android type of obesity was found with high prevalence in females so more encouragement and motivational measures should be carried out for weight reduction for prevention of adverse consequences of obesity.
Keywords: Obesity, BMI, Pathological consequences, Types of obesity.

INTRODUCTION:

Obesity is becoming an increasingly common condition not only in western and developed countries but also in developing countries. In simple terms it is characterised by excess adipose tissue mass[1], which would clinically be diagnosed by measuring BMI, skin fold thickness, waist-hip ratio, densitometry(underwater weighing) CT or MRI and electrical impedance [1]. The worldwide prevalence of obesity is increasing at such a rapid rate that WHO consultation on obesity designated it as a major unmet public health problem worldwide affecting more than half of the population [2].

Aims and objectives:

Present study has been carried out mainly to find out prevalence of morbid consequences of obesity like hypertension, diabetes mellitus, dyslipidemia, ischemic heart disease, cerebrovascular accident, osteoarthritis, gall stones (cholelithiasis), obstructive sleep apnoea, skin conditions, psychological problems like depression etc. in asymptomatic obese patients. We also tried to find out and compare its prevalence in various age groups and sexes as well as at various grades and types of obesity.

MATERIAL AND METHODS:

We have conducted the study in our medicine department (during our residency in Shardaben hospital – NHL medical college, Ahmadabad, Gujarat, India during the year 2006 to 2009) to examine and investigate 100 asymptomatic and overtly normal looking obese subjects to find out prevalence of morbid pathological consequences of obesity according to grading of obesity with help of BMI; in both sexes, in adults, non pregnant women and in all races. Obese asymptomatic persons above age of 18 years attending our OPD and indoor department other than ill-health like attendants of patients, medical or paramedical staff etc. were considered subjects of our study. After explaining them purpose and procedure of the study we obtained their oral consent to participate in the study. BMI(wt in kg/ht in m^2)was calculated and all those persons having BMI more than 25kg/m^2 were included for further study. Every subject was graded for obesity as per WHO definition [3] as follows:BMI: Grade-1: 25.0-29.9kg/m^2, Grade-2: 30.0-34.9kg/m^2, Grade-3: 35.0-39.5kg/m^2&Grade-4: >=40kg/m^2.We have also measured waist and hip circumference of each subject and calculated waist to hip ratio and according to this ratio we have differentiated each subject into either android(central) or gynecoid type of obesity. We have

inquired from all the persons whether they had any clinical complain, first without leading questions and then with leading questions regarding giddiness, frequent micturation, increase appetite or increase thirst, recurrent infection like boils or abscess etc., chest pain, pain in joints, disturbed sleep, indigestion, depressed mood etc. Following investigations were done in all patients: fasting and postprandial sugar levels, serum lipid profile, thyroid function test to rule out hypothyroidism, resting ECG, C-X-ray, X Ray of knee AP-lateral, USG of abdomen, 2D echo. Certain specific investigations like overnight pulse oximetry were reserved only in the subjects who were morbidly obese or who had some abnormality in clinical examination or investigation. Persons who were diagnosed to be having hypothyroidism, hypothalamic disease, cushing's syndrome, congestive cardiac failure, renal failure, cirrhosis, ascites or any other evident cause of weight gain were not consider for present study. Pregnant females also not included in the study.

RESULTS:

Table-1: Age & Sex distribution of obese subjects:

Age Group (Years)	No. of Male	No. of Female	Total
15-34	7	12	19
35-54	26	43	69
55-74	6	6	12
	39	61	100

Table-2: Distribution of obese subjects according to BMI in this study:

BMI	Grade-1 25-29.9 kg/m^2	Grade-2 30-34.9 kg/m^2	Grade-3 35-39.9 kg/m^2	Grade-4 >/=40 kg/m^2	Total
Male	8	20	6	5	39
Female	17	33	7	4	61
Total	25	53	13	9	100

Table-3: Prevalence of pathological consequences of obesity in subjects:

Pathological consequences	No. of Male	No. of Female	Total
Pre-hypertension	9	17	26
Hypertension	28	31	59
Diabetes mellitus	11	20	31
Dyslipidemia	22	20	42
Ischemic heart disease	9	3	12
Osteoarthritis	4	5	9
Gall stones	4	10	14

DISCUSSION:

In recent years the impact of obesity and its consequent medical conditions have reached to an epidemic proportion not only in developed countries but also in developing countries. Obesity has now emerged as a leading metabolic disease all over the world with such an impact that WHO considered this as an era of global epidemic of obesity [3].Substantial increase in obesity related morbidity and mortality now a days due to the strong association of obesity with cardiovascular disease, type 2 diabetes mellitus and other chronic diseases. Public health approaches must focus on interventions that would educate public on danger of unhealthy lifestyle choices and their subsequent outcomes. [5]As grading of obesity increases, there is increase in morbidity is found [4]. We have studied random sample of 100 obese males and females with objective of gaining first level information about asymptomatic existence of medical diseases in obese objects of our lower to middle socioeconomic state of population. In our study we have found male to female ratio of about 1:1.5 and more subjects in 25 to 50 years of age. Similar results have been reported by National Foundation of India in study at Delhi (male32%, female 52%), and National Family Health Survey of India as well [6]. In our study we have found more subjects including 29 males and 38 females with android or male type of obesity, and probably that might be the reason

of almost all our subjects (87%) having one or more medical condition known to be associate with obesity and they were totally asymptomatic and unaware of these disorders. Association of HBP and obesity has been established beyond doubts to the extent that weight reduction is now considered major therapeutic measure in patients of pre-hypertension [7], which also co-relate with our findings of high prevalence of hypertension in asymptomatic obese subjects(85). It was estimated that 11% of the cases of heart failure in men and 14% in women could be attributed to obesity alone [7]. Silent form of myocardial ischemia in the form of ST segment changes with or without T wave inversion was detected in 12% of our asymptomatic obese subjects. 9% increase in ischemic heart disease events for each unit increase in BMI found in the Asia-pacific cohort collaboration study, involving >3,00,000 adults followed up for almost 7 years [7]. The mechanisms underlying dislipidemia which commonly seen with obesity are not fully understood but are thought to be involving combination of insulin resistance and hyper insulinemia stimulating hepatic triglyceride synthesis from an increased adipose tissue [7] & this dislipidemia is obviously important factor in the relationship of BMI to increase risk of heart disease. We found high prevalence of dislipidemia (42%) majority whom had central obesity. Clinically manifest diabetes develops only with appreciate genetic legacy, but obesity, by enhancing insulin resistance, increases the demand on pancreatic islets and tends to unmask and exacerbate the underlying genetic propensity [10]. Using the BMI at the age 18, a 28 kg weight gain increase the risk for diabetes by 15 fold, whereas a weight reduction of 20 kg reduced the risk to almost zero [8]. We have found that 31 objects had already diabetes &it detected for first time. Other pathological consequences are also common due to obesity like osteoarthritis of knees and ankles. We found 9% of our study population having osteoarthritis. It has also been reported that weight reduction is associated with decrease risk of OA. Other disease like cholelithiasis, fatty liver, psychological problems like depression, dermatological problems ,sleep apnoea, cerebrovascular accidents reported to be associated with obesity very commonly but we did not find them in our study. Certainforms of cancers are significantly increased in overweight persons, like neoplasm of colon, rectum and prostate, cancers of the reproductive system and gall bladder etc [11].

Summary:

Following facts were found in 100 asymptomatic obese male and female subjects with clinical examination and routine investigations:

- 39 subjects were males and 61 were female. Majority of them (69) were in the age group between 35-54 years.
- BMI range of 26-46kg/m^2 was found and majority of subjects (53) were having Grade- 2 obesity.
- Central obesity was found in 29 males and 38 females; while gynecoid type of obesity was found in10 males and 23 females.
- 87% subjects were found to be having one or more association of medical conditions: hypertension (59%), pre-hypertension(26%), DM(31%), IHD(12%), dislipidemia(42%), OA (9%), gall stones(14%).
- HBP, DM, IHD and dyslipidemia were found in more subjects with central obesity in both male and female subjects.

CONCLUSION:

Obesity is more prevalent in females than in males &currently android type of obesity was found with high prevalence in females. Even though in asymptomatic obese patients, we have found diseases like HBP, DM, IHD, dislipidemia etc. In asymptomatic obese personsrepeated clinical examination and investigations are required for early detection of medical morbid conditions apart from obesity. More encouragement and motivational measures should be carried out for weight reduction for prevention of adverse consequences of obesity.

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