

“SCREENING OF SERUM INSULIN IN OBESE INDIVIDUAL W.S.R TO STHAULYA – AN OBSERVATIONAL STUDY”

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ABSTRACT

Obesity is a state of excess adipose tissue mass. Although often viewed as equivalent to increased body weight but very muscular individual may be overweight by numerical standard without having increased adiposity. In 2014, more than 1.9 billion adults, 18 years older were overweight. Of these over 6 million were obese. 39% of adults aged 18 years and over were overweight in 2014 & 13% were obese. Most of the world population lives in countries where overweight and obesity kills more people than under weight. Overall about 13% of the world's adult population (11% of men & 15 % of women) were obese in 2014. Based on clinical features *Sthaulya* can be considered as Obesity and it is one among *Medhadatupradoshaja vikara*. Hyperinsulinemia and insulin resistance are pervasive features of obesity and increasing weight gain. So the present study was intended for screening the serum insulin. It was observed that among 60 patients, the average serum insulin were 50-150mU/L in maximum number of clinically diagnosed cases of *Sthaulya*.

KEY WORDS: *Sthaulya*, Obesdity, *Medhadatu*, Serum insulin.

INTRODUCTION

Obesity is major health care challenge for 21st century. In 2008, 1.5 billion were overweight (BMI \geq 25). Of this 200 million men and 300 million women were obese (BMI \geq 30). At least 2.8 million people die each year globally as a result being overweight and obese^[1]. In India, WHO says that the proportion of people overweight will increase from 9% to 24% in between 1995 to 2025 and warns that unless action is taken by 2020, there will be 5 million deaths attributed to overweight and obesity worldwide compared to 3 million now, where sedentary lifestyle and unhealthy food habits being a causative factors resulting in many serious systemic complications like insulin resistance, diabetes, hypertension, hyper lipidemia and hyper androgenism in women. In *Ayurveda* *sthaulya* has been described since very early days in various *samhitas*. *Charaka* has described *sthaulya* as one among the *astoundithas*. In the pathogenesis of *sthaulya*, meda, kapha, vata and agni are the main responsible factors. *Sthaulya* has eight doshas like shortening of life span, deranged movements, difficulty in sexual intercourse, general weakness, foul smell from body, over sweating, increased hunger, excessive thirst^[2]. Due to decreased immunity they are more prone to the diseases like *Parmeha*, *Jwara*, *Vidradhi*, *Bhagandara* and *Vatavikara*^[3].

Hyperinsulinemia and insulin resistance are pervasive features of obesity and increasing weight gain^[4]. So the present study is intended for screening the serum insulin in the clinically diagnosed obese individual's w.s.r to *sthaulya*.

Aims and objectives

Biochemical evaluation of serum insulin in clinically diagnosed cases of *sthaulya*.

MATERIALS AND METHODS

A total of 60 patients having the clinical features of *Sthaulya* were selected for the study irrespective of sex, occupation, religion and socio-economical status from OPD & IPD of Shri. J.G.C.H.S Ayurvedic Medical College Hospital Ghataprabha, A special proforma were prepared with detail history taking, physical examination, signs and symptoms as mentioned in our classics.

Study design: It is an observational clinical study on 60 patients of either sex diagnosed as *Sthaulya* based on clinical features. After that patients were subjected to serum insulin test for the evaluation of objective finding for *Sthaulya*.

Inclusion Criteria

1. Patients fulfilling the classical signs and symptoms of *Sthaulya* were selected.
2. Patients of age group 18 - 35 years
3. Patients with raised BMI > 30 as per the WHO standards.

Exclusion criteria

1. Patients having serious cardiovascular diseases like HTN, MI, IHD etc.
2. Patients suffering with endocrine disorders like DM, Hypothyroidism etc.

Diagnostic Criteria

Patients were diagnosed clinically on the basis of complete History taking and Physical examination.

Duration of the study

Since this is an observational study, patients were kept under observation until fulfilment of objectives

Assessment criteria

Assessments were done based on Subjective and Objective Criteria.

Subjective criteria^[5]

- *Daurbalya* (Weakness)
- *Daurgandhya* (Bad smell of Body)

- *Atipipasa* (Excessive Thirst)
- *Atikshuda* (Excessive Hunger)
- *Chala sphik udara stana* (Enlargement of Buttocks, Abdomen and Breast)
- *Alasya* (Laziness)
- *Kshudrashwasa* (Difficulty in Breathing)
- *Krichra vyavaya* (Difficulty in Coitus)
- *Sweda Adhikya* (Excessive Sweating)
- *Angagaurava* (Heaviness of Body)

Objective criteria

- Patients having BMI > 30.
- Fasting Serum insulin.

OBSERVATION AND RESULTS

Total 60 patients were diagnosed as *Sthaulya* for the study and they were subjected for Serum insulin the results of different observations are cited in below tables

Overall assessment of Subjective parameter

In the present study it was observed that Among 60 patients, 100% of patients were having *chala sphik udara stana*, *anga gaurava* and *alasya*, 46.6% were having *swedaadhikya*, 36.6 % were having *kshudra shwasa*, 30% were having *atipipasa* and *atikshudha*, 13.3% were having *krichra vyavaya*, 10% were having *daurgandhya* and *daurbalya*.

Table: 1 Showing Overall Assessment of Subjective parameter in 60 patients

Subjective criteria	No.of patients	Percentage	Average serum insulin (mU/L)
<i>Chalasphik udara stana</i>	60	100%	68.5
<i>Angagaurava</i>	60	100%	109.3
<i>Alasya</i>	60	100%	104.7
<i>Swedaadhikya</i>	28	46.6%	63.0
<i>Daurgandhya</i>	06	10%	36.2
<i>Daurbalya</i>	06	10%	24.1
<i>Krichra vyavaya</i>	08	13.3%	190.6
<i>Atipipasa</i>	18	30%	129.6
<i>Atikshuda</i>	18	30%	128.0
<i>Khudra swasa</i>	22	36.6%	78.4

Critical analysis of subjective parameter

In the present study among 60 patients, 22(36.6%) patients were diagnosed with *Chala sphik udara stana*, *alasya*, *angagaurava*, *swedaadhikya* and *kshudrashwasa*. 6(10%) patients were diagnosed with *Chala sphik udara stana*, *alasya*, *angagaurava* and *daurbalya*. 18(30%) patients were diagnosed with *Chala sphik udara*

stana, *alasya*, *angagaurava* *atipipasa* and *atikshudha*. 8(13.3%) patients were diagnosed with *Chala sphik udara stana*, *alasya*, *angagaurava*, and *krichravavya*. 6(10%) patients were diagnosed with *Chala sphik udara stana*, *angagaurava*, *sweda adhikya* and *daurgandhya*.

Table: 2 Showing critical analysis of subjective parameter in 60 patients

Critical analysis of subjective parameter	No. Of patients	Percentage	Average Serum insulin level (mU/L)
<i>Chala sphik udara stana</i> [cspus] + <i>alasya</i> [al] + <i>angagaurava</i> [ag] + <i>swedaadhikya</i> [sa] + <i>kshudrashwasa</i>	22	36.6%	84.8
<i>Chala sphik udara stana</i> [cspus] + <i>alasya</i> [al] + <i>angagaurava</i> [ag] + <i>daurbalya</i>	6	10%	76.6

<i>Chala sphik udara stana[cspus] + alasya [al] + angagaurava [ag] + krichravavya</i>	8	13.3%	118.3
<i>Chala sphik udara stana[cspus] + alasya[al] + angagaurava [ag] + atipipasa +atikshudha</i>	18	30%	108.4
<i>Chala sphik udara stana[cspus] +alasya [al]+angagaurava[ag]+sweda adhikya[sa]+ daurgandhya[dau]</i>	6	10%	79.7

Serum insulin level

Among 60 patients, 6 patients's had serum insulin level in between 2-25 mU/L which constitutes the 10% of the total incidence. 6 patients had serum insulin level in between 26-50.9 mU/L which constitutes the 10% of the total incidence. 22 patients had serum insulin level were

in between 51-100.9 mU/L which constitutes the 36.6% of the total incidence, 18 patients had serum insulin level in between 101-150 mU/L which constitutes the 30% of the total incidence and 8 patients had serum insulin level above 150 mU/L which constitutes the 13.3% of the total incidence.

Table no: 3 Showing Distribution of patients according to Serum Insulin Level

Serum insulin level	No. Of patients	Percentage
2-25.9 mU/L	6	10%
26-50.9 mU/L	6	10%
51-100.9 mU/L	22	36.6%
101-150 mU/L	18	30%
Above 150 mU/L	8	13.3%

DISCUSSION

Obesity is a state of excess adipose tissue mass. Although often viewed as equivalent to increased body weight but very muscular individual may be overweight by numerical standard without having increased adiposity. *Sthaulya* is one among *Astonidita* and mainly it's a *Kaphapradoshaja* and *Medopradoshaja Vikara*. After the study it was observed that, among 60 patients, 100% of patients were having *chala sphik udara stana*, *anga gaurava* and *alasya* with average insulin of 68.5, 109.3 and 104.7mU/L respectively. 46.6% were having *sweda adhikya* with 63.0mU/L. 36.6 % were having *kshudra shwasa* with 78.4mU/L, 30% were having *atipipasa* and *atikshudha* with 129.6 and 128.0mU/L respectively. 13.3% were having *krichra vyavaya* with 190mU/L, and 10% were having *daurgandhya* and *daurbalya* with serum insulin 36.2 and 24.1mU/L respectively.

CONCLUSION

Sthaulya is a metabolic disorder, described by *Charaka* in *Astauninditiya Adhyaya* and its *kapha pradhana* and *medo-pradoshaja vyadhi*. Based on critical analysis of subjective parameters it can be concluded that *Chala sphik udara stana*, *Alasya*, *Angagaurava* and *Sweda adhikya* can be considered as *Pratyatma lakshana* (Cardinal features), and *Kshudra shwasa*, *Daurabalya*, *Daurgandhya*, *Krichra vyavaya*, *Atipipasa* and *Atikshuda* as *anubandha lakshanas* (Associated features) of *Sthaulya*. This observational study show that the serum insulin was found increased in the clinically diagnosed cases of *sthaulya*, so one can consider serum insulin as objective criteria in the diagnosis of *sthaulya*.

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