

## OBSERVATIONAL STUDY TO DETERMINE ATI SWED PRAVARTAN IN STHAULYA WSR TO HYPERHYDROSSIS IN OBESITY

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### ABSTRACT

*Ati swed pravartan* as described by *Charaka in sutrasthan adhyay 21* is one of the main *Lakshana* among eight *Lakshanas* of *atisthaulya*. It is found that there is excess sweating in overweight person than lean body person while doing day to day activity. **Objective:** To know pathophysiology behind excess sweating or hyperhydrosis in obese patients. **Design:** *Sthula Rugna* having *udara lambanam*, *ayatha upachaya of med dhatu* and BMI above 27 were selected. They were assessed for 1) Body fat %, 2) hip waist ratio 3) Abdominal Girth 4) Degree of Excess sweating. Results: n=50, 1)58% Female and 42 % male have BMI above 27 2) 56% female have fat% above 25% and 40 % Male have body fat % above 20% 3) 58% Female have abdominal girth above 80cm and 42 % male have Abdominal Girth above 90 cm 4) 56% Female have hip waist ratio above 0.7 and 32% male have Hip Waist Ratio above 0.8 5) a)14 % female & 6% male have Grade 1 sweating b) 42% Female & 32% male have Grade 2 sweating c) 4% female & 4% male have Grade 3 sweating **Discussion:** If individual weights more, sweat rate is likely to increase because body must exert energy to function than lean body person.

**Keywords:** *Sthaulya*, *Swedabadh*, Obesity, Hyperhydrosis .

### INTRODUCTION

Ayurveda emphasizes on real knowledge of many metabolic disorders of today's era. *Sthaulya* is one among them. *Charaka* and *chakrapani* in *Sutrasthan Adhyay 21* mentioned and elaborated main eight *Lakshnas* of *Atisthaulya*. *Ati sweda Pravartan (Sweadabadh)* <sup>(1)</sup> is one among them. *Sweda* is *Mala* of *Med Dhatu* <sup>(2)</sup> and *Medo Mulam* is *Sthana* of *Swedvaha Strotas* <sup>(3)</sup> it is suggested that there is correlation between *Swed Vaha and Medvaha Strotasa*. In *Sthaulya* there is *Dushti* of *Med Dhatu* this may affect production of *sweda*. So, *sweda* is produced in large quantity as compared to

lean body person. Overweight and excess sweating goes hand in hand<sup>(4)</sup> because body is doing extra work internally to maintain the body functions that are needed to support extra weight that have gained.<sup>(5)</sup> When 50 patients of obesity were examined 40% patients get irritated due to excess sweating while doing day to day practice. So increased sweating does have close relationship with being overweight<sup>(4)</sup> because those who suffers from obesity or being overweight have less tolerance threshold in respect to sweating.<sup>(6)</sup> So pathophysiology be-

hind this hyperhydrosis(excess sweating) in obesity is understood .

**MATERIALS AND METHODS:** 50 patients having BMI above 27 coming to OPD were selected.

- 1) Male and female Age group between 18 to 45 selected.
- 2) All the patients assessed for body fat % by fat monitor.
- 3) Abdominal girth measured
- 4) Hip Waist Ratio (HWR) calculated.
- 5) Degree of excess sweating asked.

1) BMI- Body Mass Index is value derived from weight and height of individuals. It is calculated by Body Mass/weight divided by square of body height.

It is universally expressed as Kg/m<sup>2</sup>.

Patients having BMI between 25 to 30 are overweight and above 30 are obese.

2) Body Fat Percentage- It is calculated with help of body fat monitor. It works on Bio-electric Impedance. In this it sends small impercentile, safe electric current through body measuring the resistance. Current faces more resistance in obese body than it faces while passing through lean body mass and water.<sup>(7)</sup>

3) Abdominal girth- It is measured by measuring tape at umbilicus level.

4) Hip waist ratio- It measured by dividing waist circumference by hip measurement with help of measuring tape.

5) Degree of sweating- It is assessed by asking patients degree of sweating.

- 1) Grade 1 sweating: Excess sweating after excersize only
- 2) Grade 2 sweating; Excess sweating while doing daily work, walking.
- 3) Grade 3 excess sweating; at resting position

Result- 1)58% Female and 42 % male have BMI above 27

2) 56% female have fat % above 30% and 40% male have body fat % above 20%

3) 58% Female have abdominal girth above 80cm and 42 % male have Abdominal Girth above 90 cm

4) 56% Female have hip Waist Ratio above 0.7 and 32% male have Hip Waist Ratio above 0.8

5) 14 % female & 6% male have Grade 1 sweating b) 42% Female & 32% male have Grade 2 sweating c) 4% female & 4% male have Grade 3 sweating

| N=50   | BMI | Fat% | Abdominal girth | HWR | Grade1 Sweating | Grade2 sweating | Grade3 sweating |
|--------|-----|------|-----------------|-----|-----------------|-----------------|-----------------|
| Male   | 42% | 40%  | 42%             | 32% | 6%              | 32%             | 4%              |
| Female | 58% | 56%  | 58%             | 56% | 14%             | 42%             | 4%              |

## DISCUSSION

- Sweda is mala of med dhatu so dushti of med dhatu may affect the sweda production. swedawah strotas is situated in med dhatu which is deepest layer of skin .
- According to chakrapani: Shleshma in sansarg with Med Dhatu produces

Sweda in excess quantity even with small excersize.<sup>(8)</sup>

- In Sthaulya samprapti Agni Sandhukshan is observed .This may increases ushna guna of Pitta which increases body temperature .This raised body temperature may increase sweda.<sup>(9)</sup>

Hyperhydrosis: It is a condition characterized by increased sweating in excess of that required for regulation of body temperature.

Sweating allow body to regulate its temperature. In obese there is more production of heat because body has to work lot than lean body person .This heat increases body temperature. This raised temperature stimulates sweat glands to produce more sweat. Obese patients have more sweat glands per square inch area than non obese patients. This also increases sweat production. <sup>(10)</sup> There are 2 types of sweat glands, Eccrine Sweat glands, which are present all over body. Apocrine sweat glands are situated on arm pit and genital area. Sweat glands are supplied by post ganglionic nerve fibres of sympathetic nervous system while thermo-sensitive neurons are located in pre optic and anterior region of hypothalamus .In obese people lot of heat is generated even with small excersize which increases body core temperature .This high temperature stimulates hypothalamus as well as sympathetic nervous fibres attached to sweat glands. This produces acetylcholine at sympathetic nerve endings by which sweat glands are supplied. These sympathetic stimulation increases sweat production. Sweat glands produce primary secretion similar to plasma from interstitial fluid .As more sweat is produces due to stimulation to glands there is no absorption sweat in straight part of sweat gland and more sweat is produced on skin surface. Sweat itself is odorless. Apocrine glands produces sweat containing proteins and fatty acid they are metabolized by bacteria on skin and produces odor .But Eccrine glands do not produce sweat containing proteins and fatty acid so do not produce odor .<sup>(11)</sup>

## CONCLUSION

If some becomes fit, body becomes more efficient at regulating body's temperature & sweat glands adopt along with body's sys-

tem. If prevention of overweight is done at the stage of excess sweating only further stage of morbid obesity and its complications can be prevented.

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