APPRAISAL OF OBESITY & RELATED DYSLIPIDEMIA W.S.R. MEDOROGA IN AYURVEDA

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ABSTRACT

Obesity and related dyslipidemia is one of the most common disorder of metabolism in human being and perhaps also one of the oldest documented metabolic disturbances in Ayurveda. An obese or Sthula person has been identified as Atinindita (worst despicable personality) in Ayurvedic classical texts. Acharya Charaka has described Sthaulya as excessive increase in quantity of Meda and Mamsa Dhatu leading to pendulous movements of buttock, abdomen and chest with morphological disproportion. Sthaulya is the disease of Medodhatvagni Vikriti. In Sthaulya, over-nourishment of only Meda dhatu cause malnourishment of all other Dhatu. Two types of Meda (Fat) are described viz. Baddha Meda (adipose tissue) & Abaddha Meda (circulating lipids). Genetic predisposition as well as overeating along with decreased energy expenditure is considered as its primary etiological factors. It is a rapidly emerging medical problem and associated with increased morbidity and mortality. For this reason, prompt treatment must be advocated which should aim at normalizing Kapha, Vayu and decreasing Meda by Guru and Aptarpana Aahar and Vihara as per Ayurvedic principles.

KEYWORDS: Medoroga, Sthaulya, Meda, Baddha Meda, Abaddha Meda, Obesity, Dyslipidemia.
INTRODUCTION
The nature has taught the man how to be healthy before the science has discovered the laws of health. In Modern era with continuous changing life style and environment, man has become the victim of many diseases caused by unwholesome dietary habits and deranged lifestyle. Obesity (Medoroga) and related dyslipidemia is one among these major diseases. The industrialization, stress during the work, dietary habits, lack of physical activity & various high-calorie food items among the daily diet e.g. fast food, frozen and canned food items, increased amount of soft drinks and beverages results into a clinical entity which we call as Obesity.

The World Health Organization recognizes obesity as the greatest health threat of the 21st century. The rapid rise in prevalence across the world has caught governments and health services by surprise, and the consequences are clearly evident. Obesity and related dyslipidemia are one of the most common disorders of metabolism in humans and perhaps also one of the oldest documented metabolic disturbances in Ayurveda. An obese or Sthula person has been identified as Atinindita\textsuperscript{[1]} (worst despicable personality) in Ayurvedic classical text Charak Samhita and genetic predisposition as well as over eating with decreased energy expenditure is considered as its primary etiological factors. Obesity and dyslipidemia as a medical problem is receiving increasing medical attention in recent years due to increased morbidity and their association with degenerative diseases. Dyslipidemia has been gaining much attention and the emphasis is being laid on procurement of a safe and effective drug to combat this risk factor as this factor may alone increase the morbidity in an obese or moderately obese individual by manifold; and when the condition is associated with other diseases like diabetes mellitus and hypertension, the risk is even greater.

According to W.H.O., the worldwide prevalence of obesity has nearly doubled between 1980 and 2008\textsuperscript{[2]} and continued to rise. Obesity has significant impact on both mortality and morbidity. Data from population studies such as that from the National health and Nutrition Examination survey 2009-2010, more than 2 in 3 adults are considered to be overweight or obese, more than 1 in 3 adults are considered to be obese, more than 1 in 20 adults are considered to have extreme obesity, about one-third of children and adolescents ages 6 to 19 are considered to be overweight or obese and more than 1 in 6 children and adolescents ages 6 to 19 are considered to be obese. Coronary artery disease (CAD) is the major cause of death in overweight but cancer rates are also increasing, especially colorectal cancer in males and
cancer of gallbladder, biliary tract, breast, endometrium and cervix in females. Epidemic obesity is accompanied by an epidemic of type 2 diabetes mellitus. Framingham heart study revealed that there has been marked increase in cardiovascular diseases associated with obesity\textsuperscript{[4]} including hypertension, dyslipidemia, cerebrovascular accidents, peripheral vascular disease, coronary artery disease, myocardial infarction and sudden death. Dyslipidemia is one aspect of pathophysiology that accounts for increased cardiovascular risk. Obesity may also lead to profound psychological consequences for individuals. Society also suffers from the effect of obesity related disability and early retirement.

In Ayurvedic texts, central obesity has been described by its cardinal sign “Chala Sphika-Udara-Stanam\textsuperscript{[5]} (Pendulous movements of buttocks, abdomen and breast)”. Various clinical features described for Medoroga\textsuperscript{[6]} such as Kshudra Shwasa (breathlessness on exertion), Krathana (snoring), Sarv-kriya asamartha (inability to work), Alapa prana and maithun shakti (low vitality & impotence), Javoprodha (lassitude), Daurbalya (weakness), Atinindra (excessive sleep), Kshuda–Pipasa atiyoga (excessive appetite & thirst) etc. correlate well with those of obesity. Hence, it can be said that obesity and Medoroga are the same diseases and have been afflicting human beings since time immemorial but the incidence is now rising at an alarming rate.

**Sthaulya and Medoroga**

In Ayurveda, Sthaulya and Medoroga have been described to be synonymous to each other. Literally it means a disease in which Medo-Dhatu is deranged. The Ayurvedic researchers of later age identified the risk associated with obesity and have used the term Medoroga to define disorders arising due to vitiation of Meda Dhatu. The term Medoroga was first used by Acharya Madhava\textsuperscript{[7]} to define obesity and related lipid disorders. In Ayurvedic classics, in reference to “Medoroga”, two types of Meda\textsuperscript{[8]} (fat) are described viz. Baddha Meda & Abaddha Meda.

- **Baddha Meda-** The fat which is not mobile and is stored in the form of fat at various places (fat depots/ omentum/muscles in the body).

- **Abaddha Meda-** The fat which is mobile and circulates in the body along with blood in the form of lipids (Cholesterol, triglycerides, LDL, HDL and VLDL)
Aetiopathogenesis of Medoroga

Atisthaulya has been included under Santarpanotha Vyadhi[13] and the following Nidana have been described for it.

- **Aharaj Nidana**: Sleshmala Ahara (Guru, Madhur, Sheeta, Snigdha, Pichchil, Navanna, Pistanna, Gorasa etc)
- **Viharaj Nidana**: Adhyashan, Avyayama, Avavaya, Diwa Swapna, Harsh, Achintana etc.

Frequent consumption of Sleshmala Ahara (Madhur, Guru, Sheeta, Snigdha) i.e. high-calorie diet without undertaking adequate physical activity and having prolong sleep including day sleep, the Annarasa remain Apakva or incompletely processed and becomes Ama. Ama Rasa is produced as Dhatwagnimandya arises due to excessive loading of Madhura and Atisnigdha Ahara Rasa. In other words, the Anna Rasa after its formation and absorption is not properly dealt with by Dhatwagni. This Ama is made available for conversion into Sneha (Meda) owing to its affinity to Meda (homologus to Meda dhatu but heterologus to all the other Dhatu) leading to adiposity. Such Ama Rasa does not provide nutrition to other Dhatu as the increased Meda accumulates in various microchannels of the body and obstructs them. Achintan, Harsh, and excessive sleep including day sleep which represents diminished physical activity and mental contentment along with lack of stress have been indicated in production of Medoroga due to less calorie expenditure in response to decreased adrenaline secretion. Acharya Charak has apart from Aharaja and Viharaja Hetu, described Beeja Swabhava as specific aetological factor.[14] Charakrapani has explained this as parents who are obese may have obese offsprings by the virtue of particular quality in the Beeja or genetic predisposition. He says that the constitution of such person is so that even with normal diet, there is tendency of adiposity.

Acharya Charaka has described Sthaulya as excessive increase in quantity of Meda and Mamsa Dhatu[9] leading to pendulous movements of buttock, abdomen and chest with morphological disproportion. Such a person suffers from lack of energy. In Charak Samhita Sutrasthana, Atisthaulya has been described as a Maharoga under Sleshmanatmaja Vyadhi.[10] Acharya Sushruta has considered Atisthula to be Alpa-Bala in whom every disease manifests in a severe form. Sushruta has considered Medoroga to be Rasnimittaja disorder.[11] In the aetiopathogenesis, he has considered Sthaulya to be manifestation of Dhatwagnimandya and production of Ama Medodhatu. Sthaulya is the disease of Medodhatvagni vikriti. Rasa-Raktagata Sneha (circulating triglycerides, cholesterol and
lipids) whenever starts to increase due to excessive eating and less calorie consumption, overload on Dhatvagni starts to build-up. Patients shows the symptoms of Rasavriddhi and Kaphavriddhi i.e. Angagaurava, Alasya, Tandra, Nidradhikya etc. Later on actual Meda dhatu gets increase and present with various physical signs and in later stages difficult to perform daily routine activities. Vagabhatta is the first to describe the types of Sthula Purusha and has categorized them into Heena Sthula, Madhya Sthula and Atisthula.[12]

Clinical manifestations of Medoroga
The cardinal feature of Medoroga has been described as excessive deposition of adipose tissue in buttocks, chest and abdomen leading to Chalta or movement of these parts on slight activity. Adiposity is first supposed to occur in the abdomen, which is the seat of Medodhara Kala. This is then followed by deposition of fatty tissue on buttocks and chest to such an extent that they exhibit pendulous movement on minimal activity. Excessive accumulation of Meda leads to decreased vitality and impaired longevity. Meda itself is Shithila and leads to lassitude and weakness with impaired working capacity and libido because of obstruction of various microchannels. There is excessive production of sweat, which increases with increased production of Medodhatu as it is its Mala. Meda, apart from being Shithila, is also Guru and thus leads to Anutsaha (lack of enthusiasm) and Jawoprodha (Sluggishness of movement). Vitiated Kapha and accumulating Medodhatu lead to vitiation of Vayu (Saman Vayu), which increase in Kostha (gastro-intestinal tract) and leads to production of excessive Kshuda (appetite) and Pipasa (thirst). Apart from other symptoms, Kshudra shwasa (breathlessness on exertion) arises due to obstruction of Pranavaha Srotasa (cardio-respiratory system) by the accumulating Medodhatu. Excessive Meda Dhatu when obstructs various microchannels of body results in symptoms like Krathana (snoring), Gadgad Dhwani (indistinctness of speech), Alpa Shukrata (low sperm count), Gatrasada (prostration of body), Jadya and Sarvkiya Asamartha (inability to work). Along with these symptoms, Purvarupa (prodromal symptoms) of Prameha are also included as symptoms of Medoroga. These include, odorous sweat, weakness in body, disinclination or decrease work drive and inclination towards rest, coating of tongue and matting of lashes, heaviness in body, dryness of palate and throat, sweet taste in mouth, burning sensation in hand and feet etc.[15][16]

Various life threatening complications of Medoroga have been described in various texts which can cripple a person. Acharya Charak has considered an obese person to be the one who is all the time affected by one or the other dreading disorder.[17] In Sushruta Samhita,
Various Updrava (complications) have been said to arise due to Marga-Avrodha (obstruction) of Vata, which leads to Alpaprana (low vitality), Prameha Pidika (carbuncles), Jwara (fever), Bhagandara (fistula-in-ano), Vidradhi (abscess), Vata Vikara (neurological manifestations) and ultimately death.\(^{[18]}\) He says that because of obstruction of various channels of body by Meda (fat), even a minor disease presents as major complication in an obese.

Vagabhatta has for the first time classified Atisthaulya in three types while prescribing Chikitsa for them\(^ {19}\)

- **Heena Sthula or Mildly obese** can be conceptualized as that Medorogi who is not suffering from any complication of obesity and has less than four features of the eight cardinal features of Medoroga. Also a person who is suffering from obesity for less than a year can be considered Heena Sthula.

- **Madhyam Sthula or moderately obese** can be considered as person who is not suffering from any complication of Medoroga but has more than four cardinal features of Sthaulya. Similarly a Medoroga of duration more than one year but less than five years could be considered.

- **Atisthula or severely obese** can be considered as one that has all the eight features of Medoroga, is suffering from obesity for more than five years and have one or more complications of obesity.

**Ayurvedic management of Medoroga**

Medoroga has been considered as a Kasthasadhya-Vyadhi (difficult to treat) which can lead to severe complications and even death of the individual if left untreated. For this reason, prompt treatment has been advocated which should aim at normalizing Kapha, Vayu and decreasing Meda. Acharya Charak has advocated the practice of Guru and Aptarpana Aahar and Vihar in treatment of Sthaulya.\(^{[20]}\) Because of Kapha and Meda vitiating the Vata Dosha, the Sthula Purusha has hyperfunctioning of Agni (digestive fire) and hence Guru and Aptarpana Aahara (heavy and low-calorie diet) should be given, so that hyperfunctioning Agni takes time to digest it and the Ruksha and Dhatunashana Guna of Aptarpana helps to absorb Kapha and Medodhatu and thereby arrests increase of Meda Dhatu, as they are Vata Shamaka and Meda-Kapha Nashaka. Also, Langhana (fasting or light diet) will lead to further stimulation of Vata. Hence Guru and Aptarpana form of Chikitsa has been advocated
by Ayurveda for the management of Medoroga. Acharya Vaghbhatta has categorized the
Chikitsa of Medoroga into 3 types according to the type of Sthaulya.[12]
1. Atishthula - Samshodhana (Bio-purification therapies)
2. Madhyama Sthula - Deepan– Pachana (Medicines to improve digestion & metabolism)
3. Heena Sthula - Kshudha and Pipasa Nigraha (Controlling appetite & thirst)

The first step in treatment of Medoroga is Nidana Parivarjana. As Sthaulya has been
described under Santarpanaatha Vyadhi (metabolic disorder), so factors which cause
Bringhana (which leads to obesity) should be avoided. Shodhana (bio-purification therapies)
is applicable in advanced form of disease and can be divided into Bahya Shodhana and
Abhyantara Shodhana. Bahya Shodhana includes Raksha Udvartana (dry massage)[21] which
leads to mobilization and redistribution of fat deposits. Abhyantara Shodhana include the
Vamana (emesis), Virechana (purgation) and Lekhana Vasti (medicated enema).[22] Acharya
Charak has specifically advocated their use in Atisthula Purusha who possesses the stamina
(Bala). Acharya Charaka has also mentioned Lekhaniya Dashemani Dravya[23] which
performs Lekhana (mobilization) of excess and abnormal Meda (fat), causing weight
reduction as well as relief in other sign and symptoms. These drugs are Mustaka (Cyperus
rotundus), Kushta (Sausseria lappa), Haridra (Curcuma longa), Vacha (Acorus calamus),
Katurohini (Picrorrhiza kurro), Chittrak (Plumbago zeylanica), Chirabilva (Holoptelia
integristolia), Ativisha (Aconitum heterophyllum), Daruharidra (Berberis aristata) and
Haimvati (Laptadenia reticulata). Other single drugs recommended for Sthaulya are Guggulu
(Commiphora mukul), Shilajeet (Black bitumen), Haritaki (Terminalia chebula), Vibhatak
(Terminalia bellica), Amalaki (Emblica officinalis), Guduchi (Tinospora cordifolia),
Vidanga (Emelia ribes), Suthi (Zingiber officinalis), Shyonaka (Oroxylum indicum), Patla
(Sterospermum suaveolans), Gambhari (Gmelina arborea), Achnmantha (Clerodendrum
phlomidis), Apamarga (Achyranthes aspera), Gomutra (Cow urine), Rasanjana (extract of
berberis aristata), Madhu (honey), Yava (Hordeum vulgare) etc. Compound formulations
include Aarogya vardhani vati, Kutaki vati, Triphala churna, Trikatu churna, Phaltrikadi
kwatha, Achninantha Kwatha,[24] Bilvadi Panchmula Kwatha,[24] Maha manjishthadi Kwatha,
Loharishta, Vidangarista, Lohasava, Vidangadya Loha, Triushanadya Loha, Navak Guggulu,
Medohara Guggulu, Amritadya Guggulu, Loha Rasayana, Shilajeet Rasayana, Guggulu
Rasayana etc.
In Ayurvedic therapeutics, it is believed that these drugs act at the level of Dhatwagni and by its promotion, will help in the reduction of apakava meda dhatu of which baddha meda (adipose tissue) is a part. The baddha meda (adipose tissue) get mobilized/burnt out by these drugs and is converted into abaddha meda (circulating lipids) which on further degradation in liver is converted into various types of fatty acids and glycerol etc. Gradually in this process, there is decreased production of abaddha meda (circulating lipids) also. This phenomenon of vilayana of meda (mobilization of adipose tissue) is the main outcome of the use of lekhaniya drugs i.e. these drugs possess hypolipidemic and anti-obesity properties. Eventually, weight loss leads to significant improvement in insulin resistance. This will in turn normalize the clinical manifestations, anthropometric profile, blood pressure, blood sugar and lipid profile.

Vyayama (exercise) and Yoga are the most important life style modifications which have a positive impact on insulin sensitivity and cardiovascular fitness. It improves insulin resistance, lowers levels of triglycerides and free fatty acids and increases HDL cholesterol. It may also improve endothelial function and cause increased release of nitric oxide. Vyayama (exercise) has the added benefit of facilitating weight loss. Weight reduction through exercise not only corrects obesity but also play an important role in reversing many of the metabolic abnormalities.

CONCLUSION

Medoroga as described in Ayurveda texts can be correlated with the disease entity obesity and related dyslipidemia in modern medicine on the basis of aetiological factors and their clinical manifestations. In Medoroga, derangement of both Baddhameda (adipose tissue) and Abaddhameda (circulating lipids) are taken in consideration. Obesity has significant impact on both mortality and morbidity. Dyslipidemia is one aspect of pathophysiology that accounts for increased cardiovascular risk. So, emphasis should be laid on administration of safe and effective treatment to combat this risk factor. For this, Ayurveda has advocated Guru and Aptarpana form of Chikitsa along with diet and exercise. Hence, a holistic approach is the need of hour to manage this epidemic which includes diet and lifestyle modifications, biopurification therapies, medications and yoga.

REFERENCES


