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A Literary Review on Medoroga W.S.R to Dyslipidemia

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Abstract: ***Medoroga, as described in ayurveda, is a disorder arising from the vitiation of medo dhatu due to impaired Agni, excessive intake of Santarpana Aahar (over nutritious diet), sedentary lifestyle, and improper daily regimen. It is characterized by abnormal accumulation and qualitative derangement of body fat, leading to clinical features such as Sthaulya, Alasya, Swedadhikya, Kshudra Shwasa and Anga Gaurava. Dyslipidemia, in contemporary medicine, refers to an abnormal lipid profile marked by elevated total cholesterol, triglicerides, low-density lipoproteins (LDL), or reduced high- density lipoproteins (HDL), and is a major risk factor for cardiovascular and metabolic disorders. On the basis of etiopathogenesis, clinical manifestations, and complications, Medoroga shows a close resemblance to dyslipidemia. The Ayurvedic concept of Ama, Medo-dhatwagni Mandya, and Srotorodha can be correlated with altered lipid metabolism and atherogenic changes seen in dyslipidemia. Ayurvedic management of Medoroga emphasizes Nidan parivarjana, Shodhana therapies such as Vaman and Virechana, along with Shamana drugs having lekhana, Medohara, and Agni Deepana properties, supported by appropriate Ahara and Vihara. Thus, understanding Dyslipidemia through the lens of Medoroga provides a holistic approach for its prevention and management, highlighting the relevance of Ayurvedic principles in addressing modern lifestyle disorders.***

Keywords: medodhatu,medoroga, lipids, dyslipidemia

1. Introduction

The modern era of electronic gadgets has limited the world into our hands. This development has increased our comfort level and all of us are snuggled in this modern world. Fast foods, junk foods, lack of exercise, stress, addictions etc. are some of the factors which contribute greatly to the lifestyle disorders. These factors impair the metabolism of an individual getting them prone to a large number of disorders like Diabetes, Dyslipidemia, Hypertension, Cardiovascular disorders etc. Dyslipidemia is a disorder of lipoprotein metabolism, including lipoprotein over production or deficiency[1]. Cardiovascular diseases account for most NCD death score 17.3 million people annually. According to WHO survey done in 2002 almost 4/5th (80%) of global stroke events and about 56% of global heart disease are attributed to Dyslipidemia. This is responsible for about 4.4 million death (7.9% of the total) and 2.8% of global disease burden. In India, there has been an alarming increase in the prevalence of CVD over the past two decades that accounts for 24% of all deaths among adults aged 25–69 years[2]. Prevalence of hypercholesterolemia according to Indian Council of Medical Research (ICMR) Integrated Disease Surveillance varies from 10-15% in rural to 25-30% in urban populations[3]. Treatment of Dyslipidemia can reduce the risk of heart disease by approximately 30% over a 5-year period[4].

Dyslipidemia is contributed by high fat diet, sedentary lifestyle etc. According to *Ayurveda*, these *Nidanas* are compared to use of *snigdha, guru*, & *chestadvesha* (lack of physical activity) which leads to *Santarpanjanya Vyadhi*. According to *Ayurveda, Nidana* for *Medoroga* is excessive intake of *Shleshma Vardhaka Ahara-Vihara* and less exercise causes *Agnidushti* resulting in excessive formation of *Sama Meda*. When there is derangement of *MedodhatwAgni*, then it will lead to excess accumulation of abnormal quantities of poshaka *medodhatu* in *rasa*. This excess accumulation of abnormal quantities of *poshaka medodhatu* in *rasa dhatu* resembles hyperlipidaemia of modern medicine. The consequence of such increase in *Poshakamedodhatu* leads to disorders such as *Dhamanipratichaya* described by *Acharya Charak* in *Kaphaja nanatmaja vyadhi*[5]. Due to *Avarana* of *Marga* by the *Sama Meda, Poshana* of subsequent *Dhatu* in the body is hampered leading to *Upachaya* of *Medodhatu. Medodhatvagnimandya* leads to improper formation of *Medodhatu* in excess and if not arrested further results in *Medoroga*.

2. Methodology

Disease Review (Ayurveda)

Dyslipidemia is a metabolic disorder which can be correlated or have a close resemblance with *Medoroga*, *atisthaulya* or *medoDosha*. In Ayurvedic literature, the term *Medoroga* and *Sthaulya* have been used as synonyms. Only *Adhyamala*, while commenting on *Sharanghdhara Samhita*, tried to differentiate between two types of *Medo Roga*.

मेदोदोष इति मेदोवृधिजनितो दोषो मेदोदोष , यद्वा मेद एव दोष: कारणेकार्योपचारात, वृद्धियथा - अव्यायाम्दिवास्वप्नश्लेश्मलाहरसेविन: मधुरोन्नरस: प्राय: स्नेहान्मेदोविवर्धन: इति | तत् प्रायेण उदरस्थितं भवति | यदुक्तं - मेदस्तु सर्वभूतानां उदरेषुवस्थितेषु स्थितम् | अतएव उदरो वृद्धः प्रायो मेदस्विनो भवेत् इति |

मेद दोष: - मेद्सावृतमार्गत्वात पुषयन्तुवन्ये न धातव: मेदस्तु चीयते तस्मादसक्तः सर्वकर्मसु |शुद्रश्वासतृषामोहस्वप्नक्रथनसादने | युक्तः क्षुतस्वेद दौर्गंध्य अल्पप्राणो अल्पमैथुनो इति| (Sharangdhar Samhita Pratham khanda 7/65 , Deepika teeka)

***Medo roga* and *Medo Dosha*:**

1) ***Medo Roga***: Adiposity including its clinical features (*Sthaulya*). Here he has mentioned *Udarvriddhi* due to fat deposition as an example.
2) ***Medo Dosha***: Lipid disorders where *Meda* acts as an etiological factor in the genesis of other diseases. Here he has mentioned the morbid changes developed due to obstruction in the channels by *Meda*. The obstruction of the channels leads to vitiation of *Vata* in various channels due to diminished nutrition corollary to various severe diseases having symptoms of *Shvasa, Trishna, Murcha* etc.

Nidana (Etiological Factors)

It is always important to have a deep insight about the pathogenesis and the causative factor of a disease. *Nidan* or etiological factor in *Medoroga* or *sthaulya* are clearly mentioned by different acharyas. In *Charaka Samhita*, there is description of the *Nidana* of *Sthaulya* (*Medoroga*) critically.

तदतिस्थौल्यमतिसम्पूरणाद्गुरुमधुरशीतस्निग्धोपयोगादव्यायामाद व्यवायाद्दिवास्वप्राद्धर्
नित्यत्वादचिन्तनाद्बीजस्वभावाच्चोपजायते | (Ch. Su. 21/4)

Excessive corpulence is caused by over intake; intake of heavy, sweet, cold and unctuous food, avoidance of physical exercise, abstinence from sexual intercourse, day-sleep, uninterrupted cheerfulness, lack of mental exercise and heredity i.e. beeja *dosha*[6]

रसनिमित्तमेव स्थौल्यं कार्श्यं च |तत्र श्लेष्मलाहारसेविनोऽध्यशनशीलस्याव्यायामिनो दिवास्वप्नरतस्य चाम एवान्नरसो [१] मधुरतरश्च शरीरमनुक्रामन्नतिस्नेहान्मेदो जनयति, तदतिस्थौल्यमापादयति | (Su. Su 15/32)

Corpulence and leanness of body depends on rasa. When one constantly takes diet increasing *kapha*, indulges in eating when the previous meal is undigested, avoids physical exercise and sleeps in day time. The *aahar rasa* being undigested and sweeter circulating in the body, due to excessive unctuousness, produces fat which causes obesity.

Endogenous causes like *Dosha, Dhatu, Mala* and *Srotas* etc. are better explained by *Acharya Susruta*[7]. *Susruta* has also mentioned Ama as the causative factor.

Acharya Dalhana has quoted three main etiological factors of *Sthaulya* or *Medovriddhi*[8].

मेदो जनयति विशिष्टाहारवशाददृष्टवशान्मेदसाऽऽवृतमार्गत्वाच्च धातुद्वयमतिक्रम्य मेद एव वर्धयति| (*Su. Su. 15/32, Dalhan teeka*)

All the causative factors of *Medoroga* described in Ayurvedic classics can be classified into four groups.

1) *Aharatmaka Nidana*
2) *Viharatmaka Nidana*
3) *Manas Nidana*
4) Any *Nidana*

According to *Charak Acharya* Disease Production Starts with *Dhatu Vaishamya*[9]. The unbalanced *Dosha* & Mala are termed as disease; whereas this balanced state is health. On the basis of *Samanya Vishesha Siddhanta*[10] the excessive consumption of similar substances (*Dravyasamanya*), similar qualities (*Gunasamanya*) or similar actions (*Karmasamanya*) help in over production of the *Dhatu*. When one or two or all the three properties are similar, then such substances boost up the growth of the *Dhatus* which result as *Dhatuvriddhi*. In the same way growth of Medo Dhatu is observed by excessive consumption of:

1) *Dravyasamanya*: *Medas* (animal & plant fat)
2) *Gunasamanya*: Food with *Snigdha Guru Guna*, *Sheeta Virya*, *Madhura rasa* & *Vipaka*
3) *Karmasamanya*: Sedentary life, no exercise, day sleep etc.

Acharya Charaka has mentioned causative factors which leads to over nutritional disorders (Santarpanjanya Vyadhi) can also be considered as etiological factors of Dyslipidemia.

सन्तर्पयति यः स्निग्धैर्मधुरैर्गुरुपिच्छिलैः|
नवान्नैर्नवमद्यैश्च मांसैश्चानूपवारिजैः||
गोरसैर्गौडिकैश्चान्नैः पैष्टिकैश्चातिमात्रशः|
चेष्टाद्वेषी दिवास्वप्नशय्यासनसुखे रतः||
Ch. Su.23/34

Involvement of medovaha srotasa:

The *srotasa* involved in *Medoroga* or formation of *ama asthayi medodhatu* is *medovaha srotasa*. Factors like excessive consumption of *Medya ahara* and *Varuni* lead to *Medovaha srotodushti* causing a state of '*Khavaigunya*' in the *Meda dhatu*.

अव्यायामाद्दिवास्वप्नान्मेद्यानां चातिभक्षणात्|
मेदोवाहीनि दुष्यन्ति वारुण्याश्चातिसेवनात्||Ch. Vi 5/16

Samprapti (Etiopathogenesis):

Samprapti means -*Vyadhi Janaka Dosha Vyapara* which express the course of the disease, +from *Nidana Sevana* to *Vyadhi Uttpatti*. The knowledge of *Samprapti* helps in the comprehension of the specific features of a disease like *Dosha, Dushya, Srotodushti, Ama* and *Agni*. *Acharya Charaka* has accepted "*Ahara*" as most common pathogenic factor for *Medovriddhi*, whereas *Sushruta* has accepted *AmaDosha*.

According to *Sushruta*, *Ama Rasa* is produced due to *Kaphavardhakaahara, Adhysana*, lack of exercise, day sleep. The *Madhura Bhava Ama Rasa* moves within the body, *Snigdhansha* of this *Anna Rasa* causes *Medovruddhi* which produces excessive stoutness. According to *Vridhdha Vagbhatta*, In *Nidana*sevana, dietary factors like Atimadhura, Atisnigdha Ahara, lifestyle factors like lack of exercise, day sleep, Manasika *Nidana*s like Achintan, Nityapraharsha etc. lead to a Jathargni dushti & Kaphavriddhi which results in diminished digestive power. *Manasika hetu* like *Harshnityatvata*, *Achintana* directly become factors for Kapha-Vridhi. This further lead instigates the formation of *Ama Annarasa* and subsequent Ama Rasa Dhatu. By repeatedly uses of Gurvadi Anna etc, Leena *Sleshma* mix with Ama Rasa *Dhatu* leads to laxity in *Dhatu* level that leads to Medo Dhatv*Agni* Mandhya & Medo Sroto *Dusti*. Repeated attempt to these *Nidana*, *Sthoulyata* occurs. The *Khavaigunya* occurs in the *Medovaha Srotas* by *Anya Nidanas* like Beeja

Dosha & *Avarana*. This *Khavaigunya* further assists *Medodhatv Agnimandya* by producing obstrution in *Medovaha Srotasa* which results in obesity. Here it is important to note that on the basis of further disparity between dietary, lifestyle and environmental factors several variations are probable.

Samprapti Ghataka:
Dosha - Tridosha, Samanavayu, Vyanvayu, Pachaka Pitta, Kledaka Kapha,
Dushya - Rasa, Mamsa, Meda, Sveda
Srotasa - Annavaha, Rasavaha, Mamsavaha, Medovaha, Svedavaha
Srotodushti - Sanga, Avarana,
Agnimandya - MedodhatvAgnimandya, JatharAgnimandya
Ama - MedodhatvAgnimandyajanit, - JatharAgnimandyajanit,
Udabhavasthana - Amashaya
Sanchar - Rasayani
Adhisthana - Whole body specifically Udara, Sphika, Stana
Vyakti
Roga Marga- Shakhashrita (Bahya)
Swabhava – Chirakalina

***RUPA* (chief complaints):**
All Acharya have clearly described the *Rupa of Medoroga*. The cardinal sign & symptoms of *Sthoulya* as per *Charaka* are[11](Cha.su 21/9). These *ashta Dosha* can also be considered as the *Upadrava* of Dyslipidemia.
Beside these Cardinal Symptoms, eight disabilities (*Ashtavidha Dosha*) of *Sthoulya* are[12]:

Ayusohrasa (Diminution of lifespan), *Javoparodha* (Lack of enthusiasm),*Kriccha Vyavaya* (Difficulty in sexual act),*Daurbalya* (Debility), *Daurgandhya* (Foul smelling of body) *Swedabadha* (Distressful sweating), *Kshudhatimatrata* (Excessive hunger) *Pipasatatiyoga* (Excessive thirst).

All the symptoms of *Sthoulya* described in various Ayurvedic texts are as followed[13]:

1. *Chala sphika, Udara, Stana* (Pendulous Buttocks, Abdomen, Breast),*Udarvridhi* (Enlargement of abdomen), *Ayathopachaya* (Abnormal metabolism of body),*Ayushohrasa* (Diminution of life span), *Alpayu* (Diminution of life span), *Alpa prana*, *Javoparodha* (Slugishness of movement), *Sarvakriyasu Asamarthata* (Unable to bear physical exercise), *Alpa Vega* (Decreased vigour), *Krichha vyavaya* (Difficulty in sexual act), *Alasya* (Dullness) *Anutsaha* (Lack of enthusiasm), *Daurbalya* (General Debility), *Alpa bala* (less strenth), *Gatrasada* (Prostration of the body), *Daurgandhya* (Foul smell of the body), *Svedaabadha* (Distressful sweating), *Kshudhadhitimatra* (Excessive hunger), *Pipasatiyoga* (Excessive thirst) *Nidradhikya* (Excessive sleeping), *Kshudrasvasa* (Dyspnoea on exertion), *Moha, Gadgadtva vani* (Indistinctness of speech), *Krathana* (snore), *AtimamsaMeda vridhi, Sukumarata* (Delicacy), *Guruta* (heaviness in body), *Jadyata*, *Shithilata* (Flabbiness in the body) *Acharya Susruta* while explaining further manifestations or *Updravas* has explained following disease as the consequences of *Medoroga*[14]

तमतिस्थूलं क्षुद्रश्वासपिपासाक्षुत्स्वप्नस्वेदगात्रदौर्गन्ध्यक्रथनगात्रसादगद्गदत्वानि क्षिप्रमेवाविशन्ति, सौकुमार्यान्मेदसः सर्वक्रियास्वसमर्थः, कफमेदोनिरुद्धमार्गत्वाच्चाल्पव्यवायो भवति, आवृतमार्गत्वादेव शेषा धातवो नाप्यायन्तेऽत्यर्थमतोऽल्पप्राणो भवति, प्रमेहपिडकाज्वरभगन्दरविद्रधिवातविकाराणामन्यतमं प्राप्य पञ्चत्वमुपयाति ।[Su.Su. 15/32]

The *updravas* like *prameha pidika, jvara, bhagander, vidradhi* are due to increase in *Sthayi Medodhat*u whereas *Vatavikara* i.e.focal disease of *Vata* e.g . *Pakshaghata, Ardita* etc which are caused by *Avarana of Meda to Vata* So here it may be due to *Asthayi Medodhatu Vriddhi*, i.c. Dyslipidemia leading to Atherosclerosis which proceeds to different focal *Vata Vikaras*

Sadhyasadhyata
Medavriddhi is described as a *Krichra-Sadhya Vyadhi*. *Acharya Charaka* has mentioned the bad prognosis of *Medoroga* as":
मेदस्यतीव संवृद्धे सहसैवनिलादयः।विकारान् दारूणान् कृत्वा नाशयन्त्याशु जीवितं ।च.सू 21/8

Means, if an obese person is not duly managed, he is prone to death due to excessive hunger, thirst and complications. *Sahaja Medoroga* is considered as *Asadhya.*

As per the enumeration of *Vagbhata Medogata* diseases are curable only in uncomplicated patients with more *Bala* and less chronicity. So, *Vagbhata* has mentioned *Medoroga* as *Asadhya Vyadhi* due to its relapsing and challenging nature. Sudden drastic weight reduction is considered as *Arishta. Yoguratnakara* has clarified that sudden loss or gain could be fatal within six months.

Disease review modern
Dyslipidemia is a disorder of lipoprotein metabolism. The disorder can manifest as an elevation of plasma cholesterol, triglyceride or both or a low HDL level or all three together. most dyslipidemias are hyperlipidaemias; that is an elevation of lipids in the blood, often due to diet and lifestyle. The prolonged elevation of insulin levels can lead to dyslipidemia risk of developing IHD is double[15]. Dyslipidemia is one of the leading risk factors for coronary heart disease (CHD) and stroke. Abnormal cholesterol levels are estimated to cause 18% of the global CVDs and 56% of the global Ischaemic heart diseases (IHD). WHO reported that high cholesterol level is one of the main non communicable disease related risk factor in India. Raised cholesterol is estimated to cause 2.6 million deaths (4.5% of total). Lipid and lipoprotein abnormalities are very common in the general population, also risk factor for cardiovascular disease due to the influence of cholesterol, one of the most clinically relevant lipid substances on atherosclerosis[16].

2. Classification of Dyslipidemia[17]

3. Etiologically dyslipidemia is classified into two groups as,

1. Primary dyslipidemia
2. Secondary dyslipidemia

Primary dyslipidemias are either,
-Due to genetically determined defects in lipid or lipoprotein metabolism
Genetically determined defects (may be precipitated / aggravated by some environmental factors such as alcohol intake and drugs particularly oestrogens as contained in contraceptives & steroid hormones).

Fredrickson classification (analysis of lipids by beta-quantification ultracentrifugation followed by electrophoresis) differentiates five categories of Dyslipidemias based on heredity:

1) Type I Hyperlipidaemia or Familial Chylomicronaemia syndrome
2) Type IIa or Familial Hypercholesterolaemia
3) Type IIb or Familial Combined Hyperlipidaemia
4) Type III or Familial Dysbeta lipoproteinemia
5) Type IV or Familial Hypertriglyceridaemia
6) Type V or Familial Hypertriglyceridaemia

Table 2.3: Lipoprotein Patterns (Fredrickson Phenotypes)

Phenotype	Elevated lipoproteins	Elevated lipids
I	Chylomicrons	TGs
II a	LDL	Cholesterol
II b	LDL & VLDL	TGs & Cholesterol
III	VLDL & Chylomicron remnants	TGs & Cholesterol
IV	VLDL	TGs
V	Chylomicrons & VLDL	TGs & Cholesterol

Secondary Dyslipidemia:

Table 2.4: Causes of Secondary Dyslipidemia[18]

Type of Secondary Dyslipidemia	Cause
Obesity	Decreased insulin sensitivity and increased insulin resistance
Diabetes Mellitus	Ketoacidosis, insulin resistance
Hypothyroidism	Reduced hepatic LDL receptor function
Liver Disorders	Hepatic lipase deficiency
Alcohol intake	Inhibition of hepatic oxidation of FAs
Renal Disease or Nephrotic Syndrome	Reduced LPL activity
Cushing's Syndrome	Glucocorticoid excess
Drugs: beta blocker, thiazides	Defect LPL

10. Clinical features
Dyslipidemia itself causes no symptoms but can lead to symptomatic vascular disease, including coronary artery disease and peripheral arterial disease High levels of LDL-C can cause eye lid xanthelasmas, arcuscorneae and tendinous xanthomas found at the Achilles, elbow and knee tendons and over metacarpophalangeal joints

Risk factors

1) Cigarette smoking
2) Hypertension (BP >140/90 mm Hg or on antihypertensive medication)
3) Family history of CHD
4) Age (men >45 years; women >55 years)
5) Low HDL-C (< 40 mg/dl)

3. Complications

1) Acute pancreatitis- High TGs (> 1000mg/dl)
2) Atherosclerosis[19] Atherosclerosis is characterized by intimal lesions called 'atheromas', or atheromatous or fibrofatty plaques, which protrude into and obstruct vascular lumens and weaken the underlying media. They may lead to serious complications like IHD. Myocardial Infarction alone is responsible for 20-25% of all deaths in the United States.

4. Discussion

Dyslipidemia is contributed by high fat diet, sedentary lifestyle etc. According to *Ayurveda*, these *Nidanas* are compared to use of *snigdha, guru*, & *chestadvesha* (lack of physical activity) which leads to *Santarpanjanya Vyadhi*. According to *Ayurveda, Nidana* for *Medoroga* is excessive intake of *ShleshmaVardhakaAhara-Vihara* and less exercise causes *Agnidushti* resulting in excessive formation of *Sama Meda*. When there is derangement of *MedodhatwAgni*, then it will lead to excess accumulation of abnormal quantities of poshaka *medodhatu* in *rasa*. This excess accumulation of abnormal quantities of *poshaka medodhatu* in *rasa dhatu* resembles hyperlipidaemia of modern medicine. Due to *Avarana* of *Marga* by the *Sama Meda, Poshana* of subsequent *Dhatu* in the body is hampered leading to *Upachaya* of *Medodhatu. Medodhatvagnimandya* leads to improper formation of *Medodhatu* in excess and if not arrested further results in *Medoroga*

5. Conclusion

- Dyslipidemia is the imbalance of lipids such as Cholesterol, Triglyceride, VLDL, LDL and HDL. This condition is caused by various factors like sedentary life style, high calorie and fatty diet, lack of physical work and due to genetic reasons and can lead to atherosclerosis and further cardiovascular disease.
- As per Ayurveda, the clinical relevance of dyslipidemia is significant with *Medoroga* in which *santarpanjanya aahar, vihar* along with *beeja swabhav* plays a vital role in the *medodhatwagni mandya* which leads to *ama asthayi Meda dhatu*.
- The Ayurvedic concept of Medo-dhatvagni Mandya, Ama formation, and Srotorodha provides a comprehensive explanation for the disturbed lipid metabolism observed in dyslipidemia.
- The comparative study highlights that Ayurvedic management of Medoroga-through Nidana parivarjana, Shodhana, Shamana, and lifestyle modification-has significant potential in preventing and managing dyslipidemia and its complications.
- The prevalence is increasing in younger age groups and in urban population.
- Therefore, integrating Ayurvedic principles with contemporary diagnostic approaches can provide a more effective, preventive, and sustainable strategy for managing dyslipidemia as lifestyle disorder.

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