



International Journal of Indian Medicine

www.ijim.co.in

ISSN: 2582-7634

Volume 3, Issue - 4



IJIM

INDEXED

April 2022



International Journal of Indian Medicine

Access the article online



International Category Code (ICC): ICC-1702

International Journal Address (IJA): IJA.ZONE/258276217634

Conceptual review of Hyperlipidaemia and its treatment according to Ayurveda Ramteke M¹, Daulatkar K.²

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Abstract:

Background: Hyperlipidaemia is a common lifestyle disease marked by an increase in one or more plasma lipids, such as triglycerides, cholesterol, cholesterol esters, phospholipids, and plasma lipoproteins. Hyperlipidemia is a major contributor to the occurrence and severity of cardiovascular illnesses such as coronary heart disease. In the present period, hyperlipidaemia is becoming a big health issue. It can be included into Santarpanjanya Vyadhi. It's also a Dhatupradoshaja Vikara, with Medodhatu taking the initiative. Both Kapha Dosha and Ama play a significant part in the disease's aetiology. Kapha Dosha becomes aggravated as a result of excessive ingestion of causative ingredients, and Annarasa remains Apakva and becomes Ama. Since their qualities are comparable, the raised lipids can be linked to Sneha, Medo Dhatu, and Sama Rasa. A wide range of medications, such as statins, fibrates, resins, and others, are accessible in contemporary medicine and are extremely successful in lowering cholesterol levels, although they have certain negative effects (diarrhoea, dizziness, etc.). It is more closely associated with Medodushti in Ayurveda, which is only a precursor stage of Medoroga that is easily reversible with an efficient Ayurvedic regimen. Considering Agni and Ama play a significant part in the pathophysiology of hyperlipidemia, medications with Dipana, Pachana, Ama Nasahak, Kaphamedohara, Srotoshodhak, and Rasayan qualities will be extremely beneficial in the treatment of hyperlipidaemia.

Keywords: Hyperlipidaemia; Medoroga, Medovaha Srotodusti Vikara, Agni, Cholesterol, Lipids

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How to cite this article : Ramteke Monali, Daulatkar K. Conceptual review of Hyperlipidaemia and its treatment according to Ayurveda. Int J Ind Med 2022;3(3):1-13 <http://doi.org/10.55552/IJIM.2022.3401>

INTRODUCTION:

Cholesterol and Triglycerides are the two primary lipids found in blood. Lipoproteins, globular particles that also include proteins known as apoproteins, transport them. Lipoproteins are lipid transport vehicles that carry lipids from peripheral tissues to the liver. Cholesterol is found in all animal cell membranes and serves as the foundation for steroid hormones and bile acids. Triglycerides play a crucial role in the transmission of energy from meals to cells. Increased lipids in the blood originate from either an increased rate of synthesis or a reduced rate of lipoprotein breakdown in dyslipidaemia. A rise in one or more of the following lipids: cholesterol, cholesterol esters, phospholipids, or triglycerides is defined as hyperlipidaemia. A tendency to coronary, cerebrovascular, and peripheral vascular artery disorders can be caused by abnormal plasma lipids. Hyperlipidaemia is a condition in which the concentration of cholesterol or triglyceride-carrying lipoproteins in the blood exceeds a predetermined normal limit. The liver is responsible for the high levels of cholesterol in the bloodstream. The liver creates around 80% of the cholesterol in the body, while the

remainder is derived through foods such as fish, eggs, and meat.^[1-3]

Atherosclerosis is caused by a build-up of lipids (mostly in the form of esterified cholesterol) in the artery walls due to high cholesterol levels. Atherosclerosis affects different parts of the circulatory system in different ways, resulting in different clinical symptoms depending on which circulatory bed is affected. Hyperlipidaemia is one of the most important risk factors for cardiovascular disease (CVDs). Cardiovascular illnesses are expected to become the leading cause of death and disability globally by the year 2025, accounting for one-third of all deaths worldwide. In 2015, 17.7 million individuals died from cardiovascular diseases (CVDs) over the world (31 percent of all global deaths). Coronary artery disease was responsible for 7.4 million of these fatalities, whereas stroke was responsible for 6.7 million. Hyperlipidaemia is one of the risk factors for this condition.^[4-6]

Although Dyslipidemia cannot be directly linked to any clinical states described in Ayurvedic classics, Acharya Chakrapani's idea of Abaddha Meda has similarities to the condition of Dyslipidemia described in

modern research. Dyslipidemia symptoms are similar to Ama and many of the Rasa dushti, Rakta dushti, and Medodushiti janya symptoms mentioned in current texts. Various Ayurvedic academics have attempted to link it to Rasagata sneha vriddhi (increased lipids in plasma), Raktagata sneha vriddhi (increased lipids in blood), and Rasaraktagata sneha vriddhi (increased lipids in plasma and blood). It is linked to Medo dushti. Because of their comparable qualities, the raised lipids can be linked to Sneha, Medodhatu, and Samarasa. Hyperlipidaemia is related to Asthayi Medo Dhatu Vriddhi, which is Ama in nature and is maintained in the body for a prolonged period of time, resulting in further difficulties. It is possible that the disease is linked to Kapha Karaka Nidana, i.e., Santarpana Ahara, Vihara, which includes a sedentary lifestyle, a high-calorie diet, a lack of exercise, and so on, all of which contribute to Kapha Dosha and Medo Dhatu morbidity. Excessive buildup of abnormal Kapha and Meda happens in various Srotas in the body as a result of Medodhatvagnimandya and Dushti. The presence of Aparipakva Kapha – Meda in the Rasa- Raktavaha Srotas obstructs the passage of Vata and Rakta via the afflicted

channels, resulting in illness manifestation depending on the location of infirmity.^[7,8]

We have a wide range of drugs in the allopathic system of medicine such as statins, resins, and others that are quite effective in normalising lipid levels, but they also have side effects such as headache, nausea, bowel upset, rashes, sleep disturbances, Myalgia, and an increase in serum transaminase, which can lead to liver damage.^[7,8]

Hyperlipidaemia according to Ayurveda :

In Ayurveda various attempts have been made to use distinctive nomenclature to denote the word hyperlipidaemias which are as follows

- I. Rasagata Sneha Vriddhi
- II. Rasa Raktagata Sneha Vriddhi
- III. Medovriddhi
- IV. Medoroga or Medodosha
- V. Ama Medo Dhatu.

Hyperlipidaemia occurs due to

- I. Agnimandya
- II. Ama utpatti
- III. Medoroga

Role of Agnimandya

The vitiation of Agni has serious impact on health at various levels depending on type of Agni involved. All metabolic diseases are an outcome of improper

functioning of Agni. The imbalance in the functional capacity of Agni is the main initiating factor for the production of Ama. Ama is a product of incomplete digestion of food which can be absorbed from GI tract but cannot be utilized by the body cells. Ama formation occurs when intake of food exceeds the digestive capacity i.e. Agni.^[9]

The excess Poshaka Medo Dhatu may accumulate on the walls of vessels (Dhamani) and may cause serious complications related to circulation. In Charaka Samhita, Dhamanipratichaya (Kaphaja Nanatmaja Vikaras) has been mentioned. On the basis of their clinical manifestations Dhamanipratichaya (Dhamaniupalepa, Dhamanipustata, and Dhamanimati poorana) can be correlated with the term Atherosclerosis / Arteriosclerosis.

Nidana (Etiology)^[10--14]

Aharaja Nidana (Dietary Factors)- The Meda Dhatu is increased by Navanna (freshly ripened serials), Navamadya (freshly prepared alcohol consumption), Gramya and Audaka rasa (food or vegetables from dry and wet marshy land), Mamsa Sevana (nonveg), Paya Vikara (milk preparation), Dadhi (curd), Ghee (milk fat), Guda Vikara (foods prepared from jaggery), Shali (rice). Carbohydrates in

meals can readily be turned to fats if consumed in excess. Carbohydrate-derived fats are more saturated and have a higher melting point. Excessive intake of protein-rich meals, such as milk and milk products, can raise body lipid levels. When dietary protein consumption exceeds tissue use, it is converted to triglycerides and stored in the body. Dravyas with Prithvi and Apya Mahabhuta domination have Guru (heavy), Madhura (sweet), Sheeta (cold), Snigdha (oily), Shleshmala (Kapha stimulating), Atipicchila (excessively sticky), and Abhishyandi attributes. The aforementioned chemicals are believed to create a direct rise in the Kapha Dosha and Meda Dhatu due to their identical Bhautika makeup. Avyayama, Divaswapna, and excessive ingestion of Guru Ahara and Varuni cause Medovaha Srotodushti Vikara in the Medadhatu, resulting in a condition of Khavaigunya.

Viharaja Nidana - The causal element for Kapha aggravation includes Avyayama (no exercise), Avyavaya (no sexual commerce), Divaswapna (daytime sleeping), Asanasukha (excess sitting), Swapnasukha (excess sleeping), Bhojanottara Snana (bath after meal), Bhojanottara Nidra (sleep after meal), and so on. As a result, aggravation of Kapha

and the emergence of Meda is one of the etiopathologies of Medoroga. Sthaulya is caused by raising Sneha Guna in the body, which raises Kapha Dosha and leads to Meda Vriddhi. Taila Abhyanga, Snigdha Udavartana, and Madhura Snigdha Basti are all causative elements of Sthaulya by increasing Sneha Guna in the body.

Manasika Nidana - Harshanityatva (joy), Achintanam (no tension), Priyadarshanam (viewing just likings), and Saukhyam (pleasure) are some of the psychological characteristics outlined in Ayurvedic writings. These are Kapha aggravating variables, exacerbating Meda in the process.

Adrishtavastha (Beejadoshaja Nidana) - These are caused by flaws in the Shukra or Shonita, or both, which are passed down the generations. Genetic abnormalities have been identified as a cause of Meda Roga and related illnesses such as Prameha by all Acharya. Beejadoshaja (defective gene) is also one of the etiological components of Atisthaulya, according to Acharya Charaka.

Avaranajanya Nidana - According to Acharya Dalhana, Vata Vikara or Vata illnesses are caused by Medadhatu's Avarana (covering) of the Marga. This refers to secondary disorders such as Madhumeha

(diabetes mellitus), Dhatwagnimandhya (hypothyroidism), Medovaha Srotodusti Vikara (hyperlipidaemia), and so on, in which Vata plays a prominent part in the aetiology. Due to an excess of Medadhatu, the natural Gati (movement) of Vata Dosha becomes impeded, producing additional pathogenesis. Because one condition acts as the etiological factor for the other, these variables producing secondary hyperlipidemia are also known as Nidanarthakari Roga.

Rupa (Clinical manifestations) ^[15-16]

According to Acharya Charaka, the body is deformed by buttocks, abdomen, and breast owing to an excessive rise in Meda and Mansa dhatu, and that increased bulk (adiposity) is not accompanied by an increase in energy. As a result, the individual is less enthusiastic about his physical exercise. Patients with high blood cholesterol levels or a family history of the illness are more likely to develop xanthelasma, which are cholesterol deposits beneath the skin, particularly on or around the eyelids. Patients with high triglyceride levels may develop many pimple-like lesions across their bodies. Patients with elevated levels of triglycerides may develop numerous pimple-like lesions at

different sites in their body. Patients with severe elevations of Triglycerides can have eruptive xanthomas over the trunk, back, elbows, buttocks, knees, hands, and feet.

Samprapti (Pathogenesis):

Aahara, according to Acharya Charaka, is the major pathogenic factor for Medavridhhi or Medadushti in Medoroga, whereas Amadosha, according to Acharya Sushruta, is the main pathogenic factor for Medavridhhi or Medadushti in Medoroga. According to Acharya Charaka, the Koshtagata Vata becomes entrapped in the alimentary canal owing to vitiated Meda (due to excessive indulgence in causative causes) and provokes the Jatharagni, which swiftly digests the ingested food items, which are then readily absorbed by the aggravated Vata. As a result, the obese person has a strong need for eating, which leads to Medovaha Srotodusti. According to Acharya Sushruta, Kapha Dosha becomes aggravated owing to etiological reasons, food remains undercooked and becomes sweeter, and this Rasa Dhatu circulating throughout the body generates Meda. According to the Sushruta Samhita, if a person consumes Shleshmala Aahara (Madhura, Guru, Sheeta, Snigdha) on a regular basis without enough physical

exercise and instead sleeps for a long time, his Annarasa would remain Apakva and become Ama. This Ama has the qualities of Madhura and Atisnigdha, and because of its affinity for Meda, it is made accessible for conversion into Sneha (Meda). Because the enlarged Meda gets deposited in many micro channels, obstructs them, and if deposited in adipose tissue, causes obesity, such Amarasa does not offer nutrients to other Dhatu.^[17,18]

Due to the excessive Madhura of Anna rasa during Avasthapaka, Madhura and Snigha ahara, Adhyashana, and Divaswapna result in Kapha vrudhhi, particularly the Snaihika guna of Kapha and development of Amarasa. The Snaihika guna of the Rasa dhatu rises as a result of the Ashrayaashrayi bhava between Kapha and Ras, and Ama is formed in the Rasa Dhatu. As a result of this Ama, the Rasa Dhatwagni will be unable to digest it, leading to an increase in Malarupi Kapha production. When the enlarged Snaihika guna of Rasa Dhatu and Malarupi Kapha enters the Rasavaha Srothas, hyperlipidemia is the result. If not treated properly and promptly, Dhamani Prathichaya will develop. It can eventually influence other Dhatus, manifesting as Hridroga and Vatavyadhi, Prameha, etc. Hyperlipidemia

exists among Krusha people as well. This is due to Vata vruddhi, which is caused by Nidanas like Chinta, Krodha, and Udvega, among others. Due to these Nidanas, Vata vruddhi develops, which leads to Vishamagni, which leads to Aprakrutha Rasa Utpathi and Malarupi Kaphavriddhi, and the disease progresses to hyperlipidemia.^[19]

Samprapti Ghatakas

- Doshā – Kapha pradhana tridosha
- Dushya - Rasa, Rakta and meda dhatu
- Agni - Jataragni, rasa, rakta and meda dhatvagni
- Ama - Tajjanya Ama
- Srotas - Rasa, Rakta and Medovaha
- Rogamarga - Bahya or Abhyantara (Based on Vyadhi)
- Udbhava sthana - Amashaya
- Vyaktasthana – Sarvashareera (Sthoulya), Basti (Prameha), Hridaya (Hridroga), Mastiskhya (Pakshaghata).

Ayurvedic Chikitsa (Management)

According to Ayurveda, the general principle of management of any disorder is divided into three parts:

Nidana Parivarjana

This is the most significant line of treatment for Medaroga and the primary line of management for any condition. This suggests

that the root of the Samprapti process, Nidana, should be avoided for better illness treatment. Aharatmaka, Viharatmaka, Manasa, and other Nidana that are involved in illness aetiology should be avoided. Provocative, vitiating Medavahasrotas, Medavridhikara Ahara, and Vihara should all be avoided.^[20,21]

Samshodhana (Bio cleansing therapies)

To cleanse the body, Panchkarma methods might be used. The use of Lekhana basti with Vaca and Manjistha, in particular, has been proven to be useful in the treatment of dyslipidemia. Udvardana has been stated for Bahya Shodhana, along with its properties such as Kaphahara, Meda Pravilayana, Sthirikaranam Anganam, and so on. It aids in the removal of foetal odour, reduces excessive perspiration, and relieves exacerbated Doshā. Acharya Charaka mentions Vamana, Virechana, and Raktamokshana for Santarpanottha Vikara, which can be utilised to treat hyperlipidemia, in his Abhyantara Samshodhana. He also recommends Rukshya, Tikshna, and Ushna Basti for Sthoulya control, which can help with hyperlipidemia.^[20-22]

Samshamana (Drug Therapy)

There are a variety of herbal and herbo-mineral remedies in use that strengthen the cardiovascular system, work as cleaning agents for the microcirculatory channels (srotovisodhaka), and help with cholesterol metabolism. According to Rogi-Roga Bala, all seven techniques of Langhana can be used on a hyperlipidaemia patient. Kustha, Prameha, Sthaulya, and Shotha are all treated in the same way by Acharya Sushruta. In Kushtha Roga Chikitsa, he mentions nine medications that are useful in the Dushti of Meda Dhatu and can be used as a guideline for the treatment of Medoroga. After Samshodhana Chikitsa, they appear to be more effective. By raising Meda Dhatvagni, Samshamana Karma relieves Vata, Pitta, and Kapha, as well as depletion of Medadhatu. Administering medications with Guru and Lekhana properties that relieve Meda, Kapha, and Vata, such as Madhu, which has Guru and Ruksha properties and so is the greatest drug for Medavridhhi. Dravyas such as Shilajatu, Guggulu, Gomutra, Triphala, Madhu, and Lekhana Basti have been recommended by Acharya Sushruta. In response, Acharya Dalhana said that Virukshana helps to diminish Meda, while Chhedaniya medications, such as Shilajit, Guggulu,

Loharaja, Triphala, and others, serve to eliminate blockage from the Srotas, particularly the Medavaha Srotas.^[20-22]

Aushadhi (Medicine)^[23-24]

Single drugs - Acharya Charaka recommended Lekhaniya mahakashaya, Mustaka, Kushtha, Haridra, Vacha, Katurohini, Chitraka, Chirabilva, Ativisha, Daruharidra, and Haimavati, which performs Lekhana Karma of excess and aberrant Meda, resulting in weight loss and alleviation of various signs and symptoms.

Combined Drugs^[25-28]

- a) Vati - Arogyavardhini Vati, Kutaki vati, Bhedani vati.
- b) Churna - Triphala Churna, Vacha Churna, Trikatu Churna, Guduchyadi Churna,
- c) Kwatha/Asava-Arishta - Mustadi Kwath, Agnimantha Kwath, Brihat Panchmool Kwath.
- d) Taila Yoga - Triphaladya Taila, Maha Saugandhi Taila.
- e) Lauha Yoga - Vidangadi Lauha, Lauha Bhasma
- f) Rasayana - Shilajeet Rasayana, Guggulu Rasayana, Lauha Rasayana.
- g) Kshara Yoga- Yava Kshara, Eranda Kshara.

- h) Lepa- Daurgandhyahar Lepa, Medohara Lepa, Shirishadi Pralepa, Vasadi Lepa, Haritaki Pralepa.

Ayurvedic lifestyle

- a) Walking, swimming, running, or rowing aerobic exercise, stationary cycling/bicycling
- b) Yoga Asana - Suryanamskar , pawanmuktaasan , utthanpadaasan , naukasan , bicycling.^[29]
- c) Pranayam - Breathing exercise and meditation.
- d) Viharaja pathya: Shrama, Vyayama, Ushnodaka Sevan, Prajagaran, Bhramana, Rohan, Upavasa etc.
- e) Viharaja Apathya: Sheetal Jala Sevana, Diwaswapna, Avyavaya, Avyayama, Ati Ashana Sukha Shaiya etc.^[30,31]

Ayurvedic diet^[30,31]

One should consume food of bitter, astringent taste, dry, Vegetables like carrot , cabbage , cauliflower ,Pulses or dried beans – lentils , mungdaal; fruits like apples , pears pineapple ,lemon water with honey , whole grains, whole oats.

Sweet, acidic, salty, and greasy foods should be avoided. Rice, wheat, pasta, and sweet milk products, as well as pizza, hot dogs,

burgers, cakes, cookies, pastries, and chocolates, are all examples of food which one should not eat.

Discussion^[20-25, 32,33]

Hyperlipidemia is an abnormal amount of lipids (cholesterol or fat) in the blood. It causes cholesterol deposits in the arteries and provokes atherosclerosis, which reduces the size of the artery and, in the long term, the blood flow through the affected vessel. It is one of the lifestyle disorders due to the today's faulty life style. It may be manifested by elevation of the Total cholesterol (Bad Low-Density Lipoprotein (LDL) cholesterol) and/or the rise in triglyceride concentrations and a decrease in the good high density Lipoprotein (HDL) cholesterol concentration in the blood. It is widely regarded as a major risk factor for coronary heart disease (CHD), for every 1% increase in cholesterol level there is 1-2% increase in the incidence of CHD. There is no direct reference of a single disease entity that can be directly correlated with hyperlipidemia. Different scholars of Ayurveda have made attempts to correlate it clinically either as Rasagat, Raktagat, or Rasaraktagat Sneha vridhhi, Medoroga, Medo Vridhhi, Ama Medo Dhatu, Sthaulya, etc. An Ayurveda approach to Hyperlipidemia

involves methods to increase power of Agni and to digest the Ama because Agni is responsible for all metabolic activities in the body. It is solely responsible for any increase or decrease of Dosha, Dhatu or Mala. When Agni gets decreased it leads to formation of Ama, once which is formed capable of obstructing the metabolic pathways and causing diseases. Correction of Agni is the basic treatment for increased lipid levels. The symptoms described by Acharya Charaka are the inordinate increase in the fat and flesh causes disfigurement, i.e., pendulous buttocks, abdomen and breasts, reduction in the corresponding energy, making the person less enthusiastic in physical activities, Ayushohrasa (Diminution of lifespan), Javoparodha (Lack of enthusiasm), Kricchavyavaya (Difficulty in sexual activity), Daurbalya (Debility), Daurgandhya (Foul smell from the body), Swedabadha (Distressful sweating), Kshudhatimatrata (Excessive hunger) and Pipasatiyoga (Excessive thirst).

As per Ayurveda, all the diseases develop due to Agnimandya. This is also true in the case of Medo Roga. Therefore, the treatment of the disease should always be precisely correction of the state of Agni by using the Shodhana

and Shamana especially acting on Agnisthana i.e. Yakrut (liver). As according to modern concept Dyslipidemia is a disease of disturbed the lipoprotein metabolism and liver is the main stay of the lipoprotein metabolism. Hyperlipidaemia is a Prabhuta Dosha disease and treatment of Prabhuta Dosha is Shodhana. Due to Shodhana Karma excessive Doshas are removed out from the body and Dosha Dushya Anulomana is attained. If Shamana Chikitsa is done after Shodhana it will be more effective. Dipana Pachana Dravyas will be beneficial in Samprapti Vighatana of Hyperlipidaemia by doing Ama Pachana at various levels and improving the status of Agni. Thus, Dietary and Lifestyle modifications, besides proposed Ayurveda strategies are essential factors to be rigorously followed by the patient for effective control of Hyperlipidaemia.^[34]

Conclusion

Due of its link to numerous arterial disorders, such as coronary artery disease, it is critical to understand and regulate the pathogenesis of hyperlipidaemia. It is anticipated that lowering cholesterol by one percent reduces chronic heart disease by two to three percent. Based on the causal cause, clinical

characteristics, and pathophysiology, hyperlipidemia resembles Medovaha Srotodusti Vikara. The right use of Nidana parivarjana and Ritucharya and Dinacharya will aid in the maintenance of Agni and the balance of Doshas Dhatus and Malas, hence preventing the onset of disease. Ayurveda has the ability to help not only with therapy but also with prevention by interrupting the pathogenesis process. More study is needed to validate, investigate, and implement these Ayurveda principles and medications, which might be a blessing to the future world.

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Source of Support : None declared

Conflict of interest : Nil

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