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RESEARCH ARTICLE

A CONCEPT OF HYPERLIPIDAEMIA W.S.R. TO RASA-RAKTAGATA SNEHAVRIDDI – A SCIENTIFIC REVIEW

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Abstract

Hyperlipidaemia is a prevalent condition worldwide and a major contributor to life threatening diseases like atherosclerosis, coronary artery disease (CAD), hypertension, stroke etc. It is a disorder of lipid metabolism manifested by elevation of plasma concentration of the various lipids and lipoproteins. The ability of Hyperlipidaemia to engage in the pathology of atherosclerotic diseases such as coronary heart disease, which dominates the scenario of diseases causing morbidity and mortality in the region, has piqued the interest of researchers worldwide. In Ayurveda, there is no exact reference of a single disease entity which can be directly correlated with the term Hyperlipidemia. Also, different scholars have different opinions about the nearest possible disease. Some scholars considered it as Rasagata Snehavridhi, Rasa Raktagata Snehavridhi or Rasa Raktagata Medovridhi, while some are suggesting to consider Hyperlipidemia under the broad umbrella of Medoroga also. Present study tries to correlate conceptual facts to show relation between Hyperlipidemia and Rasa-Raktagata Snehavridhi.

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Introduction:-

In the present era of modernization, people are getting more civilized which has resulted in lifestyle changes like, sedentary life, consumption of highly processed food, excessive mental stress, addiction and disturbed sleep pattern. This ultimately hampered the metabolism at macro as well as micro level which over course of time has resulted in many metabolic disorders like Hyperlipidemia. It is described as a disorder of lipid metabolism manifested by elevation of plasma concentration of the various lipids and lipoprotein. It is a prevalent condition worldwide and a major contributor to life threatening diseases like atherosclerosis, coronary artery disease, hypertension, stroke etc.^[1] According to National Cholesterol Education Program Adult Treatment Panel (NCEPATP III) guidelines, Hyperlipidemia includes LDL >100 mg/dl, total cholesterol > 200 mg/dl, HDL < 40 mg/dl and triglycerides >150 mg/dl^[2]. There is a strong pathophysiological association of raised LDL cholesterol with initiation and progression of coronary atherosclerosis. Robust data are available that shows that lowering its levels can regress and stabilize atherosclerotic vascular disease^[3]. Lipids are the group of naturally occurring molecules acting as a structural

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component of various cell membranes. They include fats, sterols, fat soluble vitamins, waxes etc. All these have common property of Snehatwa (lubricity). As per Ayurveda, human body consists of Medo dhatu, Vasa&Majja dhatu. These also show same property of Snehatwa and so lipids can be correlated with these three factors. They show common features but all those are present at different sites and perform different functions^[4]. Sneha is essential and offers corpulence to the body when normal, but it leads to various disorders when it is in a disturbed state in terms of Rasagata Snehavridhi or Rasa-Raktagata Snehavridhi which lead to Medodushti.

Nidana like excess intake of Kaphavardhaka and Madhur rasa pradhaan ahar, Diwaswapna and Apyayama contribute to Medoroga. Santarpana ahara vihara, which includes sedentary lifestyle, high calories food intake, lack of exercise which finally leads to morbidity of Kapha dosha and medo dhatu^[5]. Due to Medodhatvagnidushti excessive accumulation of abnormal kapha and meda occurs in various strotas in body. Aparipakwa Kapha-Meda in the form of Sneha present in Rasa-Raktavaha Strotas results in obstruction to the movement of Vata&Rakta through affected channel, which finally ends up in disease manifestation according to the site of affliction. The state of apakwa Kapha or Meda and its excessive presence, margavarodh in Rasa-Raktavaha strotas is often compared with the state of Hyperlipidemia. On the basis of above pathophysiology, Hyperlipidemia can be clinically correlated with Rasa-Raktagata Snehavridhi. Furthermore, since this unnecessarily elevated asthayi medo dhatu is Ama in origin, it is stored in the body for a longer period of time, resulting in Strotorodh which further leads to additional complications like Sthaulya, Prameha, Hridroga etc.

Aim:-

To scientifically review the concept of Hyperlipidemia and establish its correlation with the Ayurvedic concept of Rasa-Raktagata Snehavridhi, highlighting its etiopathogenesis, clinical features, diagnosis and management from both modern and Ayurvedic perspectives.

Objective:-

1. To review the modern concept of Hyperlipidemia, including its definition, classification, etiopathogenesis, clinical manifestations, diagnosis, complications and management.
2. To review the Ayurvedic concept of Rasa-Raktagata Snehavridhi based on classical references from Charaka Samhita, Sushruta Samhita and other classical ayurvedic texts.
3. To correlate Hyperlipidemia with Rasa-Raktagata Snehavridhi by comparing their etiological factors, pathogenesis, clinical manifestations etc.

Methodology:-

Lipids & Lipoproteins:-

Lipids:-

Definition: In biology and biochemistry, a lipid is a macro-molecule that is insoluble in non polar solvents^[6]. Several chemical compounds in food and in the body are classified as lipids. They include (1) natural fats also known as triglyceride (2) phospholipids (3) cholesterol and few others of less importance. As fat (lipid) is insoluble in plasma, so it cannot be transported directly through blood. It is now recognized that lipids (fat/cholesterol) in their various forms are transported by lipoproteins.

Lipoproteins:-

Definition^[7]: Lipoproteins are group of heterogenous substances, metabolically active, constantly circulating through the vasculature and existing in a state of dynamic equilibrium between tissues and liver. Triglyceride-fats and cholesterol esters are carried internally in a lipoprotein and shielded from water by the phospholipid's monolayer and the apoproteins. Such characteristics make them soluble in salt water-based blood pool.

Synthesis of lipids^[8]:

The endoplasmic reticulum synthesizes lipids, especially phospholipids and cholesterol. These are rapidly incorporated into the lipid bilayer of the endoplasmic reticulum to grow more extensive. This occurs mainly in the smooth portion of the endoplasmic reticulum.

Concept of Hyperlipidemia: Hyperlipidemia is polygenic in inheritance that is manifested with the aid of the issues appreciably encouraged through elements which includes imperative obesity, saturated fats intake, and the cholesterol content within the eating regimen^[9].

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. A rise in one or more of the following lipids: cholesterol, cholesterol esters, phospholipids, or triglycerides is defined as Hyperlipidemia. A tendency to coronary, cerebrovascular, and peripheral vascular artery disorders can be caused by abnormal plasma lipids. Hyperlipidemia 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^[10,11,12].

Role of Lipids & Lipoproteins in Atherosclerosis:-

Atherosclerosis is caused by a buildup of lipids in the artery walls due to high cholesterol levels. On taking high fat, high cholesterol diet, adhesion of monocytes to arterial endothelium occurs at first. Later monocytes penetrate the endothelium, accumulate in the sub endothelial space and engulf lipid and lipid laden foam cells. The endothelial level is disrupted leading to platelet adhesion and aggregation which release potent growth factor that stimulate smooth muscle cell proliferation and connective tissue accumulation. Thus atherosclerotic plaque develops.

Atherosclerosis affects different parts of the circulatory system in different ways, resulting in different clinical symptoms depending on which circulatory bed is affected.

Classification of Hyperlipidemia:-

Based on the type of lipid:-

Hypercholesterolemia: Elevated levels of cholesterol

Hypertriglyceridemia: Elevated levels of Triglycerides

Based on causative factor:-

Primary (Familial hyperlipidemia)^[13]:-

Because of a genetic abnormality, it is also known as familial. A single gene defect and numerous gene defects are categorized as monogenic and polygenic.

Classification of Primary Hyperlipidemia:-

Type	Disorder	Cause	Elevated Plasma Lipoprotein
I	Familial Lipoprotein Lipase Deficiency	Genetic	Chylomicrons
IIa	Familial Hypercholesterolemia	Genetic	LDL
IIb	Polygenic Hypercholesterolemia	Multifactorial	LDL
III	Familial Dysbetalipoproteinemia	Genetic	Chylomicrons Remnants
IV	Hypertriglyceridemia	Multifactorial Genetic	VLDL
V	Familial Combined Hyperlipidemia	Genetic	VLDL, LDL

Secondary (Acquired Hyperlipidemia)^[14]:-

It is acquired due to the involvement of various disorders such as glomerular syndrome, diabetes, long term alcohol consumption, hypothyroidism, and the use of medications such as beta blockers, corticosteroids, and oral contraceptives.

Symptoms of Hyperlipidemia:-

Hyperlipidemia generally does not have any obvious symptoms but they are usually discovered during routine examination or until it reaches the danger stage of a stroke or a heart attack. Patients with high cholesterol level or patients with the familial forms of the disorder can develop xanthomas which are deposits of cholesterol may form under the skin, especially under the eyes. At the same time, patients with elevated levels of triglycerides may develop numerous pimple-like lesions at different sites in their body^[15].

Complications of Hyperlipidemia:-

Atherosclerosis: It is the most important risk factor for atherosclerosis, which is the major cause of cardiovascular disease. Atherosclerosis is a pathologic process characterized by the accumulation of lipids, cholesterol and calcium and development of fibrous plaques within the walls of large and medium arteries^[16].

Coronary Artery Disease (CAD): Atherosclerosis, the major cause of coronary artery disease, characterized by the accumulation of lipid and the formation of fibrous plaques within the wall of the arteries resulting in narrowing of the arteries that supply blood to the myocardium, and results in limiting blood flow and insufficient amounts of oxygen to meet the needs of the heart. Elevated lipid profile has been connected to the development of coronary atherosclerosis^[17].

Myocardial Infarction (MI): MI is a condition which occurs when blood and oxygen supplies are partially or completely blocked from flowing in one or more cardiac arteries, resulting in damage or death of heart cells. The occlusion may be due to ruptured atherosclerotic plaque. The studies show that about one-fourth of survivors of myocardial infarction were hyperlipidemic^[18].

Ischemic stroke: Stroke is the fourth leading cause of death. Usually strokes occur due to blockage of an artery by a blood clot or a piece of atherosclerotic plaque that breaks loose in a small vessel within the brain. Many clinical trials revealed that lowering of low-density lipoprotein and total cholesterol by 15% significantly reduced the risk of the first stroke^[19].

Treatment:-

Lifestyle Modification: Lifestyle changes are the cornerstone of Hyperlipidemia as management and are often the first line of treatment, especially for individuals with moderately elevated lipid levels. Lifestyle modifications like Dietary changes, Weight management, Regular physical activity, Alcohol consumption and Smoking cessation can significantly reduce lipid levels and lower the risk of cardiovascular disease.

Pharmacological therapy^[20]: When lifestyle modifications alone are insufficient to achieve target lipid levels, pharmacological interventions become necessary. Several classes of medications are available, each targeting different aspects of lipid metabolism. This involves mainly the use of drugs. The major drug involved in the treatment of Hyperlipidemia is "Statin". Generally, the drugs involved in the treatment of Hyperlipidemia are classified as follows;

HMG-CoA reductase inhibitors (Statins): (Lovastatin, Simvastatin, Pravastatin, Atorvastatin, Rosuvastatin) - Statins act by competitive inhibition of Hydroxyl - methyl glutaryl coenzyme - A reductase (HMGCoA) which is the limiting step in the cholesterol biosynthesis in the liver results in reducing the plasma levels of total cholesterol (TC), LDL and ApoB. Statins also result in a little rise in HDL levels and a moderate drop in plasma triglycerides.

Bile acid sequestrants (Resins): (Cholestyramine, Colestipol) - Bile acid sequestering reduces the concentration of LDL cholesterol by inhibiting the absorption of bile acids from the intestine and formed indigestible complexes that are excreted with feces.

Activate lipoprotein lipase (Fibric acid derivatives): (Clofibrate, Gemfibrozil, Bezafibrate and Fenofibrate) - Stimulation of lipoprotein lipolysis.

Nicotinic acid: It exhibits its hypolipidemic effect by its ability to reduce LDL, VLDL, Triglyceride, and Total Cholesterol and increase HDL cholesterol.

Others: Ezetimibe, Gugulipid

Concept of Rasa-Raktagata Snehavridhi:-

Agni is responsible for all the metabolic activities in the body^[21] and hence it is solely responsible for any increase or decrease of Dosha, Dhatu or Mala. When this agni gets vitiated then it has an impact on health at microcirculatory level depending upon the agni involved. As stated earlier excessive consumption of madhur, drava, snigdha, and gurugunatmak ahara causes increase in quantity of Pruthvi and Jala mahabhuta. It results in Agnimandya (Jatharagni as well as Dhatwagni & Bhutagni). This causes formation of sama (apachit) ahara rasa which is more snigdha, guru, manda, styana, picchil. The sama ahara rasa which is improperly formed won't be assimilated by dhatus due to Dhatwagni mandya. Such sama dhatuposhakansh will be accumulated in Rasa-Rakta dhatus in abnormal quantities.

Description of term Rasa-Raktagata Sneha Vikruti in Samhita Granthas:-

Acharya Dalhana in his commentary on Sushruta Samhita (Su.Su.14) has stated that ahara rasa nourishes the Sthayee Rakta (Rudhira), Mamsa, Meda, Asthi, Majja, Shukra dhatus with their respective nutrients homologous through different and distinct routes (channels)^[22]. Hence the nearest sthayee dhatu is nourished earlier with rasa poshkansha and the dhatu that lies further nourished with its nutrient homologous relatively later through longer

and smaller pathways or channels. So the sthayee mamsa dhatu receives its specific nutrient homologous from rasa after the supply to rakta dhatu; similarly, the sthayee meda dhatu is nourished with its specific nutrient homologous by rasa after the supply to sthayee mamsa dhatu.

Acharya Chakrapani Datta also in his commentary on Charaka Samhita (Ch.Su.28/4) has described about Khalekapota Nyaya and Kedar Kulya Nyaya of Dhatu Poshana. It clears that Medoposhakansha sneha is present in the Rasa-Rakta earlier the formation of Medo dhatu^[23].

Acharya Charaka has described about 20 Kaphaj Nanatmaja Vyadhi due to kapha vridhhi vikar. Dhamani pratichaya is one of them^[24] which is quite similar to Rasa-Raktagata Snehavridhhi.

बुभुक्षुश्च तन्ना च निद्राधिक्यं च स्तैमित्यं च गुरुगात्रता च आलस्यं च मुखमाधुर्यं च मुखमृदुश्च श्लेष्मोद्विगणं च मलस्यधिक्यं च बलासकश्च अपक्तिश्च धमनीप्रतिचयश्च.....||

Nidana^[25,26,27]:-

The substances having qualities similar as meda increases sneha in the body. On the basis of concept of Samanya-Vishesh siddhanta, the nidanas of sneha vikruti can be described as:

Acharya Dalhana in his commentary on Sushruta Samhita (Su.Su.15/37) mentioned that due to consumption of Kaphavridhhi kara ahara frequently there is formation of Madhuratara ahara rasa firstly in the body. This madhuratara ahara rasa results in Rasa Raktagata Snehavikruti followed by Medoroga^[25].

तत्रश्लेष्मलआहारसेविनोअध्ययनशीलस्यअव्यायामिनोदिवास्वप्नरतस्यचआमएवअन्नरसोमधुरतस्यशरीरम्अनुक्रमन्अतिस्रेहात्मेदोजनयति | तदतिस्थौल्यम्आपदयतिअध्ययनशीलस्यइतिअजीर्णभोजनाभ्यासिनः इतिअर्थः || सु.सु. १५/३२.

Similarly Acharya Bhavaprakasha explained about Rasa Raktagata sneha vikruti in Madhyama khanda Adhyaya^[26].

अव्यायामदिवास्वप्नश्लेष्मलआहारसेविनः मधुरअन्नरसः प्रायः स्नेहात्मेदोविवर्धयेत् |

तत्रमेदसोविप्रकुष्टमिदानम्आहअव्यायामएति | अन्नरसः आमरसः ||१

मेदसाऽवृत्तार्गत्वात्पुण्यन्येनधातवाः | मेदस्तुचीयतेतस्मात्अशक्तः सर्वकर्मसु || २ भावप्रकाशमध्यमखण्ड/३९.

Also Acharya Yogaratnakara mentioned about Rasa Raktagata sneha vikruti in Nidanasthana Medoroga Adhyaya^[27].

अव्यायामदिवास्वप्नश्लेष्मलआहारसेविनः मधुरअन्नरसः प्रायः स्नेहात्मेदोविवर्धयेत् |

मेदसाऽवृत्तार्गत्वात्पुण्यन्येनधातवाः |

मेदस्तुचीयतेतस्मात्अशक्तः सर्वकर्मसु || योगरत्नाकरनिदानस्थानमेदोरोग.

Classical Reference	Nidana mentioned
Charaka Samhita, Sutrasthana 21/4	अतिभोजन (Overeating), मधुर -स्निग्ध -गुरुआहार (Excessive sweet, unctuous, heavy diet), अव्यायाम (Avyayama), दिवास्वप्न (Divasvapna), हर्ष -नित्यत्व (Excessive comfort and sedentary habits), अव्यवाय (Lack of sexual activity) बीजस्वभाव
Sushruta Samhita, Sutrasthana 15/32	श्लेष्मलआहारसेवन (Shleshmala Ahara), अव्यायाम (Avyayama), दिवास्वप्न (Diwaswapna), अध्ययनशील (Ajirna Bhojanabhyasi – as per commentator)
Bhavaprakasha, Madhyama Khanda, Medoroga Adhyaya 39/1-2	अव्यायाम (Avyayama), दिवास्वप्न (Diwaswapna), श्लेष्मलआहारसेवन (Shleshmala Ahara Sevana)
Yogaratanakara. Nidanasthana, Medoroga	अव्यायाम (Avyayama), दिवास्वप्न (Diwaswapna), श्लेष्मलआहारसेवन (Shleshmala Ahara Sevana)

Samprapti:-

Nidana i.e. excess intake of kaphavardhaka and madhura rasa pradhan ahara, diwaswapna and avyayama contribute to medoroga. Santarpana ahara vihara, which includes sedentary life style, high calories food intake, lack of exercise which finally leads to morbidity of kapha dosha and medo dhatu. Due to medodhatwagni dushti excessive accumulation of abnormal kapha and meda occurs in various strotas in body. Aparipakva kapha - meda in the form of sneha present in rasa-raktavaha strotasa results in obstruction to the movement of vata&rakta through affected channel, which finally ends up in disease manifestation according to the site of affliction. The state of apakva kapha or meda and its excessive presence, margavarodh in rasa-raktavaha strotas is often compared with the state of Hyperlipidemia. On the basis of above pathophysiology, Hyperlipidemia can be clinically correlated with Rasa-Raktagata Snehavridhi or Dhamani Praticay. Furthermore, since this unnecessarily elevated asthayi medo dhatu is ama in origin, it is stored in the body for a longer period of time, resulting in strotorodh which further leads to additional complications like Sthaulya, Prameha, Hrudroga etc.

Poorvarupa:-

In the initial stage of disease patient does not have any complaint or no symptoms seen related to Rasa-Raktagata Sneha vikriti but on routine blood investigations many patients are diagnosed with deranged lipid profile. Some of the patient has family history and they are prone to have Hyperlipidemia. As initial manifestations are due to agnimandya, the symptoms related with samata and medo dushti like atinidra, tandra, aalasya, anga gaurava etc. can be considered as poorvarupa of Rasa-Raktagata Snehavridhi.

Rupa (Clinical manifestation):-

If the nidana sevana continues then samprapti continues to occur and following rupa can be seen in patients: kshudra shwas that is dyspnoea on exertion, aalasya that is lethargy, nidradhikya that is sleepiness, gaurava that is feeling of heaviness. According to Acharya Charaka, the body is deformed by buttocks, abdomen, and breast owing to an excessive rise in meda and mamsa 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. The rasayani that contain rasa, rakta lost their normal flow due to styan, guru and picchilrasa i.e. due to increased sneha within them. The styan and picchil guna causes the sanga of rasa and rakta in their own strotas i.e. the sneha portion of these dhatus causes upalepan in the rasayanis and further causes Dhamani Praticay mentioned as kaphaj nanatmaj vyadhi.

Chikitsa:-

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

1. Nidana Parivarjana: This is the most significant line of treatment for any disease condition. In Rasa-Raktagata Snehavridhi, the aim is to avoid dietary and lifestyle factors that aggravate kapha, meda and ama, thereby correcting agni and pachana of the accumulated sama medas and preventing further lipid accumulation.

2. Samshodhana Chikitsa: The role of shodhana is in kaphachedana, dhatwagni deepana and strotoshodhana. As the proper shodhana brings dhatusamyatwa and agni deepi, which is useful in Rasa-Raktagata Snehavridhi.

Lekhana basti: Lekhana basti has been proven to be useful in the treatment of Hyperlipidemia. All ingredient drugs are generally having properties like Rukshan, Tikshna and Strotoshodhana.

Udvartana: It has been stated for Bahya shodhana, as it has properties such as kaphahara, meda pravilayana, sthirikaranam angam etc. It aids in the removal of odour, reduces excessive perspiration, and relieves exacerbated dosha. Acharya Charaka mentions vamana, virechana and raktamokshana for Santarpanottha vikara, which can be utilised to treat Hyperlipidemia. He also recommends ruksha, tikshna, and ushna basti for sthauilya, which can help in Hyperlipidemia.

3. Samshamana Chikitsa (Drug Therapy): As there is involvement of ama, ama pachana and correction of agni should be primary aim of the treatment. As in Rasa-Raktagata Snehavridhi, there is sanchit ama, so the role of pachana is first and foremost than deepana. The term 'Pachana' itself means, "that which digests ama". By pachana and deepana, ama may be pacified and agni deepana is achieved which in turn corrects the Dhatuparinaman. Drugs having katu, tikta rasa, laghu, ruksha, sukshma guna and ushna veerya are useful in this condition as they reduce kapha and meda and also having properties like deepana-pachana, sneha-meda-kleda shoshana and strotovishodhana. By raising meda dhatwagni, samshamana karma relieves vata, pitta and kapha as well as depletion of Meda dhatu. 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 Shilajatu, Guggulu, Triphala and others serve to eliminate blockage from the strotas, particularly the medavaha strotas.

Pathyapathya:-

Abhishyandi ahara (dadhi, navanna, dugdhajanya padarth etc.) should be avoided. They are atherosclerotic.

All the kapha-medokara ahara vihara (aanup mamsa, diwaswapa, adhyashana ect.) are apathyas in this condition. Those which produces agnimandya should be avoided.

Ahara having guru,snigdha, picchil gunas should be avoided.

Use of takra, madhu, hot water in the diet should be promoted.

Discussion:-

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 and that is why it is widely regarded as a major risk factor for coronary heart disease, stroke etc.

It is one of the lifestyle disorders due to the today's faulty lifestyle which mainly includes faulty food habits (adhyasana, atimatrashan), minimum physical activity, sedentary lifestyle along with mental stress resulting into various metabolic abnormalities in the body, one of them is Hyperlipidemia.

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 Rasagata, Raktagata, or Rasa-Raktagata Snehavridhi, Medoroga, Sama medas, Sthaulya etc. In Rasa-Raktagata Snehavridhi, atisnigdha, madhura, guru ahara leads to kapha vridhi and agnimandya. This dushit agni further forms ahara rasa which is more snigdha, more guru i.e. ama in nature. So further uttarottar dhatus like rasa, rakta also becomes more snigdha, guru, styana, picchil. So, viscosity of rasa, rakta increases due to above gunas ultimately leads to Rasa-Raktagata Snehavridhi and Hyperlipidemia. Hence being close resembles of these two diseases in terms of nidana, roopavastha, upadrava it can be studied under the heading of Hyperlipidemia.

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, which is capable of obstructing the metabolic pathways and causing diseases. Correction of agni is the basic treatment for increased lipid levels. As per ayurveda, all the diseases develop due to agnimandya. This is also true in the case of Hyperlipidemia. 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 concepts, Hyperlipidemia is a disease of disturbed lipoprotein metabolism and liver is the main stay of lipoprotein metabolism. Hyperlipidemia 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. Deepana pachana dravyas will be beneficial in samprapti vighatana of Hyperlipidemia 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 Hyperlipidemia.

Conclusion:-

Hyperlipidemia is a disorder of lipid metabolism manifested by elevation of plasma concentration of the various lipids and lipoproteins. Although ayurveda does not describes a distinct disease entity, its etiopathogenesis can be closely understood through the concept of Rasa-Raktagata Snehavridhi. The critical analysis presented in this review suggests that Rasa-Raktagata Snehavridhi provides a more appropriate ayurvedic correlation for Hyperlipidemia. An understanding of Hyperlipidemia correlating with ayurvedic principles provides a holistic approach that emphasizes agni deepana, pachana, kaphaghna and medohara treatment along with diet and lifestyle modification. Timely intervention in the early stages of kriyakala will prevent further complications like CAD, Stroke etc. Lifestyle modifications, including dietary changes and increased physical activity, continue to play a crucial role in primary prevention and adjunctive therapy. Further experimental, clinical, and interdisciplinary

research can be done to establish evidence based data of the correlation between Hyperlipidemia and Rasa-Raktagata Snehavridhi.

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