



Research Article

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AN EXPLORATORY STUDY ON AETIOPATHOGENESIS OF HYPERLIPIDAEMIA

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ABSTRACT

Hyperlipidaemia is a common metabolic disorder nowadays due to changes in the food habits and lifestyle. WHO estimates that almost 20% of strokes and over 50% of heart attacks can be linked to high cholesterol. Hyperlipidaemia is not mentioned in Ayurvedic classics. In Ayurveda diseases can be diagnosed and treated by analyzing the nidanas (causative factors) and condition of doshadushyas. In this review article the etiology related to lifestyle factors of Hyperlipidaemia is corroborated with modern view and a pathogenesis was introduced in ayurvedic view. Relevant literatures were reviewed, and a survey was conducted to corroborate etiological factors of Hyperlipidaemia in Ayurvedic view. The overuse of guru (heavy)snigdha(unctuous), pichila(slimy) aharas, avyayama(lack of exercise) & mental factors such as chinta, soka etc. will vitiate jatharagni(digestive fire). Ama arising from jathagnimandya will vitiate rasa dhathu and kaphadosha. Rasa dhathu contains precursors of all dhathus. Due to dhatwagnimandya the precursors of medo dhathu present in rasa dhathu is not transformed. As a result, rasa dhathu containing the precursors of medo dhathu will increase and manifests as Hyperlipidaemia. Due to effect of vitiated rasa dhathu, kaphadosha and ama, the symptoms such as srotorodha (blockage of body channels), gourava (heaviness) and angasada (weakness) will get manifested. Nidanaparivarjana and samprapthivighatana are the main treatment principles of Ayurveda. The manifestation of hyperlipidaemia can be prevented by nidanaparivarjana. Hithaharaviharas recommended in Ayurveda also help us to lead a healthy life

Keywords: Hyperlipidaemia, Pathogenesis, jatharagni, Rasa dhathu, Ama

INTRODUCTION

Hyperlipidaemia is a major metabolic disorder caused by derangement of lipid metabolism. Hyperlipidaemia does not have any specific symptoms. Blood levels of cholesterol and triglycerides will give valuable information for the assessment of lipid metabolism. Hyperlipidaemia has a pivotal role in the manifestation of atherosclerosis. Myocardial infarction, cerebral infarction, aortic aneurysm and peripheral vascular diseases are the major consequences of atherosclerosis.

Hyperlipidaemia is a common disorder nowadays due to change in life style habits. But Hyperlipidaemia is not mentioned in Ayurvedic classics. In Ayurveda diseases can be diagnosed by the knowledge of doshas, dushyas, agni, ama and srotas. The knowledge of etiological factors and pathogenesis has an important role in the treatment and prevention of diseases. Nidana parivarjana (avoiding causative factors) and samprapthivighatana are the main treatment principles in Ayurveda. Hyperlipidaemia which is an important life style disorder nowadays, can be treated and prevented by the knowledge aetiopathogenesis

AIMS AND OBJECTIVES

The etiological factors of Hyperlipidaemia were analyzed in ayurvedic view and a samprapthi (pathogenesis) was introduced by analyzing the condition of doshadushyas

MATERIALS AND METHODS

Relevant literatures related to modern science and ayurveda samhithas are reviewed and a survey was conducted to collect and corroborate the etiological factors related to lifestyle of Hyperlipidaemia were collected and it was corroborated with Ayurvedic view

Hyperlipidaemia—A review

Hyperlipidaemia is a general term for elevated concentrations of any or all of the lipids in plasma such as cholesterol, triglycerides and lipoproteins. The causes of hyperlipidaemia are multifactorial. Hyperlipidaemia is either due to primary abnormality in lipid metabolism or due to secondary manifestation of some other conditions. Diet rich in carbohydrates and saturated fats, excessive intake of alcohol, obesity, lack of exercise, smoking and mental stress are the main lifestyle factors of Hyperlipidaemia.

Diet rich in carbohydrates and use of saturated fats like hydrogenated vegetable oils, egg yolk, dairy products such as cream, butter etc will increase the level of serum triglycerides and LDL cholesterol. The normal response to a high carbohydrate diet is an increase in triglycerides by approximately 50 to 100%. In some lipidaemic subjects, a high carbohydrate intake produces more intense lipaemia with triglyceride levels increasing by 100mg or more. The human body synthesizes lipids from carbohydrates by endogenous synthesis. Reuse of cooking oil and fried items also enhance the development of Hyperlipidaemia because it contains more *trans* fatty acids which will increase serum lipids.

Moderate alcohol consumption increases level of HDL cholesterol which decreases the risk of CHD. However excessive intake of alcohol raises the triglyceride level in the blood and it will increase the risk of coronary heart disease. Obesity is also an important cause of hypertriglyceridaemia because in obese persons excess fat and carbohydrates are converted into fatty acids. Lack of exercise also leads to possibility of developing high cholesterol and cardiovascular diseases. Regular physical exercise increases the concentration of HDL particularly HDL₂ cholesterol and decrease the serum triglycerides. Mental stress increases fatty acid level in the blood by stimulating the hypothalamus by producing growth hormones of anterior

pituitary. This will lead to increased catabolism of triglycerides and thereby increases the levels of free fatty acids.

There are no specific symptoms of hyperlipidaemia. So regular blood screening should be done to diagnose hyperlipidaemia. Accumulation of lipids in the tissues is not always due to the result of severe and prolonged hyperlipidaemia. Lipids accumulate in the arterial walls, subcutaneous tissues, bony prominences, tendons and cornea. But these symptoms are not diagnostic of hyperlipidaemia

SURVEY ANALYSIS

In order to collect and corroborate the etiological factors in the light of Hyperlipidaemia in the light of doshas, dhatus, and srotases etc. A survey was conducted among the patients OPD & IPD patients of Govt. Ayurveda college, Trivandrum. Sample of 40 people of both sex with hyperlipidaemia and 80 people with

non hyperlipidaemia having age limit between 30&65 were selected. Consent for conducting study got from patients and ethical clearance also obtained from institution. Patients who were taking allopathic medicines and patients with genetic disorder are excluded. Lipid profile test was used for assessing patients. Study design is analytical cross sectional and convenient sampling was used as sampling technique. The details obtained from survey were statistically analyzed.

From survey it is found that there is strong association between study characters and occurrence of hyperlipidaemia. The survey had shown that people who are regularly using fried items and reusing cooking oil are mostly prone to develop hyperlipidaemia. People who are using saturated fats and fried items have increased cholesterol levels especially the triglyceride and LDL. The survey also shown that mental stress has an important role in the development of Hyperlipidaemia. People who are using alcohol had increased LDL level than that of non alcohol users.

Table 1: Distribution of 40 Hyperlipidaemic and 80 Nonhyperlipidaemic samples according to some selected properties

Properties	Hyperlipidaemia samples	Hyperlipidaemia samples %	Non hyperlipidaemia samples	Non hyperlipidaemia samples %	Chi.sq
Mental stress	22	80	7	8.75	31.33
Alcohol	21	52.5	14	17.5	15.81
Fried items	35	87.5	16	20	46.99
Reuse of oil	32	80	10	12.5	53.41
Exercise	9	22.5	45	56.25	12.27

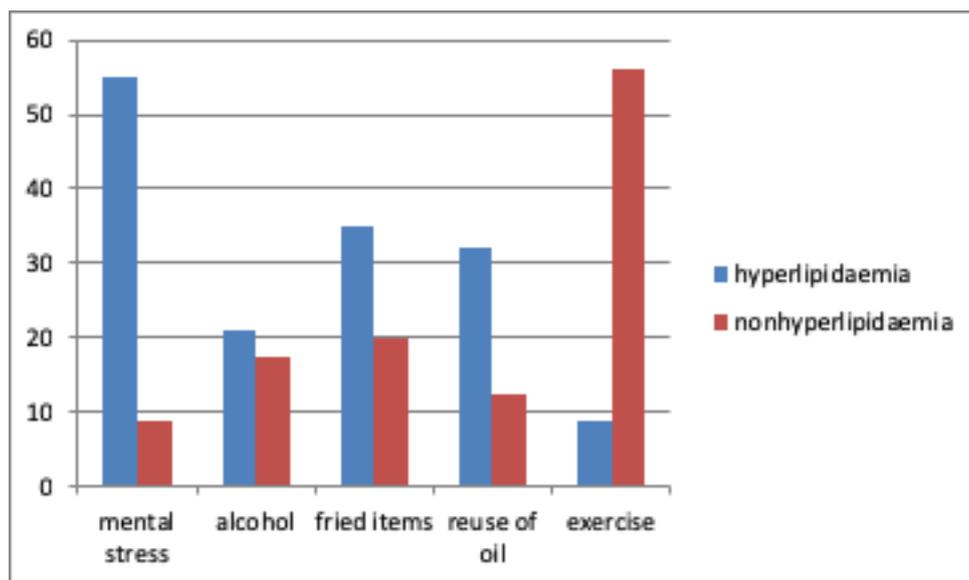


Figure 1: Percentage distribution of samples

RESULTS AND DISCUSSION

On the basis of survey, the etiological factors are corroborated with Ayurvedic view. Any factor which has a tendency to produce a disease is considered as nidana in Ayurveda¹. By analyzing the properties, it is found that carbohydrates and fats are having guru (heavy), snigdha (unctuous), manda (slow), pichila (slimy) and abhishyandi (obstructing circulating channels) gunas. In Ayurveda, samanya (generic concomitance) is always the cause of augmentation². Intake of carbohydrates and saturated fats will increase guru, manda, snigdha and pichila gunas in our body. Excessive use of snigdha, pichila and guru aharas will vitiate jatharagni, rasa dhathu and kaphadosha.

According to Ayurveda, moderate intake of alcohol is srotasodhana (clearing channels of circulation). Moderate use of alcohol is vata kapha samana and excessive use will bring toxic

effects in our body³. Madyapana will vitiate medovaha srotas. Avyayama (lack of exercise) is said to enhance the development of Hyperlipidaemia. In Ayurveda, proper exercise is said to impart lightness to the body parts, increase the efficiency of work, stimulation of jatharagni and help in decreasing excessive fat accumulated in the body⁴. Sedentary life style also promote the vitiation of kaphadosha. Mental stress is one of the aggravating factors of Hyperlipidaemia. Jatharagnimandya occurs if a person afflicted with manodoshas⁵ (doshas of the psyche). Manodoshas also leads to rasavahasrotodushti⁶.

Hyperlipidaemia is a major metabolic disorder caused by derangement in lipid metabolism. In Ayurveda metabolic disorders are diagnosed and treated as agnivikrithi. Jatharagni is responsible for the pakadi karmas (transformation process) occurring in the body⁷. Excessive intake of snigdharas, mental stress and avyayama etc will lead to Jatharagnimandya (weakness

of digestion). Due to Jatharagnimandya ama is formed⁸. This ama will get mixed with annarasa (essence of food). The amayuktha annarasa and increased kaphadosha will vitiate rasa dhathu. According to Ayurveda samana guna will augment samana guna. Ama having the properties of snigdha and pichila guna will increase the snigdha and pichila guna of rasa dhathu. So the snigdha and manda guna of increased kapha will increase the snigdha and manda guna of rasa dhathu. In effect the snigdha, manda, pichila guna of rasa dhathu will increase and cause vitiation of rasa dhathu. Since dhatwagnis are moieties of jatharagni⁹, jatharagni mandya will lead to rasa dhatwagni mandya. Rasa dhathu contains precursors of all dhathus. Hyperlipidaemia is due to alteration in the production, catabolism or defective clearance of plasma lipids and lipoproteins in circulation. Due to rasa dhatwagni mandya, the precursor of medo dhathu present in the amayuktha vitiated rasa dhathu is not properly transformed. As a result, rasa dhathu containing precursors of medo dhathu will increase. Due to the combined effect of ama, kapha and vitiated rasa dhathu symptoms such as srothorodha, gourava and angasada will get manifested more. Hridaya and dasadhamanis are the moola sthana of rasavaha srothas¹⁰. So srothorodha will mostly affect the blood vessels of heart. Coronary artery diseases are mainly caused by Hyperlipidaemia.

The vitiated rasa dhathu circulated all over the body is responsible for nourishment of all dhathus (tissues). So if the patient continue the nidanas without undergoing proper treatment, it will lead to the vitiation of other dhathus and srotases leading to further complications. The amayuktha vitiated rasa dhathu along with vitiating nidanas of medo dhathu and medovaha srotas will lead to the development of Prameha. While analyzing all the vitiating nidanas; it is found that the vitiating nidanas of rasa and medas is same. So there is increased chance of vitiation of medo dhathu due to amayuktha rasa dhathu. According to modern science, increase in serum triglycerides will lead to increased glucose level in the blood. So Hyperlipidaemic patients have more chance of getting diabetes mellitus than others. Similarly, diabetes patients are more prone to develop Hyperlipidaemia than others.

CONCLUSION

There is a well-established triangular relationship between habitual diet and lifestyle cholesterol levels and coronary heart disease. Most of the cases of hyperlipidemia can be controlled by healthy diet and lifestyle. Dietary manipulation alone will

be helpful in regulating some cases of Hyperlipidaemia. Agnimandya is a root cause of all disease. So maximum attention to be paid to increase the strength of jatharagni. The food which is panchabhoutic is responsible for the augmentation of corresponding homologue in the human body. So ahara dravyas dissimilar to the panchabhoutic combination of vitiated doshadushyas should be followed.

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