



Title: Study of hyperlipidemia and Ayurvedic concept of *meda dhatwagnimandya*.

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Abstract:

Changing life style is the common cause of many diseases. Now a days. Hyperlipidemia & obesity are the two global problems. So Ayurvedic concepts of lipids (*meda*) & *staulya* & its treatment is the best remedy to overcome from these problems. I have tried to elaborate the concept of correlation of *meda* & lipids & *dhatwagnimandya*. Even the endocrinal dysfunction causing th high lipid levels & obesity. **Aims:** To study the etiopathogenesis of hyperlipidaemia according to Ayurveda and modern medical science. **Objectives:** To correlate *meda dhatwagnimandya* and hyperlipidaemia

**Observations:**

- Weight gain
- Polyunsaturated fats
- Exercise
- Smoking
- Specific nutrients
- Stress

Consequences of Hyperlipidaemia: Atherosclerosis is the immediate and direct effect. Then thrombosis, embolism, IHD, chronic ischaemic brain disease, cerebral infarcts, ischaemic bowel disease, intestinal infarcts, intermittent claudication, and gangrene is the more severe effects.

Result And Discussions With Conclusion: *kapha* and *meda* have interrelation and *meda* can correlate to lipids.

Keyword: *Meda, dhatwagnimandya*, lipids, Hyperlipidemia, metabolism

Introduction:

Today is the era of modernization and fast life. Everybody is busy and living stressful life.

The industrialisation, stress, lack of exercise, changing dietary habits and sleeping pattern results into disturbances of *agni* and metabolism and ultimately imbalance of body equilibrium.

Agnimandya results into *dhatwagnimandya*, mainly *meda dhatwagnimandya*. So the end result is hyperlipidemia

Aims and Objects:

To study the etiopathogenesis of hyperlipidaemia according to Ayurveda and modern medical science.

Objectives

To correlate *meda dhatwagnimandya* and hyperlipidaemia

Literature Review:

Concept of Meda

Meda means Fat.

In our body, there are many tissues which are rich in fat. All these structures have *sneha* as common feature. They are *medo dhatu*, *vasa* and *majja dhatu*. All these three have *snigdha* as common but all the three differ in their site and function.

Mainly *meda* present in *sphik* i.e. buttocks. *stan* means breasts and *udar* means abdomen.

Vasa

It is *snehansha* of *mansa dhatu*. It is *upadhatu* of *mansa*. The *vasa* is ghee like fatty substance situated underneath skin, and also included in connective tissues.

Majja dhatu

It is completely different *dhatu* as mentioned and different in all other aspects like *vridhhi*, *kshaya* and *sarapurush lakshanas*.

Sthana and swarup of medo dhatu

There are two types of *meda dhatu*. One is *Poshya* and other is *poshak*. Among these two *poshak* is mobile in nature means *margaga* which is circulated in the whole body with *rasa rakta* to give nutrition to *poshya medo dhatu*. It can be traced that lipids along with the cholesterol are being circulated with blood.

Poshya medo dhatu is having immobile nature that is *sthanaga* type which stored in *medodharakala*.

Pramana:

Total quantity of *meda* is two *anjali* and *vasa* is three *anjali*. Thus major *snigdha* part is of five *anjali*. Means *sheha* content of the body contributes approximately 11 to 12%. Modern physiology also mentioned the same amount of fat in the body.

Medovaha strotas dushti hetu

Avyayam, *diwaswap*, excess indulge in *medayukta ahar*, excess alcohol consumption | Ref. (*charak viman* 5/15)

Dushti lakshanas and vikaras



Excess sweating, excess oily skin *talushosha*, excess thirst etc.

Sushrutacharya added *granthi*, *galaganda*, *arbuda*, *madhumeha*, etc.

HYPERLIPIDAEMIA

Hyperlipidaemia is a condition in which the levels of lipids in plasma are increased. It is of utmost significance because it leads to atherosclerosis of vessels (arterial walls) leading to vascular accidents. Blood levels of cholesterol and triglycerides are uniformly distributed in general population, graphically presenting bell-shaped curves without any indication of cut off points between normal and abnormal. Moreover, lipid levels vary with age, sex & nutritional status. Values are lower at birth with a relatively rapid upsurge during the first year of life and further slow rise until 6 years of age. Adolescence causes more change in males than in females. Levels of plasma lipids tend to rise from the third up to seventh decade, particularly in affluent societies. In newborn, plasma cholesterol is around 100 mg/dl, which slowly rises to about 160 mg/dl during 1st year of life. Plasma cholesterol levels tend to slowly rise after 4th decade of live in men and in postmenopausal women. Also the cholesterol levels of Plasma may be elevated during the period of menstruation in females.

THE HYPERLIPOPROTEINAEMIAS

The who (Fredrickson) classification is a biochemical phenotypic classification based on raised lipoprotein.

Frederickson's classification of Hyperlipidaemias: primary

Hyperlipidaemia is classified into – type I, IIa, III, IV, & V. They may be only hypercholesterolemia (type IIa) or only

hypertiriglyceridaemia (type I, IV & V) or both (Combined form)

(type IIb &III)

HYPERCOLESTEROLAEMIS

Elevated levels of fasting plasma total cholesterol in the presence of normal levels of triglycerides. It is almost always associated with increased concentrations of plasma LDL cholesterol (type IIa);

A rare individual with markedly elevated HDL cholesterol may also have increased plasma total cholesterol levels.

FAMILIAL HYPERCOLESTEROLAEMIA

It is a genetic disorder that occurs in the heterozygous form in approximately 1 in 500 individuals. FH is due to mutations in the gene for the LDL receptor and is genetically heterogeneous. Till date more than 250 different mutations in the gene having been described.

In untreated adults, total cholesterol levels range from 275 to 500 mg/dl.

Plasma triglyceride levels are typically normal, and HDL cholesterol levels are normal or reduced.

It is of two types:

1. Heterozygous
2. Homozygous

HETEROZYGOUS:

In this type the receptor capacity is reduced to 50% LDL is not removed from the circulation and may be due to increased production of LDL. Serum cholesterol may vary from 300-600 mg/dl. This can be diagnosed by testing LDL



receptor cell from amniotic fluid of foetus or at the time of birth by estimation of cord blood.

Clinical Features:

It usually develops severe atherosclerosis in early or middle age. Tendon xanthoma, tuberous xanthomas, and xanthelasma, are common in heterozygous FH. CHD develops in men by the fourth decade of life or earlier and there is marked increase in the risk of premature CHD in both males and females.

HOMOZYGOUS

It occurs in 1 out of 1 million individuals and it associated with a marked increase of plasma cholesterol levels upto 500mg/dl.

Clinical features

Individual generally have large xanthelamas and prominent tendon and planar xanthomas and severe premature CHD that can be manifested in childhood. It has been estimated that the onset of CHD occurs about 20 years earlier.

HYPERTRIGLYCERIDAEMIA

In this form rise in S. Triglycerides is present which may result from excess of chylomicrons (type 1), VLDL (type 4), or both.

HYPERCHOLESTEROLEMIA WITH HYPERTRIGLYCERIDAEMIA

Rise in both cholesterol and triglycerides and associated with excess oh LDL as well as VLDL.

SECONDARY CAUSES

1. Diabetes Mellitus
2. Hypothyroidism
3. Renal disease
4. Liver disease
5. Ethanol
6. Coffee
7. Gout
8. Obesity
9. Iatrogenic
10. Hormonal influences
 - a) Pregnancy
 - b) Exogenous sex hormone

Epidemiology

Age- The lipid research clinic (LRC) survey showed that total cholesterol increases with age in both sexes up to middle age and declined moderately in elderly.

Sex- Studies have shown that the total cholesterol levels are relatively similar in men and women between the age 20 to 50 but women have higher HDL at almost all ages after puberty. After menopause LDL level increased.

Dietary and lifestyle

Determinants of LDL cholesterol

Increased level	Decreased level
Greater dietary fat intake	Less dietary fat intake
Greater dietary cholesterol intake	Less dietary cholesterol intake
	Exogenous estrogen

The key factors associated with increased and decreased HDL are listed in the following table.



Determinants of HDL cholesterol

Increased level	Decreased level
Leanness	Obesity
Estrogen	Androgen
Genetic	Genetic
	Cigarette smoking and alcohol intake

Some important characteristics of fat

Much of carbohydrates are converted to fat prior to its utilization for supply of energy.

Some organs prefer fat as a fuel in preference to carbohydrates.

As the calorific value of fat is over twice as greater than carbohydrates and protein, i.e. 9.3cal/gm. So the fat is stored in the tissues as principle form of energy.

It supplies essential fatty acid (poly unsaturated fatty acid) and fat soluble vitamins (A,D,E,K)

It is required in diet essentially for absorption of these essential substances.

Although phospholipids, cholesterol and triglycerides are not stored in adipose tissues, but go to form essential structural constituents of various organs in the body.

10% fats (glycerol part) may be converted into sugar during the synthesis of carbohydrates.

Amino acids can be synthesis from fatty acids and ammonia in the liver.

Being a poor heat conductor the subcutaneous fat helps in heat regulation.

The depot fat mechanically in protecting the vital organs and also act as cushions and packing tissues.

Certain endocrine factors take part in fat metabolism. They are as follow:

- Anterior pituitary
- Insulin
- Glucocorticoids of adrenal cortex.
- Thyroxin
- Adrenaline (Epinephrine)

Results and Discussions:

Comparison between the concept of *Meda* and lipids

<i>Meda</i>	Lipids
<i>Margaga meda</i> supplies energy trough rasa and rakta to body.	Lipid profile can be done by serum investigation.
Metabolism first done by <i>pachakagni</i> and <i>sukshma pachan</i> by <i>dhatwagni</i> .	Endocrines help to metabolized fat and lipids.
Intake of excessive <i>sneha</i> like <i>grita</i> , <i>taila</i> , <i>vasa</i> , <i>majja</i> results into <i>medo vridhhi</i>	Intake of high fat diet increases lipid levels.
Excessive <i>madhura</i> causes <i>medorog</i>	Increased consumption of carbohydrates and sugar causes obesity.
<i>Meda</i> is the main factor which is affected in <i>sthaulya</i> and <i>prameha</i>	Obesity and D.M .are often associated with abnormal lipid levels

Conclusion:

From above scenario we can say that *kapha* and *meda* have interrelation and *meda* can correlate to lipids.

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