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Ayurveda

AYURVEDA AND MODERN PERSPECTIVE ON MEDOVAHA SROTAS THEIR PHYSIOLOGICAL AND PATHOLOGICAL IMPORTANCE :- A REVIEW

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ABSTRACT Word Srotas is derived from 'Sru' dhathu, which means Gathi or through that which flows. Medas is 4th Dhathu of body word Medas means Snehana (oleation) of body. Snehana is the Sreshta Karma of Medas. It remains as semi solid butter in the free space of muscle tissues, inside the skin and abdomen. According to Charaka, Vrkka(Kidney) and Vapa Vahana are Medovaha srotases1, and according to Susrutha two Kateemoola vrkkas are Medovaha srotases2. The anatomical and physiological perspective of Medovaha srotas play a vital role towards the normal health status of an individual. Everybody wants to have a balanced body weight and constitution. It is the primary constitution of Swasthya. Considering physiological and pathological importance of Medovaha srotas, present article describe Ayurveda and modern perspective of Medovaha srotas and diseases related to malfunctioning of Medovaha srotas

KEYWORDS : Medas, Srotas, Vrkka, Vapavahanam, Katee

INTRODUCTION

The life starts as a single cell, fertilized ovum, which contains representatives of all tissues, doshas and malas. The 7 dhathus perform different action in the body, but due to their supporting and nourishing like nature, they are all named as dhathu in general

Fats are well described in Ayurveda. Susrutha narrates that human beings are full of lubricating materials(fat).Fats have two sources Sthavara and Jangama, and the 4 kinds are Ghrtha, Taila, Vasa, Majja[3]. The Medodhathu though well described in various references, but not included in the above 4 types, probably shows that these 4 types of fats can be used as food and material from the outside resources; but the Medas cannot be taken, as it can be only developed physiologically in the body and creates many diseases in increased and decreased conditions, while help in body fitness in its balanced state.

The fatty or adipose tissue present all over the body, so fat digestion and metabolism in our body can be also correlated as Medo dhathu. In Medo dhathu kshaya one of the symptoms is Pleeha vrdhi (splenomegaly)[4]. When in need of glucose, the body of a person with a fatty-acid metabolism disorder will still send fats to the liver. The fats are broken down to fatty acids. The fatty acids are then transported to the target cells but are unable to break down, resulting in a buildup of fatty acids in liver and other internal organs. Lack of detoxification of the body, accumulates the toxins inside which result into development of splenomegaly.

METHODOLOGY

Data collected from Samhitas and from various related literature
Sthana of medas :- The fatty or adipose tissue present all over the body. however it is mainly present in the abdomen. intestinal lymphatics carry the fat, which is absorbed from intestines to all over the body. The adipose tissue (fat cells) originate from medodhara kala, which is present mainly in the abdomen and bones.

Medovaha srotas

According to Charaka, vrkka and vapavahana are medovaha srotas, according to Susrutha waist (katee) and vrkka are considered as srotas.

Vapavahanam

According to Charaka, vapavahanam carry the fat which is absorbed from intestines to all over the body.it can be correlated as omentum ,adipose tissue etc.. katee also represents adipose tissues in that area (like perinephric fat)

OMENTUM

Greater and lesser omentum. It is primarily an adipose tissue. It is a curtain of fatty tissue that hangs down from our stomach and liver, wrapped around the intestines. The omentum is known as the policeman of the abdomen for its role in fighting intra abdominal infection. The omentum also contains lymphoid aggregates, called milky spots that contribute to peritoneal immunity by collecting antigens, particulates and pathogens from the peritoneal cavity and depending on the stimuli , promoting a variety of immune responses.

Adipose tissue

Specialized connective tissue consisting of lipid rich cells called adipocytes. commonly known as body fat. found all over the body. It can be found under the skin(subcutaneous fat), packed around internal organs (visceral fat), between muscles, within the bone marrow & in the breast tissue.

Lipid Digestion And Metabolism

In mouth – lingual lipase,Stomach – gastric lipase ,Pancreas – pancreatic lipase, cholesterol esterase etc..

The small intestine is very efficient in absorbing fat. So very little is normally excreted in the feces. Bile salts from the liver play a major role in fat digestion. Bile salt lowers the surface tension, causes emulsification and hydrolysis of fat, and accelerates fat digestion by micelle formation. Then transport of micelle to enterocytes of the small intestine occurs. When contact with the cell membrane, fatty acid and monoglyceride move inwards. During transport of lipid from inside the cell membrane to interstitial space; in golgi apparatus of smooth endoplasmic reticulum combines with protein such as lysophospholipid, phospholipids and cholesterol esterase; formation of chylomicrons occur (lined by lipoprotein) excreted to interstitial space and it enter to lacteal system.[5]

Lipid Metabolism

Most abundant form of energy – no ceiling for the storage of fat. The stored fat is in dynamic equilibrium in the adipose tissue.
Degradation of triglyceride

- Hydrolysis of TG --- 3 fatty acids +1 glycerol
- Glycerol merge with glycolysis as glyceraldehyde – 3 – phosphate
- Beta oxidation – series of metabolic steps by which fatty acids are catabolized
- Beta oxidation

Step 1 – oxidation (dehydrogenation)
Step 2 – hydroxylation
Step 3 – oxidation (dehydrogenation)
Step 4 – cleavage --- forms Acetyl co A

Acetyl Co A combines with oxalo acetic acid – Krebs cycle and energy produced

Removal of each Acetyl Co A ---- 5 ATP[6]

The moola of medovaha srotases are vrkka and vapa vahana, in which vrkka can be also correlated with suprarenal gland(adrenal gland)

Adrenal gland :- situated extra peritoneal at the upper pole of the kidney . hence it is called suprarenal gland. 2 adrenal gland on either side, hormones secreted by adrenal cortex called corticosteroids, can be grouped as

1. Glucocorticoids – cortisol and corticosterone are the hormones
2. Mineralocorticoids
3. Adrenal sex steroids

In which cortisol play role in fat metabolism

1.Lipolytic effect of cortisol :-

a) Permissive role in lipolysis :- cortisol itself has only slight lipolytic activity. Its presence is necessary for epinephrine, growth hormone and other lipolytic substances to stimulate hydrolysis of stored TG at maximal rates. Thus during fasting, cortisol permits the accelerated release of stored energy in the form of fatty acids and of glycerol for gluconeogenesis.
b) Indirect stimulation of lipolysis :- it is caused by blocking peripheral glucose uptake and utilization
c) Fatty acid synthesis is inhibited in liver by cortisol, an effect not observed in adipose tissue

--- It is important to note that in diabetic patients, cortisol increases plasma lipid levels and increases plasma lipid levels and increases ketone body formation, which worsens diabetes. But in normal subjects, insulin secretion is increased by raised blood glucose levels and the insulin decreases lipase activity and counter balances hyperglycemia

1. Lipogenic role:- glucocorticoids increase differentiation of adipose tissue cells from preadipocytes to adipocytes and stimulate lipogenesis by increasing adipocyte lipoprotein lipase and glucose 6 phosphate dehydrogenase activity. The lipogenic effects vary in different regions of the body. Therefore, in cortisol excess, there occurs a selective accumulation of fat in the abdomen, trunk and above.

--- It is important to note that the fat deposition observed in hypercortisolism reflects increased food intake rather than a change in the rate of lipid metabolism.

- Glucocorticoids increase appetite and food intake by,-- inducing neuropeptide Y (NPY) synthesis and NPY receptors in the hypothalamus, and suppressing CRH release
- Since cortisol also induces leptin synthesis in adipocytes, the gain in fat mass is eventually limited by the negative feedback of action of leptin on the appetite centre in the hypothalamus.[7]

Causes of medovaha srotodushti

Excessive intake of fatty food and drinks, day time sleeping, and excessive intake of varuni type wine aggravates medo vaha srotas.[8]

Medopradoshaja vikara

Charaka describes that prameha with premonitory signs and symptoms are produced by vitiation of medas. Increase medas in the body provides a favorable cause for the development of diabetes mellitus and increase fat and adipose tissue in the body.

According to susrutha, enlargement of scrotum, goiter (galaganda), gandamala etc are diseases produced by vitiated tissue. Great increase of medas produce unctuousness of the body, increase of abdomen, flanks, bad smell etc[9]

- In the 21st chapter of charaka sutrasthana Ashtou ninditheeyadhyaya, 8 ninditha purushas are mentioned. Out of 8 atisthoola and atikrisha have more of unwanted distinctive features, in which atisthoola mentioned as medapradoshaja vikara. 8 doshas of atisthoolas mentioned are ,they are difficult to indulge in sexual intercourse, they are weak, they emit bad smell, they have much of sweating, hunger and thirst. These are 8 defect inherent in them.[10]
- Excessive corpulence is caused by over intake ;intake of heavy, sweet, cooling and unctous food, want of physical excercise, abstinence from sexual intercource, day sleep, un interrupted cheerfullness, lack of mental excercise and heredity
- So in the case of fatty persons, other dhathu does not grow to the extent fat grows. This affects longevity; the bodily movement is impaired due to the looseness, tenderness and heaviness of fats. This makes sexual act difficult because of the small quantity of semen and also due to the obstruction of channel of semen by medas. Bad smell is caused by inherent defects and nature of the fat tissue and also due to excessive sweating. As the fat is associated with kapha and as it is fluid, multitudinous and heavy, as such it cannot withstand physical exercise and it brings about excessive sweating in the body; because of the sharp digestive power and presence of vayu in excessive quantity, there is excessive hunger and thirst.

Pathophysiology of corpulence :- Due to obstruction of passage by the fat, the movement of vata is specially confined to koshta (abdominal viscera) resulting in the stimulation of digestive power and absorption of food. So the patient digests food quickly and becomes a voracious eater. If he does not get food when he needs it, he can be subjected to many diseases of serious nature. The agni and vata are the two most troublesome factors; they burn the corpulent ones as the forest fire burns the forest. In the event of a disproportionate increase of fat, diseases of very serious types are caused, all of a sudden, by vata etc. which may lead to instantaneous death. Owing to an excessive increase of fat and muscle tissue, the buttock, abdomen and breast become pendulous and his strength is rendered disproportionate with his physical growth.

Rationale

Medo dhathu provides unctuousness to all body components. Unctuousness is the essential property of the essence of all 7 dhathus(ojas). In medo vaha srotodushti, increase and decrease of medas creates many diseased conditions. Unhealthy diet and physical activity result in the development of chronic diseases specifically diabetes, obesity etc.because of this evaluation of physiology and pathology of medovaha srotas is very essential.

Analysis

Medo dhathu is sarva shareera gatha dhathu, it cannot be taken from the body. So it can be primarily correlated with fat digestion and metabolism. Physiologically and pathologically medovahasrotas implies disorders of fat digestion and metabolism

DISCUSSION

Medas is sarva shareera gatha. In susrutha sarva sareera sthana, susrutha not includes asthivaha srotas, majjavaha srotas, and sweda vaha srotas, these 3 srothases are with medomooola ie; sarva sreera gata moola. Vidha lakshanas of srotases with sarva sareera gathamoola is asadhya. So susrutha not mentioned these 3 srotases.

The medas dhathu though well described in various references, but not included in the above 4 types, probably shows that these 4 types of fats can be used as food and material from the outside resources; but the medas cannot be taken, as it can be only developed physiologically in the body and creates many diseases in increased and decreased conditions, while help in body fitness in its balanced state.

CONCLUSION

According to ayurveda, the sareera, manas, and prana are all supported by tissues known as dhathu. The 4th one medodhathu, is sarva sareera gata dhathu, vrkka and vapahana are medovaha srotas. It can be mainly correlated with fat digestion and metabolism. Adipose tissue, omentum, kidney, suprarenal gland, perinephric fat are also correlated with it. Medodhathu helps in lubricating and insulating the body. It collects the energies and stores it to provide strength to the body.

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