Ayurvedic Concept Of Diabetic Peripheral Neuropathy

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ABSTRACT

Diabetes mellitus and its complication are going to a burden for human kind. Diabetes mellitus is a metabolic disorder where primary defect lies in glucose metabolism. As a result there is widespread multi-organ damage that ultimately encompasses virtually every system of body and consequently every specialty of medicine. The complication of diabetes mellitus is categorized into acute and chronic. Chronic complication of diabetes mellitus includes predominantly nephropathy, retinopathy and neuropathy. Peripheral neuropathy is the most common form of diabetic neuropathy. In ancient classical text of Ayurveda, diabetic peripheral neuropathy (DPN) has not been described separately, rather the most of neurological symptoms of diabetic neuropathy has may be considered as symptoms of various pathophysiological phenomena that occurs in madhumeha, i.e. ojo visramsa, dhatukshaya and avarana.

Key word - Diabetic peripheral neuropathy, Madhumeha, Ojo visramsa, Dhatukshaya, Avarana.

INTRODUCTION

Diabetes mellitus is defined as a group of metabolic diseases characterized by chronic elevation of blood glucose (hyperglycemia) that results from defect in insulin secretion, insulin action or both.1 Diabetes and its complications are the major causes of mortality, morbidity and decreased quality of life. Diabetic neuropathy is one of such complication characterized by sensory abnormalities like paraesthesia, burning sensation, cutaneous hyperaesthesia and numbness and loss of tendon reflexes. Diabetic neuropathy may have following clinical manifestations

- Symmetrical sensory poly neuropathy (Distal)
- Autonomic neuropathy
- Somatic neuropathy
- Acute painful neuropathy
- Mononeuropathy and mononeurities multiplex
- Asymmetrical motor diabetic neuropathy

Peripheral neuropathy is the most common form of diabetic neuropathy ranging from mild dysesthesia to severe pain that can severely affect the quality of human life. Prevalence of diabetic peripheral neuropathy (DPN) among the patients having the history of diabetes for over 10-15 yrs, is 60-70%. Risk increases with age and duration.2 Nerve damage due to various causes like metabolic factors, chronic hyperglycemia and long duration of diabetes, mechanical injury, smoking and alcohol abuse also responsible for manifestation of diabetic neuropathy. Painful diabetic neuropathy affects approximately 30% of diabetic patient with neuropathy.3 The neuropathic pain initiated or caused by a primary dysfunction in the nervous system and prevalence up to 26% of all patient with diabetic mellitus4. On the basic of extensive study in the filled of diabetic peripheral neuropathy (DPN) the precise mechanism responsible is still not clear.

Therefore exact patho-physiological mechanism of diabetic peripheral neuropathy is unclear and there also no established treatment available so far. It is a challenging fact for Ayurveda also. A standardized
Ayurvedic management protocol is mostly unavailable in most of diseases associated with modern era as well as DPN. An understanding of Ayurvedic concept of conventional diseases is an essential requirement to design any Ayurvedic therapeutics. Exploration of DPN in Ayurvedic parlance may explore the potential field to find out a solution. This review aims at scanning the Ayurvedic literatures to provide an Ayurvedic fundamentals behind the DPN.

CRITICAL ANALYSIS
Patho-physiology of DPN
Neuropathy is one of the commonest complications of diabetes. The earliest functional change in nerves is delayed nerve conduction velocity and the earliest histological change is segmental demyelination, caused by damage to schwann cells. In the early stages axons are preserved, implying prospects of recovery, but at a later stage irreversible axonal degeneration develops. Most characteristic findings of the peripheral nervous system in diabetic patients are distal and sensory predominant nerve fiber degeneration, axonal loss and endoneurial microangiopathy. Two following factors are thought to play an important role behind the development of DPN
- Metabolic disarrangements
- Vascular changes

Hyperglycemia is only one of the many key metabolic events known to cause axonal and microvascular injury. A chronic hyperglycemia, leads to peripheral nerve injury via an increased flux of the polyol pathway, enhanced advanced glycation end-products (AGE) formation, elevation of inflammatory markers, exaggerated oxidative stress, mitochondrial dysfunction as well as other factors.

Metabolic disarrangements in Diabetes Mellitus, are thought to be responsible behind the development of vascular complications. Reduced endoneurial blood flow with impaired auto-regulation is likely to cause ischemic damage in the nerve. Such dual influences exerted by long-term hyperglycemia are critical for peripheral nerve damage, resulting in distal-predominant nerve fiber degeneration. More recently, cellular factors derived from the bone marrow also appear to have a strong impact on the development of peripheral nerve pathology.

Clinical Manifestation of DPN
DPN has been defined by the Toronto Consensus Panel on Diabetic Neuropathy as a “symmetrical, length-dependent sensorimotor polyneuropathy attributable to metabolic and microvessel alterations as a result of chronic hyperglycemia exposure and cardiovascular risk covariates.” Patients with DPN typically have numbness, tingling, pain, and/or weakness that begin in the feet and spread proximally in a length-dependent fashion (stocking and glove distribution). The symptoms are symmetric with sensory symptoms more prominent than motor involvement. DPN associated numbness often causes balance problems which can lead to falls. Patients with severe DPN are at risk for ulcerations and lower extremity amputations. Overall, diabetic DPN can severely affect quality of life, particularly in those with pain.

Neuropathic pain is one of the major disabling symptoms of patients with DPN. Like other types of neuropathic pain, DNP is characterized by burning, electric, and stabbing sensations with or without numbness.

DISCUSSION
Madhumeha is a disease known to mankind since Vedic period. In ancient text compiled by Acharya Charaka, Acharya Sushruta, Acharya Vagbhatta and many others, we get detailed description about this disease. Madhumeha is the disease in which the excretion is having quality concordant with madhu which have similarity with early concept of Diabetes mellitus. The term Diabetes denotes the excess passage of urine whereas the term Mellitus - a Greek word for honey. It was known for centuries that the urine of patients with diabetes mellitus was sweet.
Oja is the supreme pranayatan out of the ten pranayatan. Here pran signifies the essence of vital parts of the body. Destruction of oja leads to various diseases and decay of the body. Oja is the supreme essence of all the dhatus increasing the vitality of protective force of the body. Oja always tries to exhibit the immunological responses. If the immunity is less of the diabetes affected person then dhatu kshaya takes place due to inappropriate metabolism where the function of agni is impaired. Agni is also the responsible factor for the vitality of the body. Oja vistransa is characterized by sandhi vislesha (looseness of joints), gatra sadan (numbness of limbs) and dosha chyavan (dislodgement of the deranged humour from their respective receptacles) and kriya sanmrodha (immobility) are very much identical to that of diabetic peripheral neuropathy. Vayu regulates the life span (ayu), immunity (vala) and also vayu is the sustainer of the body in the living humans.

Vayu is the prime dosa among other dosas and regulates the other two dosas. The vyan vayu moves very sweetly and pervades the entire physic of a person. It always functions in the form of gati (motion), prasaran (extension), vikshep (sudden movements), nimesh (winking of the eyes) and all other movements. Apan vayu is located in the vrishan (testical), vasti (urinary bladder), medhra (phallus), nabhi (umbilicus), uru (thighs), vankschan (groins), guda (anus and colon). Practically it acts in excretory process. The above said physiological functions of vyan and apan are very much important in context with diabetic peripheral neuropathy as in the pathological state of these two vayu they afflicts the body with the disease specific to their location and function. Diabetic peripheral neuropathy is categorically characteristics by pain, tingling sensations, numbness and burning sensation of the hands and feet. These very characteristics are also observed in the pathological state of vyan and apan. But numbness and burning sensation of hand and feet are the pre monitory symptoms of prameha (paridaham cha suptata changeshu). But these are also very much indicative of the complications of diabetes, specifically in diabetic peripheral neuropathy.

Vayu stimulates the digestive power. Jatharagni is the main and the proper function of jatharagni stimulates the function of bhutagni and dhatwagni. Lipids are deposited in the liver which stored as triglycerides or degrades them into small compound (acetyl CoA) that can be used for energy for the synthesis of other lipids specially cholesterol. Lipids can be deposited in adipose tissue where they are stored as triglycerides that can be mobilised for energy or retained as heat insulation. Hyperglycaemia leads to increased formation of sorbitol and fructose in schwann cells, accumulation of these sugars may disrupt function and structure. The disease diabetes is caused due to dhatu kshaya and avaran. But at the optimum level it converts into madhumaha.

The basic responsible factor for prameha is kapha and meda. With the specific etiological factor the kapha gets immediately aggravated due to its pre exaggerated quantity. The aggravated kapha spread all over the body because of its later developed de-compactness. In the spreading state it afflicts the medas because of the increased quantity of kapha and decreased in the viscosity of medas. But kapha and meda are identical. The afflicted kapha and meda affects the muscle tissues and other liquid dhatus of the body. Because of the prior their pre exceeded quantity. In the onwards state the affected muscle tissues produce different types of abscesses and the liquid dhatus of the body are again passes through the urine. In another way the pathogenesis of madhumaha reflects that the vata affects the oja, the fundamental immunity of body, comes down to reach the vasti. The unarrested state of madhumaha again affects the vital organs along with the joints. Occlusion pathology in terms of Diabetes can damage peripheral nervous tissue in a number of ways. The vascular hypothesis postulates occlusion of the vasa nervorum as the prime cause.

Enzymatic action of kshti, apa and vayu mahabhutas on meda gives rise to ksharatwa with the formation of asthi and along with the action of ushma. The formed pores of the one due to vayu is filled up with sarakta meda located in sukmashti and sthulasthi is filled up with majja. These bone marrow are also related to yellowish fatty bone marrow (sthulasthi). It is seen that the ushma is the utmost factor for the formation of any dhatu or upadhatus because of its transforming activity and snehatwa qualities identical to fatty substances is passed by meda and majja. Therefore the snigdha guna is definitely important for the formation of lipid from the ingested food materials. The snayu is the upadhatus of meda. It is formed by kshara paka of meda and sneha. In diabetic peripheral neuropathy there is a maximum aggravation of vayu leads to lomaharsha (Horrripilation), khanja (limping), gatrasuptata (Numbness in the body), spandan, and simultaneously kara pada daha (Burning sensation in the hands and feet) is also found for which vayu is the responsible factor. Though vata is incapable of causing any burning sensation itself but displacement
of normal pitta by vata causes all sorts of complication attributable to pitta. In this context the Diabetic Neuropathy is the varied form manifested with madhumeha is considered as an incurable (asadhya) disease. so the continuous methodical treatment with presence of four basic therapeutic factors, may make the disease palliable. If the patient is not properly treated or found resistant to the treatment, the complications appear by affecting various systems. This is possibly because of the vatic character of the disease or predominance of vata in the disease along with the vitiation ‘oja’. Gradual loss of vyadhi kshamatva or defensive mechanism of the body and in consequence the disease process affects different srotas or system and various complications are manifested. Apara oja is related with 8 drops of para oja, the site of which is hridaya is also the chetana sthana; that is why at extreme stage of the disease, para oja is vitiated and the patient under goes bhrama and murchha.

CONCLUSION
According to Ayurvedic principle the symptoms of Diabetic peripheral neuropathy like paraesthesia, pain and tingling sensation are indicating involvement of vata dosa whereas burning sensation is because of vitiation of pitta dosa. Hence drugs pacifying vata and pitta dosa are useful in the treatment of diabetic peripheral neuropathy.

Reference
1. Kahn R.C et. All; Joslin`s Diabetes Mellitus; 14th edition; , Lippincott Williams Wilkins Chapter 19, pg-331
5. Kumar & Clark's clinical Medicine, Elsevier, Edition: 18th, p-1026


