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Review Article

VALIDATION OF SIDDHA PATHOLOGICAL CONCEPTS OF *SIRAKAMBAVATHAM* AND ITS PARALLEL ANALYSIS WITH CEREBRO VASCULAR ACCIDENTS (STROKE)

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ABSTRACT

The *Siddha* system of medicine is widely practiced in South India and consists of an enormous classical literature that emphasize on pathological basis of disease. Contrary to conventional pathological basis of diseases, the Siddha pathology is solely based on the humoral makeup of individuals and rests on the conceptual framework formed by 96 *Thathuvams* (philosophies). These concepts connect the physical and inert energies of human body facilitating its existence at subtle and gross levels. *Sirakkambavatham* is one among the 80 *Vatha* diseases mentioned in the Siddha literature *Yugi vaithiya sinthaamani.* The present literature survey has been conducted to provide an updated integrative framework of information about the pathological concepts of *Sirakkambavatham* from *Siddha* literature and its parallel analysis with Cerebro vascular accidents (Stroke). Validating the traditional text in the limelight of modern literature unveils the traditional wisdom of ancient saints of South India and provides a better approach for disease diagnosis, prevention and its management.

KEYWORDS: *Sirakkambavatham,* Cerebrovascular accidents, Stroke, Siddha, *Vatha* disease.

INTRODUCTION

Cerebrovascular disease (CVD) is one of the most common reasons for neurological emergencies and constitutes a serious public health problem.[1] Stroke is reported to be the third commonest cause of death worldwide. Among the Asians, mortality due to Stroke was found to be more than 3 times that of Coronary Heart disease. In India, stroke is perhaps the second commonest cause of death and probably the most common cause of disabililty.[2] The crude prevalence rate of stroke from different parts of India ranges from 52 to 843 per 100,000 population.[3]In South India, Siddha system is one of the ancient sciences that took its privilege for the healthy and civilized way of life."*Sirakambavatham*" is one among the 80 *Vatha* ailments as described by Sage Yugi and vitiated *Vatha* humor is said to be the predominant cause of this disease.[4] According to Siddha diseases or *Doshas* are caused by one's past deeds, improper diet and unhealthy life styles that result in imbalance of three humours *Vatham*, *Pitham* and *Kabam*.[5] The clinical features of *Sirakambavatham* closely resemble to the manifestation of cerebro vascular accidents in modern system of classification. The world today earnestly unfolds the scientific mystery that lies in indigenous medical system worldwide. Through this review description of etiology, clinical features, prevention and management of *Sirakambavatham*in various Siddha literature has been evaluated and its symptomatology has been compared with that of Cerebro vascular accidents (Stroke).

MATERIALS AND METHODS

The review of literature carried out using the traditional Siddha books with special attention on *Yugi vaithya sinthaamani*. The key words searched in Siddha texts were: *Sirakamba-vatham*, *Udaliyal*. *Dhegaillakanam*, 96 Thathuvam, varmanool, Noi Naadal. The sources were from original texts and were analysed in the limelight of modern medicine.

Literature Analysis on Siddha Pathology of *Sirakamba Vatham*

In Siddha system, *Sirakambavatham* has been included as one among the 84 *Vatha* diseases. The etiological factors such as increased intake of vatha producing diet (Increased intake of *Pullipu* (sour) and *Thuvarppu* (astringent) tastes, frequent starvation, intense fear, and increased irritability which aggravates the *Vatha* humour which on further derangement will affect the other two humours (*Pitham* and *Kabam*) and the ratios of three humors are altered.[4]

Pathological changes in 96 *Thathuvam*[6]

1.	***Bootham***	**Elements**
	Aagayam (Space)	Hearing impairment, changes in conscious level and mental impairment
	Vaayu (Air)	Inability to use upper and lower limbs
	Thee (Fire)	Lassitude, inability of upper limb to give or take objects, stupor
	Mann (Earth)	Weakness of upper and lower limbs. Muscles, nerves get affected. Contraction of blood vessels
2.	***Pori***	**Sense organs**
	Sevi (Ear)	Deafness
3.	***Pulan***	**Functions of sense organs**
	Kaetal (Act of Hearing)	Deafness
4.	***Kanmenthiriyam***	**Motor organs**
	Kaal (Leg)	Difficulty in walking
	Kai (Hands)	Difficult to hold, give or take objects using upper limb
5.	***Karanam***	**Intellectual faculties**
	Manam (Mind)	Thinking, analyzing, determination and accomplishment are affected due to changes in conscious level and mental impairment
	Bhuddhi (Intellect)	
	Agankaaram (Will)	
	Siddham (Decision making)	
6.	***Arivu* (Wisdom of self realization)**	Mental impairment
	Naadi	**Channels of life force responsible for the dynamics of *Praanan***
	Idakalai (Channel of life force from left great toe to right nostril)	Weakness of left upper and lower limbs
	Pinkalai (Channel of life force from left great toe to right nostril)	Weakness of right upper and lower limbs
	Suzhumunai (Between the eyebrows)	*Idakalai, Pinkalai, Athi* and *Alampudai* are affected
	Athi (Pertains to ear)	Hearing impairment
	Allampudai (Pertains to ear)	Hearing impairment
7.	***Vaayu***	**Vital nerve force which is responsible for all kinds of movements**
	Uyirkaal (*Praanan*)	Sighing and Yawning
	Paravukaal (Viyaanan)	Inability to use upper and lower limbs of one side
	Samaanan (Nadu kaal)	*Praanan, Vyanan, Koorman* and *Devadadhan* are affected
	Koorman	Yawning
	Devathathan	Hypersomnia
8.	***Kosam***	**Five status of the human body or sheath**
	Pranamaya Kosam (Vital status of respiration)	Sighing and yawning
	Manomaya Kosam (cerebrovascular system)	Altered conciousness
	Vignanamaya Kosam (Mental status)	Mental derangement
9.	***Aatharam***	**Pathological changes described depending upon the *Panchabootham* concepts of *Aatharam***
	Swathitanam (earth)	Weakness of upper and lower limbs, contraction of blood vessels
	Anakatham (fire)	Lassitude, inability of upper limb to give and take objects
	Visuthi (air)	Inability to use upper and lower limbs
	Aakinai (space)	Mental derangement, hearing impairment
10.	***Mandalam***	**Three regions**
	Thingal Mandalam (Lunar zone)	Affects the blood vessels in neck and head and hearing impairment

11.	***Malam***	**Three impurities of the Soul**
	Aanavam (Pride)	Discouraging the words of the elders may cause the *Vatha* disease
	Kanmam (Deeds)	According to Agathiyarkanmakaandam, cutting trees and killing animals will produce *Vatha* disease
	Mayai (Consciousness)	Altered conscious level and delirium
12.	***Thodam***	**Three Humours**
	Vali (Vatham)	Mental derangement, hearing impairment, inability to use upper and lower limbs
	Azhal (Pitham)	Lassitude, inability of upper limb to give and take objects, altered level of consciousness
	Iyyam (Kabam)	Increased sleep
13.	***Eadanai*** (**Earthly possessions**)	All the three *Edana* is are affected.
14.	***Gunam***	**Three Cosmic qualities**
	Thamogunam (negative character)	Laziness and increased sleep
15.	***Vinai***	**Act**
	Theevinai (Bad Acts)	Bad Acts that increase *Vatham* as per *Agathiyarkanmakaandam*
16.	***Ragam***	**The Eight Passions**
	Kaamam (Desire)	Intense Sexual desire which increases *Vatha* humour
21.	***Avathai***	**Five States of Consciousness**
	Ninaivu (Consciousness)	altered level of consciousness
	Urakkam (Sleep)	Increased sleep

Humoral or *Tridosha* pathology[6]

Panchaboothams are manifested in the body as three vital forces *Vatham*/*Vayu* (Air), *Pitham*/*Thee* (Fire) and *Kabham* (Water)

A. *Vatham or Vayu:* The word *vayu* not only implies wind but also comprehends all the phenomena which come under the function of the central and sympathetic nervous system. Structurally it is the combination of *Vayu* and *Aagayaboothams*. Normally it is responsible for respiration, circulation of blood, locomotion, conducting sensory and motor impulses of the nerves, micturition, defaecation, parturition, sensation of hearing, sight, taste etc.

It is located in *Idakalai, Abaanan*, faeces, spermatic cord, pelvic bones, skin, hair, nerve and muscle. It is of ten types.

In *Sirakambavatham* primarily affected *vayus* are listed below.

S.No	Types of *Vatham*	Derangements
1.	*Praanan*	Sighing and yawning
2.	*Vyaanan*	Inability to use upper and lower limbs of one side
3.	*Nadukaal*	*Pranan*, *Vyanan*, *Koorman* and *Devadadhan* are affected
4.	*Koorman*	Yawning
5.	*Naagan*	Intellectual functions are affected in impaired mental state.
6.	*Devathathan*	Hypersomnia

B. *Pitham*: It is the life energy manifestation of thee *Bootham* in the body. It is the metabolic thermal life force of the body. It carries out digestion, absorption, metabolism, and colouration of the blood etc. *Pitham* is constituted by *Theyu bootham*. *Pitham* is located in the *Piranavayu*, bladder, *Moolaakini*, Heart, Umbilical region, abdomen, stomach, sweat, saliva, blood, eyes and skin.

In *Sirakambavatham* primarily affected *Pitham* are listed below

S.No	*Pitham*	Derangement
1	*Ranjagapitham*	Decreased blood circulation to brain
2	*Saathagam*	Inability to use upper limb and lower limb

C. *Kabam:* *Kabam* is constituted by *Appu* and *Pirithivi boothams*. It is responsible for co-ordination and defense mechanism of the body. *Kabam* is located in *Samaanavayu*, semen, *Suzhumunai*, blood, bone marrow, nose, chest, nerve, bone, brain, eyes, and joints. In *Sirakambavatham*, primarily affected *Kabam* are

S.No	Types of *Kapham*	Derangement
1.	*Avalambagam*	*Prithivi bootham* that forms the muscles and nerves get deranged resulting in weakness of upper limb and lower limb. When *Prithivi* is affected it vitiates the *Kabam*. And hence *Avalambagam* that maintain the function of *Kabam* in the body also get affected.

Vitiated *Udalthathukkal*[6]

When *Thathuvams*, including *Vatham, Pitham,* and *Kabam* are vitiated, they affect the seven *Udalthathukkal* namely, *Saaram* (Plasma), *Senneer* (Blood), *Oon* (Muscle), *Kozhuppu* (Fat), *Enbu* (Bone), *Moolai* (Bone marrow), *Sukkilam* (Semen) or *Suronitham* (Ovum) and *Udal* these (Digestive forces) and inturn produce various symptoms according to the severity and the site of ailment.

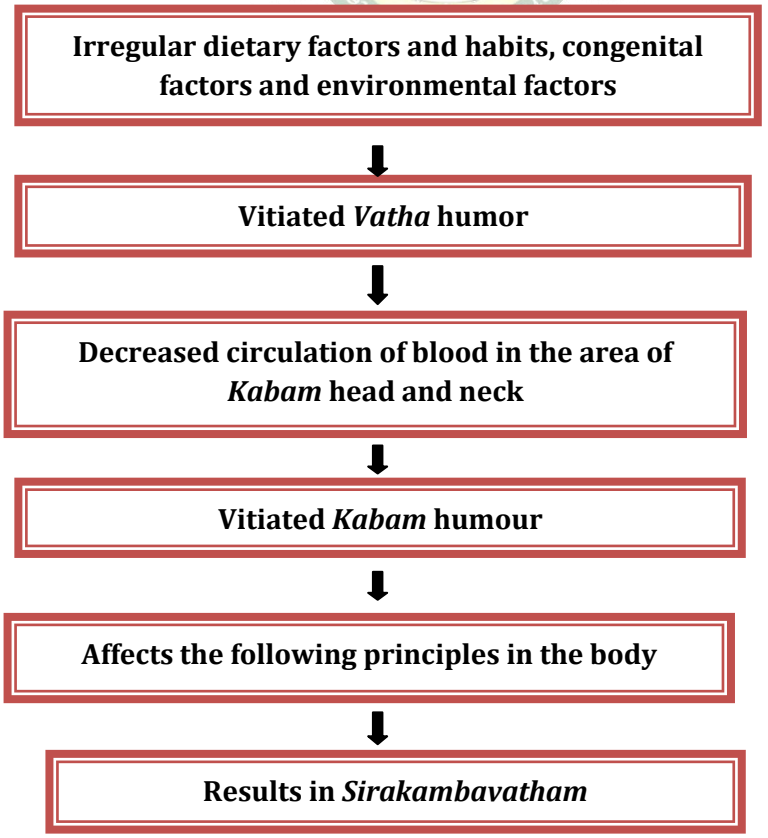
S.No	*Udalthathukkal*	Symptoms
1.	*Saaram* (Plasma)	lassitude, inability to perfrom one' work
2.	*Senneer* (Blood)	Decreased blood circulation to brain
3.	*Oon* (Muscle)	Weakness of upper and lower limbs
4.	*Kozhuppu* (Fat)	Difficulty in walking, holding and manipulating objects
5.	*Enbu* (Bone)	Difficulty in walking, holding and manipulating objects

***Varma Nilai* Derangement[7]**

S.No	Deranged *Varma Nilai*	Symptoms
1.	*Enthiravarmam*	when affected cause deafness and changes in consciousness
2.	*Kuthuvarmam*	when affected cause tremor
3.	*Segakaalavarmam*	when affected cause upper limb and lower limb
4.	*Pidarikaalam*	when affected cause tilting of head and deafness
5.	*Suruthivarmam*	when affected cause deafness

Fig: 1

Pathogenesis of *Sirakambavaatham*[4,5]



Pancha Bootham	Adharam	Dhasanaadi	Dhasavaayu	Karanam
Prithvi	Swathitanam	Idagalai	Pranan	Manam
Vayu	Visuthi	Pingalai	Vyanan	Buddhi
Aagaayam	Aagnai	Suzhumunai	Naagan	Siddham
Thee		Athi	Samaanan	Agankaram
		Alampudai	Koorman	
			Kirukaran	

Interpretation of Yugi vaithiya sinthaamani lines of *Sirakambavatham*[4]

SIRAKAMBA VATHAM

Thambamaai uthiram kandanarambil pukki
Thalaiyodu sareeramellaam thaakki pukkum
Kambamaai kaathirandum migavum kaelaa
Kaiyodu kaalirandum vasa keadaagum
Nimbamaai ninaivuthaan kalangi kaanum
Nedumoochun kottaavi nithirai yaagum
Simbamaai thalainadungi kanappumundaam
Sirakambavaathamendrae seppalaame

S.No	*Yugivaithiyasinthaamani* lines of *Sirakambavatham*	Interpretation
1.	*Thambamaai uthiramkanda narambil pukki*	Blood circulation through constricted blood vessels of the neck
2.	*Thalaiyodu sareeramellaam thaakkipukkum*	Occurrence of Blockages (in the blood vessels) from head throughout the body
3.	*Kambamaai kaathirandum migavum kaelaa*	Bilateral hearing impairment
4.	*Kaiyodukaalirandum vasa keadaagum*	Weakness/Paresis of upper and lower limbs
5.	*Nimbamaai ninaivuthaan kalangi kaanum*	Altered consciousness or mental impairment
6.	*Nedumoochu kottaavi*	Sighing and yawning
7.	*Nithiraiyaagum*	Excessive Sleep
8.	*Simbamaaithalai nadungi*	Tremor in head
9.	*Kanappumundaam*	Head ache

DISCUSSION

Reading between the lines of Yugi and its parallel analysis with Cerebro vascular accidents (stroke)

The first and second lines of the Siddha text Yugi vaithiya sinthaamani-*Thambamaai uthiram-kandanarambil pukki* and *Thalaiyodu sareeram ellaam thaakkipukkum* quotes for posterior circulation stroke. The Sage Yugi quotes that, when blood passes through narrowed or constricted blood vessels in neck it causes blockages in the blood vessels of head and throughout the body. The Forthcoming features of *Sirakambavatham* suggest that these blood vessels may be carotid and vertebral arteries that supply blood to the brain. Narrowing of blood vessels may be due to atherosclerotic changes due to deposits of cholesterol.[8] Small blood clots forms the thrombus or embolism and the constricted blood vessels may lead to sudden rise in blood pressure that may cause tearing of the blood vessels resulting in intracranial hemorrhage. Ischemia or hemorrhage of cerebral vessels results in Cerebro vascular accidents (Stroke).[9]

The third line *"Kambamaai kaathirandum migavum kaelaa"* denotes Bilateral Sudden Deafness as a Prodrome of Anterior Inferior Cerebellar Artery Infarction (AICA syndrome).[10] Deafness is a rare symptom in stroke. It is present in occlusion of basilary artery, anterior inferior cerebellar artery, superior cerebellar artery and in massive infarction of temporal lobe. Since nucleus of vestibule cochlear nerve lies at ponto medullary junction, ischemic changes at this part of brain may cause deafness. A complaint of deafness is found mainly in posterior circulation stroke. Tinnitus and vertigo may also present in this condition. The AICA syndrome is usually accompanied by vertigo and ipsilateral deafness from labyrinthine artery ischemia. Also in superior cerebellar artery syndrome the main symptoms are ipsilateral cerebellar ataxias and partial deafness.[11]

The fourth line *Kaiyodukaalirandum vasa keadaagum* denotes body weakness or sensory changes. Branch occlusions of the vertebrobasilar system cause combinations of cerebellar, corticospinal, sensory, and cranial nerve signs. With unilateral disease, cranial nerve abnormalities are often contralateral to the side of body weakness or sensory changes. Complete occlusion of the basilar artery usually causes. (tetraparesis or tetraplegia), and changes in consciousness.[12] Another study suggests that the pontine infarction with Pure Motot Hemiparesis or hemiplegia is a common clinical situation. Cortico spinal tract control the motor functions of the limbs. The neural pathway of the tract begins at cerebral cortex, its course lies in internal capsule, mid brain, pons, medulla and spinal cord.infarction in any of these areas may impair the functions of cortico spinal tract. Hence results in hemiparesis or hemiplegia.[13]

The fifth and sixth lines *Nimbamaai ninaivu-thaan kalangikaanum* and *Nedumoochunkottaavi* means the main signs of apex basilar artery occlusion comprise Alterded Level of Consciousness associated With behavioral abnormalities.[14] and Early respiratory changes include sighing and yawning with progression to cheyne stroke breathing injury continuing to the midbrain which causes the respiration changes to neurogenic hyper ventilation.[15] Another study by Alberstone et al., also reports that Posterior circulation occlusion signs include an altered level of Consciousness. (reticular activating system), hemiparesis.[16] Occlusion of the "top" of the basilar artery can also result in a large number of complex syndromes that may include visual hallucinations, impairment of consciousness (ranging from somnolence to coma), mental syndromes (hallucinations, abulation, psychoses).[17] Loss of consciousness may occur in both anterior circulation and posterior circulation strokes. But Sage Yugi's quoting explains about the impaired or altered consciousness in his text. Even though the Impaired consciousness may occur to some degrees in anterior circulation stroke, the altered level of consciousness is more significant posterior circulation strokes.

Sighing and yawning are common symptoms that occur in hypoxia. But these types of behaviours in stroke indicate hyperventilation, when the mid brain and medulla are affected. In infratentorial infarcts sleep disordered breathing is in form of hyperventilation. Face scratching, nose–face rubbing, yawning and sighs are automatisms are frequently related to the brainstem and diencephalic disorder that occurs by an epileptic discharge or a stroke.[18] Cattaneo et al., in his study presented that two cases of brain stem stroke involving the upper pons and the pontomesencephalic junction presented with transient excessive pathological yawning.[19] The seventh and eighth lines *Nithiraiyaagum* and *thalainadungi* denotes persistent, severe sleep wake disturbances are suggestive of bilateral paramedian thalamic, mesencepalic or brainstem infarcts but can also be seen following large hemisphere strokes and head tremors. Sleep-wake disorders and stroke.[20] Hypersomnia is a characteristic of tegmental mesencephalic strokes associated with infarction in thalamo perforating arteries and paramedian mesencephalic arteries.[21] Occlusion of the "top" of the basilar artery can result in a large number of complex syndromes that may include visual hallucinations, somnolescence.[22] Hence the Sage yugi aligned the breathing disorders and increased sleep needs consequently.

Head tremor is a rare phenomenon present in infarction of thalamus, cerebellum and pons. Anterior cerebral artery tremor of upper limbs and deviation of head to one side may present. But prevalance of head tremor have poor literature evidence. Involuntary Movements tend to occur after Anterior Cerebral Artery territory Infarction.[23] Head tremor is a rare but distinct manifestation of stroke that primarily involves the paramedian pontomes-encephalic area.[24] Head tremor without appendicular tremor may be caused by bilateral cerebellar infarction.[25] Patterns of spontaneous and head-shaking nystagmus in cerebellar infarction: imaging correlations.[26]

The last line *kanappumundaam* denotes head ache due to vertebra basilar insuifficiency and vertebrobasillar ischemia which may cause occipital headaches.[27] Head ache is more associated with posterior circulation stroke is mainly because of it association with cerebellar stroke.[28]In intracranial hemorrhage, head ache would be severe and usually associated with mesencephalic topography.[29]

CONCLUSION

Through this review a literature analysis of traditional Siddha system of medicine has been performed revealing the wisdom of the ancient Siddhars. Interpretation of these subtle humoural concepts and modern parameters is the need of the hour so as to enable proper diagnosis, treatment and to assess the prognosis of the disease. The Siddha system has an enormous treasure of literature and more such literary research is warranted towards globalization of Siddha system of medicine.

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