



**Review Article**

**A SIDDHA LITERATURE REVIEW ON PARALLEL ANALYSIS OF NETRICULAI VATAM WITH  
FRONTAL SINUSITIS**

**P Parvathy**

Research Associate, Siddha Regional Research Institute, Thiruvananthapuram, India.

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**ABSTRACT**

The poetic medical philosophies of Siddha were presented in palm scripts cannot be easily interpreted by common man. According to this system, the disease classification is based on the concepts of *Tridosha* pathology (*Vatham*, *Pitham* and *Kabham*). The Siddha concept of tri-humoural theory seems poles apart from those of the International Classification of Diseases (ICD) when viewed afar. This review article is an attempt to correlate clinically, the symptoms of "*Netricūlavatam*", a disease given in the Siddha text *Yūki vaittiya cintāmaṇi - 800* with that of the common ailment Sinusitis mentioned in contemporary science. Through meticulous interpretation and parallel analysis of the condition it can be concluded that the signs and symptoms of '*Netricūlavatam*' can be correlated well with that of Sinusitis. This parallel analysis would further pave way for better perceptive, diagnosis and management of the disease '*Netricūlavatam*' as mentioned in *Siddha* literature.

**INTRODUCTION**

*Siddhars* classified a wide range of 4448 diseases. The pathophysiology of Siddha system, the five element theory (Earth, water, fire, air and space) and the *Tridoshha* theory (*Vatham*- Air of life, *Pitham*- Fire humor and *Kapham*- Water humor). The balance of these three humors is essential for the maintenance of health.<sup>[1,2]</sup> It is estimated that 1 to 3% of upper respiratory infections are complicated by sinusitis.<sup>[3]</sup> Adults have approximately 2-3 episodes of upper respiratory infection and children 6-8 episodes per year.<sup>[4]</sup>

Sinusitis is an acute inflammation of sinonasal cavities which can occur in any of the four sinuses frontalis, maxillary, ethmoidalis and sphenoidalis. The etiology of sinusitis includes environmental allergens, irritants, infections caused by bacteria and fungus, dental issues resulting in inflammation or infection. Certain dental procedures like extractions, implants, sinus augmentation grafts and cleft surgeries can

also be associated in causing odontogenic sinusitis.<sup>[5,6]</sup> Viral upper respiratory tract infections, more common causes of rhino sinusitis when untreated are complicated by bacterial infection. The prevalence of rhino sinusitis is more common in winters, damp climates and in highly polluted environment. A viral infection triggers the inflammatory cascade which contributes to the release of pro-inflammatory cytokines resulting in acute mucosal edema, impairment of mucociliary clearance and occlusion of sinus ostia. This in turn creates an environment favourable for inflammation and bacterial growth.<sup>[7,8]</sup> The symptoms associated are nasal congestion, postnasal drainage, headache, purulent rhinorrhea, facial-dental pain, and cough. In case of chronic sinusitis pain is much less of a feature. Clinical signs of both acute and chronic sinusitis include purulent nasal secretions, sinus tenderness on palpation, mucosal erythema, increased pharyngeal secretions and periorbital edema.<sup>[9]</sup>

The clinical symptoms of "*Netricūlai vatam*" have been found to merely correlate with the symptoms of "Sinusitis" in contemporary medical classification than any other condition. Hence this review focuses on the parallel analysis of the commonly existing disease "*Netricūlai vatam*" and sinusitis. Through this study, the diagnosis and treatment of this disease "*Netricūlai vatam*" may be

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well augmented to explore the ancient wisdom of Siddhars portrayed in the *Siddha* literature.

## METHODOLOGY

The literature cited here was primarily taken from the *Siddha* text *Yūki vaittiya cintāmaṇi*- 800. For the understanding and scientific correlation of the disease in *Siddha* literature, reputed databases such as Google scholar, Embase, Pubmed, Index Copernicus, Science direct etc were searched. After the methodological collection of the above information, analogy was established with parallel analysis of each subtle sign and symptom of *Netriculai vatam* of traditional Siddha text with that of modern terminology sinusitis.

### Siddha literature on *Netriculaivatam*

#### Breakup symptomatology of Siddha Poetic lines on *Netriculai vatam*

| S.No | Lines    | Siddha Poetic lines on <i>Netriculaivatam</i>                       | Interpretation of the Siddha text  |
|------|----------|---|--|
| 1.   | Line 1-2 | <i>Vāraṇanayaṇamtāṇpuruvamātirimatiyatir kuṭaintumēmūkkutaṇṭu</i>   | Ocular pain especially in between the eyebrows, head ache and pain in the nasal bridge |
| 2.   | Line 3   | <i>Kūrāṇakuralaitāṇpattirinontu</i>                                 | Distortion of voice/hoarseness due to sore throat                                      |
| 3.   | Line 4-5 | <i>Kuṭaintiṭumēkaiyoṭu kālkaṭreṇṭumārāṇa aṅkamellāmkaṭuppuṇṭāku</i> | Weariness of the body/body pain/pain in the upper and lower limbs                      |
| 4.   | Line-6   | <i>Azhuikkuraḷai</i>  | Inflammation of larynx/throat/ tonsillitis causing feeble voice resembling a cry       |
| 5.   | Line-6   | <i>Nittiraiyumayakkum</i>   | Sleepiness, giddiness/drowsiness / fatigue   |
| 6.   | Line 7-8 | <i>Tērāṇaciraciṇirkutaluṇṭām cīrunērriṇicūlaiyantiraṇceykaitāṇē</i> | Sharp/ pricking pain in the head. All these are due to <i>Netriculaivatam</i>          |

### Scientific analysis of Saint Yugi's lines on *Netriculaivatam*

#### Ocular pain in between eyebrows and nasal bridge, Head ache

The lines 1-2 of the above poem by Saint Yugi, describes the chief symptoms of sinusitis such as ocular pain (*Nayaṇam*), frontal head ache (*Puruvamātiri*) and pain in the nasal bridge (*Mūkkutaṇṭu*) denoted by the terms. The majority of frontal sinusitis patients with facial pain have mid-facial segment pain, which is a version of tension-type headache that affects the midface. Although acute infective sinusitis often causes pain, acute exacerbations usually causes pain in chronic infective sinusitis.<sup>[10]</sup> Frontal headache is caused by a vacuum or negative pressure as the result in the closure of the infundibulum and frontonasal opening. The mid localized pain at the site, was due to the pain applied to the walls of the frontal sinus. Diversely, intense local pain and pain over the medial canthus, zygoma, and upper molars was mainly due to the stimulation of the

According to the *Yūki vaittiya cintāmaṇi* - 800, *Netriculai vatam* is type of *Vatha* disease characterized by throbbing pain in between eyebrows and bridge of nose, pain in head, body pain, weariness of limbs, throat pain, sleepiness and fatigue.

*“Vāraṇa nayaṇamtāṇ puruvamātiri  
Matiyatirku ṭaintumēmūkkutaṇṭu  
Kūrāṇakuralaitāṇpattirinontu  
kuṭaintiṭumēkaiyoṭu kālkaṭreṇṭum  
Arāṇa aṅkamellāmkaṭuppuṇṭāku  
Azhuikkuraḷai nittiraiyumayakkum  
Tērāṇa ciraciṇirkutaluṇṭām  
cīrunērriṇicūlaiyantiraṇceykaitāṇē”*

-Yūkivaittiya cintāmaṇi - 800

frontal recess and frontonasal area. An antidromic impulse brings on peripheral release of substance P a neuropeptide belonging to the tachykinin family resulting in the localized neurogenic edema and hypersecretion. This release in substance P further alleviated the sensation of pain in respect to the additional mucosal swelling and impaction. Based on this process, areas of narrowing in the ostiomeatal complex, causes mechanical stimulation of the trigeminal nerve and thereby be associated with headache. Septal spur impacting the lateral nasal wall may also cause atypical facial pain. The cranial nerves supplying the nasopharynx mediate the sensation of pain.<sup>[11,12]</sup>

#### Sore Throat

The line-3 *Kūrāṇa kuralaitāṇpattirinontu* indicates the distortion of voice that occurs due to sore throat. Respiratory tract infection begins with the symptoms of sore throat, irritation, and pain in the pharynx. Most commonly the action of prostaglandins and bradykinin on sensory nerve endings in the

respiratory tract causes sore throat. This fact was substantiated in some studies, that intra-nasal administration of bradykinin, resulted in symptoms of rhinitis and a sore throat.<sup>[13]</sup> Similar symptoms of sore throat have been noted in upper respiratory tract infections, pharyngitis, and tonsillitis which is caused by bacterial infection<sup>[14,15]</sup>

### **Body pain/Pain in the Limbs**

Myalgia or muscle pain is a common symptom caused in Respiratory tract infection.<sup>[16]</sup> In the above Yugi's lines in Table-1, *Kuṭaintiṭumē kaiyoṭukālkaḷreṇṭu* indicates churning pain in the body, upper and lower limbs. It is caused due to the acute immune response of the infection phase, which is associated with the effects of cytokines on skeletal muscles. The production of prostaglandin E2 in response to cytokines causes fever and myalgia in case of respiratory tract infections. Proinflammatory cytokines such as TNF- $\alpha$  have been involved in the breakdown of muscle proteins, and also prostaglandin E2 is a pain mediator, so increased synthesis of prostaglandin E2 explains the cause of myalgia associated with acute respiratory tract infections.<sup>[17]</sup>

### **Distortion of voice/Hoarseness**

While acute sinusitis can be triggered by a bacterial or viral infection, it may result in inflammation of larynx resulting in distortion of voice resembling a cry as mentioned in the line -6 (Azhukural) of Saint Yugi's Poetic Siddha text. The early stages of acute laryngitis are characterized by inflammation and congestion of the larynx which encompass the supraglottic, glottic, or subglottic larynx regions depending on the inciting organism. During the initial stages of infection, the white blood cells get attracted towards the site of infection, to remove the pathogens, which in-turn enhance the vocal cord edema and affects vibration adversely. The phonation threshold pressure can increase as a result of the progression in edema. As the production of phonatic pressure becomes more improper, the patient develops phonatory changes as a result of change in fluid-wave dynamics of the inflamed and edematous tissue, and also by the conscious and unconscious adaptation to attempt to mitigate these altered tissue dynamics. In some cases, edema worsens, which makes it impossible to generate adequate phonation pressure that may develop frank aphonia. Such maladaptations may result in prolonged vocal symptoms after an episode of acute laryngitis persisting long after the inciting event has resolved.<sup>[18]</sup>

Acute Laryngitis is a mild and self-limiting condition which typically lasts for about a period of 3 to 7 days. If the symptoms lasts for more than 3 weeks, it is termed as chronic laryngitis. The etiology of acute laryngitis can be classified as either infectious or non-infectious, where the infectious form is more common

and is caused by the inflammatory mediators which are secreted in response to the innate immunity. Acute infectious laryngitis is most commonly a Viral origin, Symptoms often comprises of voice changes (patients may report hoarseness or a "raspy" voice), or a dry cough.<sup>[19,20]</sup>

### **Giddiness/ Drowsiness/ Sleep disorders**

Sleep disturbances are caused in the frontal sinusitis by the excessive stimulation of cytokines. The fact has been vividly described in traditional Siddha text as "*Nittiraiyumayakkum*" in the line-7. Today's scientific reasons behind this symptom of *Netricūlavatam* owes to somato tropic and hypothalamic- pituitary- adrenal (HPA) axes that activates central nervous system which induces excess sleep by the upregulation of cytokines, in response to infection and inflammation. Two of the most studied inflammatory cytokines involved in Sinusitis include IL-1 $\beta$  and TNF- $\alpha$ , which are well known Sleep regulating substances (SRSs).<sup>[21]</sup> TNF- $\alpha$  and IL-1 $\beta$  are produced by macrophages in response to stimuli such as bacterial lipopolysaccharide (LPS), proinflammatory cytokines act within the CNS to induce sickness behavior. In humans, sleep loss and altered proinflammatory cytokine levels are associated with sleep disturbance, depression, loss of appetite, and inability to concentrate.<sup>[22,23]</sup>

### **Sharp/Pricking head aches**

The term "*Ciraciṇirkutaluṅṭām*" specifies the nature of headache occurring in Sinusitis. According to Siddha pathology it is due to the accumulation of *Kabam* (accumulation of phlegm) and *Vatham* (nervine factors) that may result in pain of sharp or pricking in nature.<sup>[1]</sup> According to contemporary science, the term "sinogenic" facial pain is routinely used to suggest a pathogenic relationship between rhinological disorders and facial pain. Sinus headache may be the result of trigeminal afferents in the nasal and sinus territory that activate the trigemino-vascular system.<sup>[24]</sup> Chronic frontal sinusitis is often characterized by persisting headache in the absence of other symptoms, and so the diagnosis can be more elusive. In the case of complete obstruction in Frontal sinus, there may be a little amount of drain into the nose, which may cover-up the underlying cause of pain which is basically related to sinus.<sup>[25]</sup> Sluder was one of the first to describe frontal headache caused by vacuum or negative pressure resulting from closure of the infundibulum and frontonasal opening, similar to that of the blockage in eustachian tube causing ear pain. His observation on this phenomenon most often occurred in the frontal sinus rather than the other paranasal sinuses.<sup>[11]</sup> Nevertheless, as cited by Stammberger and Wolf, studies have demonstrated that hypoxia in the sinuses can give a sensation of pain.<sup>[26]</sup>

Sinusitis is a common disorder coexisting with common cold causing a lot of stress and due to pain and reduction in the quality of life. The above discussion on scientific analysis of breakdown symptoms of *Netricūlavatam* crystal clearly correlates with almost all of the symptoms of Sinusitis. Although a previous research article portrays the analogy between *Kabala ayaazhal* and sinusitis, the present study more specifically equates the term *Netricūlavatam* with Frontal sinusitis, as the term 'Netri' by itself denotes the frontal region.<sup>[27]</sup> Each of the symptoms have been equivocally described in terms of its present day medical terminology of frontal sinusitis.

### CONCLUSION

Through this review a golden line has been drawn to comparatively analyze the signs and symptoms of *Netricūlavatam* mentioned in age old Siddha text *Yūkivaattiyacintāmaṇi* - 800 with that of present day contemporary medical terminology Sinusitis. Each of the indicated symptoms in traditional literature has been self analysed and correlated with the scientific facts and reasons behind these symptoms. The present approach of exploring the ancient knowledge of Siddha system of medicine would endorse the Siddha system as evidence based in the light of recent scientific researches.

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**\*Address for correspondence**

**Dr. P Parvathy**

Research Associate,  
Siddha Regional Research  
Institute, Thiruvananthapuram,  
India.

Email:

[parvathyamaldev@gmail.com](mailto:parvathyamaldev@gmail.com)

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