



## UNDERSTANDING SJÖGREN SYNDROME IN AYURVEDA

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Article Received on 25/09/2019

Article Revised on 15/10/2019

Article Accepted on 05/11/2019

### ABSTRACT

Sjögren Syndrome (SS) is a chronic autoimmune disorder in which the moisture producing glands do not function properly leading to oral and ocular dryness. It is also associated with other autoimmune diseases like RA, Lupus, Inflammatory myositis and Systemic sclerosis. Primary SS is a common disease that affects 0.1 to 0.6% of the general adult female population<sup>3</sup>. Primary SS has a female preponderance (female-to-male ratio at least 9 : 1). The age peak of the disease occurs after menopause in the mid-50s. Management of Sjögren Syndrome is often aimed at symptomatic relief using lubricants, fluid intake, corticosteroids and other systemic agents. Understanding the Sjögren Syndrome in Ayurveda involves the hypothetical understanding of the varied *nidanans* involved like *Udakavaha srotodushti*, *ama*, *viruddhahara*, *ruksha guna vriddhi of vata*, *ekanta hita* and *ahita*. Based on the *lakshanas*, Sjögren Syndrome can be understood under the banner of *Vatarakta* and *Vyadhishamatwam*. Based on the *avastha* present at the time of diagnosis, the *chikitsa* changes respectively.

**KEYWORDS:** Autoimmune disorders, *Vyadhikshamatwa*, *Udakavaha srotodushti*, *Ama*, *Vatarakta*, *Ekantahita ahita*.

### INTRODUCTION

Sjögren syndrome (SS) is a chronic autoimmune disorder in which the moisture-producing glands do not function correctly; leading to oral and ocular dryness, and by autoantibody secretion. SS can also affect internal organs.<sup>[1]</sup>

Sjögren syndrome is a relatively common disease, although often under-diagnosed. Sjögren syndrome can occur alone (primary Sjögren syndrome [pSS]) or in association with other autoimmune diseases (secondary Sjögren syndrome [sSS]), most commonly Lupus, Rheumatoid arthritis (RA), Inflammatory myositis, and Systemic sclerosis.<sup>[2]</sup>

Of note, pSS may be also associated with organ-specific systemic autoimmune disease, such as autoimmune thyroiditis and primary biliary cirrhosis.

Primary SS is a common disease that affects 0.1 to 0.6% of the general adult female population.<sup>[3]</sup> Primary SS has a female preponderance (female-to-male ratio at least 9: 1). The age peak of the disease occurs after menopause in the mid-50s.<sup>[4]</sup>

### PATHOPHYSIOLOGY

Genetic predisposition, exogenous triggering factors (e.g. glandotropic viruses) and hormonal changes are thought

to initiate and maintain the immunopathogenesis of the disease. Glandular epithelial cells supposedly play a central pathophysiological role in the development of auto-immune epithelitis, especially with regard to antigen presentation of Ro/SSA- and La/SSB-protein complexes which are found on the surface of apoptotic cells. Both the innate (e.g. pDC/monocytes) and the adaptive immune system (T-/B-cells) are involved in the initiation of the disease and perpetuation of the immune response. Via the activation of various CD4+ T-helper cell subsets. B cells play an important role in auto-antibody production, from the formation of ectopic germinal center-like structures to the malignant transformation to Non Hodgkin Lymphoma.

### THE DIAGNOSTIC CRITERIA FOR SJÖGREN SYNDROME INCLUDE

A set of preliminary criteria for SS classification was proposed by an expert consensus panel (American College of Rheumatology [ACR]-Sjögren International Collaborative Clinical Alliance [SICCA]). According to these criteria, classification of an individual as a pSS patient requires the presence of two out of three of the following objective items: (1) a positive serum test for anti-Ro/SSA and/or anti-La/SSB antibodies, or positive rheumatoid factor (RF) and antinuclear antibody (ANA) (titer > 1: 320); (2) presence of keratoconjunctivitis sicca, defined by an ocular staining score over 3; and (3)

presence of focal lymphocytic sialoadenitis, defined by a focus score of 1 focus/4 mm<sup>2</sup> or above in a labial salivary gland biopsy.

Because the disease is mild in many people, the first signs of mucosal dryness may be present for years before the disease becomes clearly evident.

## **SYMPTOMS OF SJÖGREN SYNDROME**

### **MOUTH**

The symptom most associated with SS is oral (mouth) dryness, known as xerostomia. Other oral symptoms may include:

- burning of the tongue
- cracking of the tongue
- increased dental caries (cavities)
- trouble swallowing
- difficulty speaking without the use of continued lubrication.
- The parotid glands (major salivary glands located behind the jaw) may be enlarged and painful swelling may also be noted. Enlargement of parotid or other major salivary glands occurs in two-thirds of those with primary SS, but is uncommon in those with secondary SS.

### **EYES**

Eye involvement is the other major manifestation of SS. People often complain of a sandy or gritty feeling in their eyes, especially in the morning. Other ocular symptoms that may be present include:

- decreased tearing
- redness
- itching
- photosensitivity, due to the loss of the lining cells of the conjunctiva, a condition called keratoconjunctivitis sicca

### **GLANDULAR**

- A decrease in mucous gland secretion of the upper and lower respiratory tract will be indicated by a chronic dry cough.
- A decrease in mucous gland secretions of the gastrointestinal tract may be associated with esophageal (throat) dryness, as well as trouble swallowing and irritation of the stomach.
- Vaginal dryness may cause irritation and pain during intercourse.

### **EXTRAGLANDULAR**

Symptoms that occur outside the glands are seen in one-third of people with primary SS, but rarely in those with secondary syndrome.

These extraglandular symptoms may include:

- joint pain
- muscle pain
- low-grade fevers
- increased fatigue.

These symptoms and signs may be associated with lung involvement, kidney involvement, and vasculitis (inflammation of blood vessels). In addition, lymphomas (tumors of the lymph glands) develop in 6 percent of people with primary SS who have systemic disease.

## **LABORATORY ABNORMALITIES IN SJÖGREN SYNDROME**

Autoantibodies are common in SS.

- 80 percent in those with SS test positive for antinuclear antibodies (ANA).
- Rheumatoid factor is present in 75- 95 percent of those with SS.
- Elevated protein levels will be seen in 80 percent of those with SS.
- Other nonspecific laboratory abnormalities that are commonly noted in SS are elevated erythrocyte sedimentation rates (a sign of inflammation), mild anemia, and low albumin levels.

Certain genes may also be found more frequently in people with primary SS. These "histocompatibility antigens" may include HLA-B8 and HLA-DR3.

## **DIAGNOSTIC TESTS AND PROCEDURES IN SJÖGREN SYNDROME**

Several tests are commonly used to confirm a suspected diagnosis of SS:

- In the Schirmer's test, a piece of filter paper is placed in the corner of the eye to measure the degree of wetting after five minutes.
- The Rose-Bengal staining test determines whether there is inflammation of the cornea.
- Salivary gland flow rates help to determine whether there is decreased saliva production.
- Salivary gland biopsy of the lip or parotid gland may help to establish the diagnosis.

Sjögren syndrome may also be confused with disease processes, such as viral infections and drug side effects (dryness from various antihypertensive agents, antidepressant agents or antihistamine agents, etc.).

Other disease processes which may also cause salivary gland enlargement are viral infections, sarcoidosis, and diabetes.

## **PROGNOSIS OF SJÖGREN SYNDROME**

The overall disease course of Sjögren syndrome can vary from very mild to fairly significant. Individuals with secondary SS seem to have milder disease, as compared to those with primary SS. People with primary SS seem to have a greater chance of extraglandular involvement. Early diagnosis and early treatment are extremely important in trying to prevent damage to major organs.

## **TREATMENT**

Management of Sjögren Syndrome is often aimed at symptomatic relief using lubricants, fluid intake, corticosteroids and other systemic agents.

**AYURVEDIC ASPECT**

Primary and Secondary Sjögren Syndrome can be understood from the viewpoint of *swatantra* and *paratantra vyadhis* where the primary clinical manifestations are due to *swanidana* whereas the secondary is often associated with other autoimmune disorders and can be considered as *paratantra vyadhis*.

**PROBABLE NIDANA PANCHAKAS OF SJÖGREN SYNDROME**

Understanding a disease in Ayurveda requires the *nidana pancakas*. The possible *nidanas* of Primary Sjögren Syndrome include:

- \* *Udakavaha srotodushti*
- \* *Virudha ahara*
- \* *Increase in ruksha guna of Vata*
- \* *Ama*
- \* *Ekanta hita ahita dravya*

Considering the involvement of organs related to water balancing mechanism and water regulation in the Primary Sjögren Syndrome, one of the aspects that can be correlated to help in understanding of Sjögren Syndrome is *Udakavaha srotas* – the channels or centers responsible to transport fluids across the body, wherein its origin is explained as *Talu* and *Kloma* in *Susruta Samhita*.<sup>[5]</sup>

The *mula* or the roots can be understood as the origin or the controlling center of the *srotas*. *Talu* is understood as the palate or the roof of the mouth cavity. The thirst is first manifested in the palate followed by the lips, gums and the throat.

*Kloma* is a controversial organ for which the detailed explanation is unavailable. It is anyways compared to the trachea, pharynx, pancreas, lungs, gall bladder and the water regulating centers of the brain.

The causes of vitiation of *udakavaha srotas*<sup>[6]</sup> are *Ushna ahara, aama, bhaya, ati pana, shuska anna sevana* and *vega dharana*, these are considered as the causes for which the *trishna* treatment is indicated.

Considering the *lakshanika* effect over the eyes, throat, nose and external manifestations, Sjögren Syndrome can be considered to be the effect of *virudha ahara*, as one of the *nidanas*, as explained in *Charaka Samhita*.<sup>[7]</sup>

Dryness of any part of body is understood to be the increase in the *ruksha guna* of *vata*, hence the involvement of *Vataprakopa* due to *ruksha guna vriddhi* has been considered.<sup>[8]</sup>

Consumption of excess food, not following rules of intake, intake at improper time, foods which are too heavy, unctuous, cold, dry, despicable, constipative, irritant, unclean and contradictory lead to *ama*, also *manasika* involvement like when the person is angry, passionate, greedy, confused, envious, grieved,

indigestion, anxious and fearful are the causes of *Ama*, also as *Ama* is an inevitable factor in the causation of *sarva roganam*, it has been considered as a *nidana* here.<sup>[9]</sup>

Some scholars opine that, what is wholesome for *vayu* is unwholesome for *pitta* and as such no substance is absolutely wholesome or unwholesome, but this is not correct, as, in fact, substances become by nature and combination, absolutely wholesome, absolutely unwholesome and both wholesome and unwholesome. This could be our nearest understanding of Autoimmune diseases in general. *Susruta Samhita* explains this, as substances can be wholesome or unwholesome or both to the body by virtue of its permutation and combination through the concept of *ekanta hita* or *ahita dravyas*.<sup>[10]</sup>

The Permutation and Combination of any or all of these *nidanas* could lead to the *vyakthavastha/avastha vishesha* of the disease.

*Purvaroopta* can be considered as the *lakshanas* in the milder form as we are unable to elicit the the exact stage of disease.

Depending on the *Roopa*, the features of the primary Sjögren Syndrome can be considered as *Udakavahasrotodushti lakshanas* are dryness of *jihwa, talu, oshta, kanta* and *kloma* along with severe thirst.<sup>[11]</sup>

The *lakshanas* on prolonged intake of *viruddha ahara*<sup>[12]</sup> are diseases like sterility, blindness, *visarpa*, ascitis, eruptions, insanity, fistula, fainting, intoxication, tympanitis, spasmodic obstruction in throat, anaemia, poisoning due to *ama, kilasa kushta, kushta, sprue, edema, acid dyspepsia, fever, rhinitis, foetal diseases* and even death.

The *lakshanas* of *Vata dosha*<sup>[13]</sup> are dry&coarse, light, cool, rough, subtle and mobile.

The *lakshanas* of *ama* include those which are liquid, heavy, with varied colours, slimy, viscid, thread, sticky nature, manifests various kinds of pain, yields foul smell, increased sourness, excess in quantity, thick, increased turbidity and obstruct various pathways. It is stated as the cause for all diseases.<sup>[14]</sup>

The secondary Sjögren Syndrome in which it is associated with other autoimmune diseases can be considered under *paratantra vyadhis*. The Secondary Sjögren Syndrome mainly manifests as Rheumatoid Arthritis, Systemic Lupus Erythematosus, Inflammatory myositis, and Systemic sclerosis. SS in the setting of RA usually follows RA diagnosis by many years and is mainly manifested by keratoconjunctivitis sicca, with systemic features being rather uncommon. Associated with other systemic autoimmune disease, the presentation of sSS is very close to pSS. The diseases caused in association with Sjögren Syndrome include

vasculitis, Raynaud phenomenon, polyarthralgia, polyarthritis, scleroderma, myoditis among others.

The undigested particles are understood as *ama*. This is applicable at the level of *doshas* and *dhatu*s also. Considering the uric acid crystals which are the excess collagen materials, as *ama* which accumulates at the *sandhis*, though initial consideration of *amavata* is appreciable due to the *amaja nidana* and involvement of *sandhi*, but on detailed examination considering the *dosha*, *dhatu* and *samprapti* involved, the symptoms can be considered under the umbrella of *Vatarakta* rather than *Amavata*. The *samprapti* of *vatarakta* explains that the sites of manifestations start from hands and feet and spread to all the joints. From this base, it spreads to all the other parts of the body by the *sukshma* and *sara* guna of *vata* and *rakta*.<sup>[15]</sup> The main feature of RA or SLE associated with Sjögren Syndrome is arthralgia which is the main feature of *Vatarakta*.

#### VYADIKSHAMATWA

*Chakrapani* commentary on *Charaka samhita* states that *Vyadhikshamatwa* indicates the resisting power of the body by arresting the progression of the disease and preventing recurrence. Importance has been given to the terms –*vyadhibala viroditva* and *vyadhi utpada pratibandhakatva*.<sup>[16]</sup> The *vyadhikshamatwa* mostly depends on *bala* that opposes the disorder state of *doshas*. *Charaka Samhita* describes that the maintenance of health depends entirely upon the *bala*. This strength is attainable from three sources: *sahaja*, *kalaja* and *yuktikrita bala*. The *balavriddhikara bhavas* play a vital role in deciding the status of the *bala*.<sup>[17]</sup> The *Bhavas* that create the defensive mechanisms against diseases are called as *Vikara Vighata Bhavas*. *Balam* is multidimensional functional identity of body; it is the output state of equilibrium of *Dosha*, *Dhatu* and *Mala* in our body. It is an inherent variable which depends on *Prakriti*. Depending upon its functions it can be studied in 2 aspects. 1. *Vyayamashakti* 2. *Vyadhikshamatwa Shakti*. As *Balam* is the outcome of *Ojas*, it can be considered as *Karya* (effect) and *Ojas* as *Karana* (cause). So *Vyadhikshamatwa* is a type of *Balam*. If the person has good *bala* or immunity, he is less prone for *rogas*.

*Upashaya* and *Anupashaya* are to be understood according to the *avastha* of the disease.

*Samprapti* of the Syndrome is to be deduced with its respective *nidanas* like, *Vataja Nidanas* leads to *Srotodushti* at the level of *Udaka* which is responsible for *Udakavahasrotodushti lakshana*. *Virudha ahara sevana* leads to *Agnimandya* which on further intake leads to *Rasadhi dhatu dushti* manifesting as *Andya*, *Galagraha*, *Peenasa* and *Jwara*. Increase in *Vatala ahara* leads to *Ruksha guna vridhhi* of *vata* manifesting as *vata vridhhi lakshanas*. This can be inferred by *Ushnakamitwa*. *Nidana* leads to *Agnimandhya*, later leads to *Ama* which circulates all over the body. *Dravyas*

which are suitable to one, unsuitable to another are explained through the concept of *Ekanta ahitaani*.

#### CHIKITSA

In *Udakavaha srotodushti*, *trishna chikitsa* is indicated.<sup>[18]</sup> *Virudha ahara* can be managed with *Nidana parivarjana*, *Vamana*, *Virechana*, *Virodha dravyas*.<sup>[19]</sup> Increase in *ruksha guna* of *Vata* can be managed with *Sneha pradhaana chikitsa*. In *Ama*, *Amapachana* and *Agni deepana* is necessary. In case of *Ekanta hita ahita dravya*, *Nidana parivarjana eva chikitsa*.

In Secondary Sjögren Syndrome, depending on the *avastha*, *roga bala* and *rogi bala* of *vatarakta*, *raktamokshana* is indicated for *twak gata vikaras* with either of *sringha (vata)*, *jalouka(pitta)* and *alabu(kapha)*, or with *suchi*, *prachanna* or *siravaydha*. *Snehana* followed by *snigdha or ruksha mridu virechana* is indicated. *Tikshna virechana* is not indicated as *tikshna dravyas* may provoke *vata*. *Basti* is considered as the prime treatment of *Vatarakta*. Special mention is made on *SaghritaKsheerabasti* which is to be administered if the *vata* is occluded by *purisha*. *Niruha* and *anuvasana basti* is indicated when there is *shoola* in the *basti*, *vankshana*, *parshwa*, *uru*, *parvasthi* and *jatara pradasha* and in *udavarta*. In case of *Asthi* involvement, *Tiktaksheerabasti* is indicated. The *tikshna guna* of *basti* helps in relieving the *srotosanga*. This is to be followed by *seka*, *abhyanga*, *pradeha*, *anna* and *sneha* which do not cause *daha* in the *shareera*.<sup>[20]</sup> In Autoimmune disorders, *shodana* followed by *rasayana* is mandatory as we have to maintain the *bala* of the patient. *Ashtanga Hridaya* mentions *Brahma Rasayana* and *Shuddha guggulu* as *Naimittika rasayana* for *Vatarakta*, whereas *Kaisora guggulu* is mentioned by *Yogaratanakara* for the same. These *Rasayanas* act on the *ashti majjavaha srotas* and helps in their proper *ayana*. Also, depending on the *phalasaruti*, other *rasayana yogas* can also be adopted for internal and external applications like *Rasa sindhura*, *Guduchi satwa*, *Nityananda ras*, *Kshirabala taila* and *Prasaranyadhi taila*.

#### DISCUSSION

The whole concept of Autoimmune disorders can be understood under various banners. Depending on the *nidanas*, the *samprapti* of the *roga* is usually understood. Generally, we can interpret it as the decrease/variation in the *vyadhikshamatwa* of the patient due to any of the *nidanas*, especially *viruddha ahara* which brings about the alteration in the *udakavaha srotas* leading to the *udakavaha srotodushti* which is understood by the features of dryness in the *shareera*, whereas in sSS, the clear manifestations of *Vatarakta* in later stages calls for its *chikitsa*. The *Viddha lakshanas*<sup>[21]</sup> of *udakavaha srotas* need not infer only the external injury. It could be interpreted as internal injury due to vitiation of *doshas* also. The imbalance between the want and compensation of water and feeling of thirst form the key components of *udakavaha srotas* vitiation. Since thirst is invariably

associated with water imbalance or dehydration in the body, any causes of dehydration can be considered as causes of *udakavaha sroto dushti*. Hence dryness of mouth, lips and tongue seem to be the main symptom of vitiation of *udakavaha srotas*.

## CONCLUSION

There is no definite cure for Autoimmune diseases in Contemporary sciences. In Ayurveda, we can play a vital role in management of the symptoms without further derangement of the body by applying the concepts mentioned. This may help in the overall health status of such patients.

## REFERENCES

1. <https://www.lupus.org/resources/what-you-need-to-know-about-sjogrens-syndrome>
2. Nancy e. lane Thomas j. schnitzer, Cecil medicine, 23rd Ed, Chapter 268, 2007 Saunders, An imprint of Elsevier, Goldman, Pg 1786.
3. Ramos-Casals M, Tzioufas AG, Stone JH, et al. Treatment of primary Sjögren syndrome: a systematic review. JAMA. 2010; 304: 452-460.
4. Gottenberg JE, Ravaud P, Puechal X, et al. Effects of hydroxyl-chloroquine on symptomatic improvement in primary Sjogren syndrome: the JOQUER randomized clinical trial. JAMA. 2014; 312: 249-258.s
5. Sushruta, Sushruta Samhita with Nibandha Sagraha commentary by Dalhana, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan 1997, Shareera Sthana 9/12, P.No-386.
6. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008;vimana sthana, 5/11,Pp:738,Pg-251.
7. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008; Sutra sthana, 26/102-103,Pp:738,Pg-141.
8. Vagbhata, Ashtanga Hridaya, Varanasi, Chaukhamba orientalia, 9<sup>th</sup> edition, 2005, Sutra sthana, chapter 1, Shloka 11, 956 PP, page no.9.
9. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008;vimana sthana, 2/8,Pp:738,Pg-238.
10. Sushruta, Sushruta Samhita with Nibandha Sagraha commentary by Dalhana, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan 1997, Sutra Sthana 20/3, P.No-94.
11. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008;vimana sthana, 5/7,Pp:738,Pg-250.
12. Agnivesha, Charaka Samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya
13. Vagbhata, Ashtanga Hridaya, Varanasi, Chaukhamba orientalia, 9<sup>th</sup> edition, 2005, Sutra sthana, chapter 1, Shloka 11, 956 PP, page no.9.
14. Sarvanga sundara tikka, Vagbhata, Ashtanga Hridaya, Varanasi, Chaukhamba orientalia, 9<sup>th</sup> edition, 2005, Sutra sthana, chapter 13, Shloka 26, 956 PP, page no.126.
15. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008; Chikitsa sthana, 29/12,Pp:738,Pg-628.
16. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008; Sutra sthana, 28/7,Pp:738,Pg-178.
17. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008; Shareera sthana, 6/23,Pp:738,Pg-334.
18. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008;Chikitsa sthana, 22/25-39,Pp:738,Pg-568-569.
19. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008; Sutra sthana, 26/104,Pp:738,Pg-151.
20. Agnivesha. Charaka samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya,Chaukhamba Surabharathi prakashan2008;Chikitsa sthana, 29/41-42,Pp:738,Pg-629.
21. Sushruta, Sushruta Samhita with Nibandha Sagraha commentary by Dalhana, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan 1997, Shareera Sthana 9/12, P.No-386.