



## REVIEW ON SHATKRIYA KALA IN THE MANIFESTATION OF VRANA SOFA W.S.R. TO PATHOGENESIS OF INFLAMMATION.

Srinivas Turlapati,  
Professor and HOD,

Department of Shalyatantra, Yashwant Ayurvedic College P.G.T. & R.C., Kodoli, Kolhapur.

\*Corresponding Author: Dr. Srinivas Turlapati, email: [drsrinivast@gmail.com](mailto:drsrinivast@gmail.com)

Article Received on: 23/05/2017

Accepted on: 26/06/2017

### ABSTRACT:

*Shatkriyakala* are the 6 stages of disease manifestation explained by *Acharya susruta*. A good understanding of the stages which start from prodromal and end with complications is needed for the preventive and appropriate measures to treat according to the stage of manifestation of the disease. *Vrana sofa* is the prodromal stage of *vrana* which starts from *sofa* or swelling stage to the stage of development of *vrana* or ulcer if left untreated. An understanding to incorporate the role of *shatkriyakala* in the pathogenesis of *vrana sofa* relating with inflammatory odema is made hypothetically to give better approach to treat *vrana sofa*.

**KEY WORDS:** *Shatkriya kala*, *vrana sofa*, inflammation, odema, abscess, pathogenesis.

### INTRODUCTION:

*Shatkriya kala* are the 6 stages of disease manifestation from prodromal to the development of complications. *Acharya susruta* has described *shatkriyakala* in detail which are *sanchaya*, *prasara*, *prakopa*, *sthanasamsraya*, *vyakti* & *bheda*. [1] Proper analysis of each stage of *kriya kala* helps in treating the disease, assessment of prognosis and preventing complications. *vrana sofa* is a condition which is the early stage of *vidhradhi* and *vrana* development. Inflammation is part of the complex biological response of body tissues to harmful stimuli, such as pathogens, damaged cells, or irritants [2] and is a protective response involving immune cells, blood vessels, and molecular mediators. The function of inflammation is to eliminate the initial cause of cell injury, clear out necrotic cells and tissues damaged from the original insult and the inflammatory process, and to initiate tissue repair. [3] As *vrana sofa* is described as *poorva roopavastha* of *Granthi*, *vidhradhi*, it can be considered as inflammatory odema. Before the

stage of Abscess sets in, some pathological changes takes place inside the body, which finally manifests the swelling, before the localization of actual inflammatory signs that are externally evident, internally the tissues undergo marked pathological changes, which are not externally evident. [4] *susruta* has described 3 stages for *vrana sofa* which are *Amavastha*, *pachyamanavastha* and *pakwavastha*. The description of *Amavastha* clearly manifests the inflammatory swelling, which is the localization of the swelling. In this stage *doshadooshya sammorchana* takes place and the disease gets localized. This is *sthanasamsrayavastha* of *shatkriyakala* which is the 4<sup>th</sup> stage. Before this the three stages of *kriya kala* *chaya*, *prakopa*, *prasara* has to take place inside the body, which are not externally evident. According to modern science, the changes of vascular phenomenon is not externally evident, which can be understood as the first 3 *kriya kala*'s.

**Sanchya** (Stage of accumulations): Increase of *Doshas* in their own sites is called as *Sanchya*[3] which produces dislike for things which causes of increase & liking for the things of opposite qualities[4]. In this stage mild symptoms are seen. It is easy and feasible to arrest the progress of the development of *vranasofa*. The symptoms in this stage bloating, is due to accumulation of *Vata dosha*, which can be seen in general, yellowness of nails, eyes & urine due to *Pitta* & hypothermia, feeling of heaviness & laziness due *Kapha dosha*. These symptoms are not externally evident as *vranasofa avastha*'s. The *Doshas* identification regarding the development of *vranasofa* is difficult at this stage. As *vranasofa* is described as *poorva roopavastha* of *Grandhi*, *vidhradhi* etc, it can be considered as the inflammatory swelling or edema which can result into the stage of Abscess (collection of pus). Before the stage of abscess, some pathological changes takes place inside the body, which finally manifests the swelling. Before the localization of actual inflammatory signs that are externally evident, internally the tissues undergo marked pathological changes, which cannot be seen externally.

The pathology of Inflammation in modern science is grossly divided into 3 stages.

1. Stage of vascular phenomenon
2. Stage of inflammatory exudates.
3. Stage of tissue changes.

Out of these three stages, the stage of vascular phenomenon is not externally evident. The phenomenon in this stage is the vascular phenomenon is characterized by

1. Dilatation of blood vessels and increased vascularity.
2. General increase in the white cell count.
3. Occupation of plasmatic zone by leucocytes.
4. Immigration of leucocytes.

Dilatation of blood vessels and increased vascularity is brought about by the stimulation of vessel wall. Immediately after the tissue injury by bacterial toxins or any other cause, the tissues which are injured liberates histamine which produce vasodilatation and increased vascularity. The blood supply slows down in the dilated vessels after some time which produces tissue necrosis and increased action of bacterial toxins triggers the immune system, by which the white cell count increases in the blood markedly. This can be taken as *chayavastha*. The description of *chayavastha*

suggests that vitiation of *dosha*'s in *swasthanas* by *agantuja* or *nija* factors of etiology. Although specific *sthanas* are described for *doshas* they circulate throughout the body. in physiological condition they can be considered as basic functional units of the body. the increase of white cell count in the blood can be explained as "*chayavastha of doshas*."

General bodily symptoms are described in *chayavastha*. Even in modern science inspite of local reaction of inflammation, general metabolic reaction has also been described which results into some systemic disturbances, which can be compared to the *lakshanas* of *chayavastha*.

**Prakopa** (Stage of Aggravation): The accumulation of *doshas* in their own site is *prakopa*. This stage has two types; one is *SachayaPrakopa* while another is *Achaya Prakopa*. The generalised symptoms in this stage are excessive peristalsis, water brash, thirst, burning sensation, heaviness in chest & nausea [5]. This stage in the manifestation of *vranasofa* is not externally evident. The next change after increase in white cell count is occupation of plasmatic zone of the vessel wall by leucocytes. Normally the white cells together with the red cells in the axial stream, and the plasmatic zone are free from cells. But in inflammatory reaction the white cells migrate in to the periphery of the wall leaving the central zone, and get fixed to the vessel wall. This can be taken as *prakopavastha*. Aggravation of *chayavastha* is *prakopavastha*. The solid form of ghee is *chayavastha* and the early stage of melting is *prakopa*. If the general increase in vascularity and cell count is considered as *chaya*, the occupation of plasmatic zone by leucocytes, shifting from the central zone of vessel, which is a advanced stage of increased cell count, can be taken as *prakopa* which equally coincides with the description. The systemic symptoms in *prakopaavastha* which are described by *susrutha* are not specifically seen in the vascular phenomenon stages. But basing on the description those general metabolic changes will be there, it can be considered the *lakshanas*'s of first 3 *kriya kala*'s altogether as the metabolic changes.

**Prasara** (Stage of spread): Hyper excitation of *doshas* and spreading to the site of manifestation is seen in this stage which is also not completely evident externally. The symptoms in this stage are, tympanitis, body temperature is raised & burning

sensation is sensed, person experience the fatigue, indigestion, tastelessness & nausea[6], which are generalized symptoms which may not be dominating in the *vranasofa*.

**Sthansansrya** (Stage of localization): In this stage the aggravated Dosha attacks the body elements like tissue, waste products & disease is manifested. In this stage the prodromal symptoms starts appearing [7]. *sroto vaigunya* takes place At this stage with the process of interaction between morbid elements & tissues. This stage is actual condition of generation of a disease. The type of disease depends on where the *Dosha* are accumulated. The next change in vascular phenomena is emigration of leucocytes or diapedesis to the site of inflammation. The continuous action of bacterial toxins on the vessel increases the permeability of vessel wall and because of that leucocyte tends to come into extra vascular space or intercellular space and collects at the site of inflammation.

This can be taken as *prasaravstha*. The *doshas* in *prakopavastha* gets provocation and spreads out from the original *sthanas* and circulates in the body. if it is considered the blood vessels as original *sthanas* in this context for *doshas* the immigration of leucocytes into extra vascular space can be co-related to *prasaravastha* with the cells even the blood plasma also comes out of the vessel. The main motto of the vascular phenomenon is to bring out the solid and fluid constituents of the blood out of the vessels in to intercellular space to encounter the irritants which are responsible for the reaction. Here ends the vascular phenomenon and first three stages of *shatkriya kalas*.

**Vyakti** (Stage of manifestations): It is stage the disease express itself which is externally evident. In this stage disease can be diagnosed easily. *Susruta* has described this stage as occurrence of disease. It is stage in which clinical features of the disease appears. The disease like *Shopha* (inflammation), *Arbuda* (tumours) etc. & the treatment at this stage is specific against the particular disease which is manifesting [8]. Stage of inflammatory exudates or actual manifestation of swelling (*Amasofa stage*).

In this stage the reaction starts between the constituents of blood and irritants which results into the “walling off effect” of inflammation. This is to prevent the spread of disease. In this stage the

disease gets localized resulting in to the swelling. The walling off effect of swelling is brought about by fibrin clots of plasma. The collection of exudate at the site of inflammation results in to the swelling. The collection of exudate is due to plasma and cells which collect at the site of inflammation.

This can be considered as *amasofa avastha* of *vranasofa*. The *lakshanas* of *Amasofa* are given as

1. *Mandoshmata* (increased local temperature)
2. *Twak sawarnatha*
3. *Seetha sofa* (swelling)
4. *Sthiratwa* (walling off effect)
5. *Ruja* (pain).

These *lakshanas* indicate the localization of disease. Here all the cardinal signs of inflammation are explained. Here these symptoms are expressed after *Dosha-Dooshya sammorchana* which can be explained as the reaction between irritants and cells and local tissue. This is the 4<sup>th</sup> *kriyakala* or ‘*sthanasamsraya*’ *avastha*. After the *prasara avastha dosha*’s circulates throughout the body and localizes at a weak point and after *dosha-dooshya sammorchana* produce a swelling or sofa which is the *Amasofa* which can be clearly co-related to the stage of inflammatory exudate here in this stage the word *sthiratwa* clearly indicates the walling off effect of inflammation.

The word *seetha sofa* indicates the involvement of *kapha* to produce the swelling as the *seetatwa* and *sofa* are the characteristics of *kapha*. Which also indicates the formation of exudates, the white cells and plasma form the exudates, which can be considered the action of *kapha*. The word *mandoshmata* again indicates the increase in local temperature.

**Pachyamana and pakwavastha** (stage of suppuration and formation of abscess).

Three types of tissue changes takes place which are- degenerative, proliferative, suppurative.

If the dead tissue in an inflamed area undergoes softening and liquefaction, the process is known as suppuration and the liquefied fluid is pus. This stage is *vyaktavastha* of *vranasofa*, where complete manifestations of the swelling occurs, where it can be identified as abscess or *Grandhi* as this stage attains the complete *rupa* of the disease. The *pachyamana* and *pakwasofa* constitutes the *vyaktavastha*. *Pachyamana* stage constitutes the stage of suppuration and *pakwasofa* constitutes the stage of Abscess. The *lakshana*’s of *pachyamana sofa*

are “*suchibhiriva nistudyate*[9].....which are the suggestive points of nature of pain, which is indicating throbbing and pricking in nature which in turn suggests the suppuration as throbbing nature of pain is characteristic feature of suppuration. The *lakshana's jwara* etc, indicates the severity of inflammation, which produces endogenous pyrogens in the exudate (polymorphonuclear leucocytes discharge pyrogenic componenets), which pass from the surrounding medium into lymphatic circulation, producing fever etc. It has been given that for suppuration to occur in this stage the prescence of leucocytes and proteolytic enzymes for digestion of dead material is necessary. The same is explained by *sushruta .....vatadrute naasti ruja....*”[10]. This gives the meaning that without *kapha* never occurs *puya* or pus and without *pitta* ,*paka* never occurs. As *kapha* is considered in general as immune factor of the body, it clearly indicates the infiltration of leucocytes (*kaph*) and proteolytic enzymes digestion (*pitta*) for the formation of pus. The *lakshana's* of *pakwa sofa* are:

*Vednopasanthi, panduvarna, valipradurbhava, twakpariputana*(softening),*nimna darsana ,angulya avapidana*(pitting on pressure)[11]

*Vasta vivodaka sancharanam puyasya*(fluctuation).[12]

The description of *pakwa sofa* clearly indicates the abscess formation .The words “*valipradurbhava*” and *vasta vivodaka* -indicates softening and fluctuation respectively which are the characteristics of abscess. The word “*panduvarna*” indicates the diminished vascularity in the abscess stage. In this stage the pus enters pressure on the nerve endings and results into pain (*vatadrute naasti ruja*)and in the *pakwa sofa*(*sus*) all the *dosha's* are present. If the abscess is not drained intime it results into a sinus. The same is described in *susrutha as Gambhiranugato*[13].....

The stage of *pakwa sofa* is a clear manifestation with fluctuation as the main signs of abscess. In the *pakwasofa* description of *susrutha* clearly indicates and suggests softening and fluctuation. In the process of suppuration the dead tissue in an inflamed area undergoes softening and liquefaction. This softening and liquefaction are due to the action of proteolytic enzymes on the tissues, which are converted into pus (dead leucocytes and bacteria).

‘*vatadrute nasti ruja na pakaha, pittadrute nasty kaphaccha puyaha*’.[14]Without *vata,pitta,kapha* the

*sofa* cannot become a *pakwa sofa*. Without *vata* pain never occurs. It can be understood that inflammatory exudates exerts pressure on nerve endings and results into pain.

If the abscess is not drained in time it results into a sinus. The same is described by *susrutha* as “*Gambhiranugato dwara mala bhayanaha, puyaha*”....

**Bhedavasta:** in this stage the *dosha's* gets *vishamatwa*.(complications).in this stage *sofa*, gets converted in to *vrana*. If the *sofa* is not treated in time the pus in the *sofa* vitiates *mamsa,asthi* and *medas* resulting into *vrana*.This final stage can be taken as “*bhedavasta*” which is a complication. The progress of *Dosha* vitiation should, as a matter of fact be completed by fifth stage itself. But if proper treatment is not given to the patient even after attaining the stage of fifth *Kriyakala* , the *Dosha* will pass on to the sixth *KriyakalaBheda*.. This stage is thought to be hardly curable, rather incurable for example when an inflammatory condition is not treated properly in the beginning, it may form an abscess & finally it may burst out & permanent scar, will remain at that place for whole of the life. [15].

#### DISCUSSION:

It is clearly evident basing on the explanation in both Ayurvedic classics and modern science ,the early 3 stages of *kriyakala* and Pathogenesis of inflammation are not externally evident. It is difficult to diagnose and apply treatment before the onset of *amavastha* of *vranasofa*. During *amavastha* the first *shashtiupakrama* mentioned by *Susrutha*, *vimplapana karma* can be adopted to suppress the *sofa*. The rest of the 6 *upakrama* advised in treating *vrana sofa* are intended to treat *pachyamana* and *pakwasofa* with incision and drainage followed by scar healing management.

#### CONCLUSION:

*Shatkriya kalas* in the manifestation of *Vranasofa* exhibit themselves clinically from the stage of *vyaktavastha*.

The pathogenesis of inflammatory odema is also externally does not exhibit the stage of vascular phenomenon.

The first 3 *kriyakala* symptomatology helps to prevent even before the *poorva roopa* or

prodromal stage of *Vrana sofa*, which can avoid surgical intervention.

Understanding *shatkriyakala* in the terms of pathogenesis of inflammation helps for timely intervention of Antibiotics to control the infection and for proper surgical intervention in time, otherwise abscess may develop an abnormal communication with internal tissues.

#### REFERENCES:

1. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 36 page no 94, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008
2. Hurley JV. Acute inflammation. Edinburgh, London: Churchill Livingstone; 1972.
3. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 18 page no 90, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008
4. Ashtang Hridayam of Vagbhatedited with Sarvangsundar by Shri lalchandra Vaiyda Ashtang Hridayam Sutrasthana chapter 12 verse no 22 page no 101, Published by Motilal Banarasidash, Reprinted 2005.
5. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 18 page no 90, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008.
6. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 27 page no 92, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008.
7. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 29-30 page no 92, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008.
8. Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 34 page no 93, Chaukhambha Sanskrit prakashan Varanasi, Reprinted 2008.
9. *Sushrut Samhita* with *Ayurtatva Sandeepika* Commentary Kaviraja Ambikadatta Shastri, Chaukhambha Sanskrit Samsthan, 17th, 2003
10. *Shareera Kriya Vidnyanam* - Dr. M. Ramasundar Rao, M. Vijaya Vijayawada, 1st, 1988
11. 12,13,14,15 .Sushruta Samhita of Maharsi Sushruta edited with Ayurved Tattva Sandipaka by Kaviraj Ambika Dutta Shastri Part I Susrut Sutrasthana chapter 21 verse no 34 page no 93, Chaukhambha Sanskrit prakashan Varanasi,
12. A Concise Textbook of Surgery, Dr. Somen Das, 5th edition, Calcutta, Published by Dr. S. Das, 2008.
13. Bailey & Love's Short Practice of Surgery, 24th edition, London, Hodder Arnold Publication, 2004.
14. RB's, Manual of Surgery, Edited by Sriram Bhat M. Third Edition, Jaypee Brothers Medical Publishers (P) LTD. 2009

#### Cite this article as:

[Srinivas Turlapati. Review on \*shatkriya kala\* in the manifestation of \*vrana sofa\* w.s.r. to pathogenesis of inflammation., \*Ayurved Darpan - Journal of Indian Medicine\*. April - June 2017. Vol. 2 Issue 2. p. 82-86.](#)