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

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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 vranasofa.

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 dosha-doshya sammorchana takes place and the disease gets localized. This is sthanasamsrayavastha of shatkriyakala which is the 4th 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.
Doshas

It is easy and feasible to arrest the progress of the development of vranasofa. The symptoms in this stage bloating, 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 vranasa avastha’s. The Doshas identification regarding the development of vranasofa is difficult at this stage. As vранa soфа is described as poorva roopavastha of Grandhi, vidhradhi etc, it can be considered as the inflammatory swelling or odema which can result into the stage of Abscess (collection of pus). Before the stage of abscess, some pathological changes take 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 swasthana’s by agantuja or niña 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. 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 prakopavastha 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 lakshana’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 correlated to prasaravstha 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 vrana sofa. 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 Dosa-Dooshya sammorchana which can be explained as the reaction between irritants and cells and local tissue. This is the 4th kriyakala or 'sthanasamsraya' avastha. After the prasara avastha dosha's circulates throughout the body and localizes at a weak point and after dosa-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 mandonshmata 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, suppurrative. 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 vyaktawastha. Pachyamana stage constitutes the stage of suppuration and pakwasofa constitutes the stage of Abscess. The lakshana’s of pachyamana sofa

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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 presence of leucocytes and proteolytic enzymes for digestion of dead material is necessary. The same is explained 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 Dosa 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 Dosa will pass on to the sixth Kriyakala/Bhed.. 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 shashtipiakrama mentioned by Susrutha, vimplapanaka karma can be adopted to suppress the sofa. The rest of the 6 upakrama advised in treating vranasofa are intended to treat pachyamana and pakwasofa with incision and drainage followed by scar healing management.

**CONCLUSION:**

Shaktrika 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.

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