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A review on Pain Management through *Panchakarma*

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ABSTRACT

Pain can be described as any physical or mental suffering or discomfort caused by illness or injury. No matter however mild the pain is anywhere in the body it lands person in state of discomfort and affects day to day activities. Ayurveda describes pain as the premonitory sign as well as symptoms of many diseases under different terminologies viz. *Vedana, shool, ruja*. According to *Acharya Sushruta* - "*Vatat Rute Nasti Ruja*" i.e. the root cause of all types of pain is *Vata Dosha*. In spite of recent advances in pain treatment including anaesthesia, its' management still remains challenged. In a world where everyone is looking for means and medicines to minimize and kill pain Ayurveda can be a ray of hope to understand its actual concept and provide new direction for its management. According to the cause, nature and duration of the pain, Ayurveda offers a wide range of *Panchakarma* therapies to manage and heal pain. Treatment modalities offered in Ayurveda such as *Agnikarma, Jalaukaavcharan* etc. offer immediate pain relief without much untoward effects. It is hence mandatory to explore the concept of Pain and its practical utility requiring establishment in pain care reconnoitred in *Ayurveda*. Critical review of the previously available classical references and facts about pain, its management through conceptual study of vitiation of *Vatadosha* responsible for pain with chief therapeutic procedures such as *Snehan, Swedan, Agnikarma, Jalaukaavcharan, Vedhankarma, Lepankarma & Bastikarma* utilized in *Ayurveda* with a modern lookout could find a way to address this grief.

Key words: *Shoola, Vata Dosha, Panchakarma, Ayurveda*

INTRODUCTION

Manifestation of Pain has varied lengths & breadths and hence, it calls upon to understand this word in depth which is so commonly used in day-to-day practice. The International Association for the Study of Pain defines pain as an unpleasant sensory and emotional experience connected to actual or potential

tissue damage, or expressed in terms of such harm. Due to these factors, the Ministry of AYUSH in India has emphasised this worrying issue and declared that the theme of the Second National *Ayurveda* Day will be "Pain Management with Ayurveda."

Despite highly developed scientific studies, pain continues to be the leading cause of disability for a vast number of persons worldwide. It is possible to explain pain in terms of a symptom or a complication of another condition. Ayurvedic classics like the *Sushrut Samhita* define pain as a distinct concept called *Shool*, which primarily denotes colic.^[1] According to Ayurvedic scriptures, the main cause of pain is *Vata Dosha*, which is categorised as *Vataj, Pittaj, and Kaphaj Shool*. As *Vata Dosha* is responsible for every movement and action in the body, the hindrance in *Vata* flow leads to the pain. As *Vata* also allows the other *Pitta* and *Kapha* humors to function in the body, therefore *Vata* should flow easily in the body without any obstruction. The obstruction in *Vata* flow causes pain. Diet having

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similar properties causes aggravation of *Vata Dosha* due to which *Vata* gets situated in one suitable part of the body and attains growth and leads to the manifestation of symptoms caused by aggravated *Vata Dosha*. Some of the physical activities^[2] causing aggravation of *Vata Dosha* are *Ativyavaya* (excessive sexual indulgence), *Prajagara* (remaining awake at night in excess), *Vishamat Upachara* (inappropriate *Panchkarma*/ other therapies), *Ati Dosha Sravana* (excess of *Panchkarma* therapies), *Ati Asruk Sravana* (excess *Raktmokshan* or excess bleeding), *Ati Plavana* (excessive swimming), *Ati Langhana* (excessive fasting), *Atyadhva* (walking for long distance), *Ativyayama* (physical activities or exercise in excess), *Dhatu Samkshayaat* (depletion of body tissues, loss of *Dhatu*s), *Chinta Shoka Karshana* (weakening due to excess stress, grief and worries), *Roga Ati Karshana* (Excessive emaciation because of affliction of disease), *Dukhshaya* (sleeping over uncomfortable beds and sitting), *Vega Vidharana* (suppression of natural urges), *Ama* (product of improper digestion and metabolism), *Marmaghata* (injuries to *Marmas*), riding over an elephant, camel, horses, or fast moving vehicles.

Table 1: Evidence of some characteristic pain in different diseases is also found in the classical texts.

Disease	Symptoms
<i>Twakagata Vata</i>	<i>Parwa Ruka</i>
<i>Raktagata Vata</i>	<i>Teevra Ruj</i>
<i>Majja Asthigata Vata</i>	<i>Satata Ruka</i>
<i>Siragata Vata</i>	<i>Sarva Sharer Manda Ruka</i>
<i>Sandhigata Vata</i>	<i>Prasaran Akunchan Pravritta Vedana</i>
<i>Kaphagata Vata</i>	<i>Sarva Sharir Shola</i>
<i>Majjavritta Vata</i>	<i>Sarva Sharir Shola</i>
<i>Aamvata</i>	<i>Vrischik Danshavat Vedana</i>
<i>Vataj Gulma</i>	<i>Toda</i>

<i>Kitibha</i>	<i>Teevra Vedana</i>
<i>Kakanak Kushtha</i>	<i>Teevra Vedana</i>
<i>Koshthashrita Vata</i>	<i>Parshwashoola</i>
<i>Gudagata Vata</i>	<i>Udarshoola</i>

An integrated approach towards Pain Management should possibly answer the grief involved in treating this Symptom of varying degrees. Formulation of this article attempts to club the scattered information available in both the school of thoughts. Hence, looking into Pain & its manifestation through the eyes of Modern science correspondingly opens a new array for the management of Pain holistically. This article focuses on the treatment principles & science behind related treatment modalities in *Ayurveda* thereby throwing a new focus upon the subject. To discuss the subject in length, keeping modern perspective of probable mode of action of the Therapeutic Management Strategies of Pain as per *Ayurveda* which include treatment modalities like *Snehan* (external Oleation), *Swedan* (Sweat Inducing Fomentation), *Agnikarma* (Intentional Heat burn Therapy), *Jalaukaavcharan* (Hirudotherapy), *Vedhankarma* (Therapeutic body piercing), *Lepankarma* (application of medicated paste), *Bastikarma* (administration of medicated enema) have been discussed briefly. Miscellaneous added *Upakramas* (modalities) and formulations used in pain management have been given a quick overview and have been refrained from elaboration. Hope, this article will be a ready reckoner for the *Ayurveda* scholars exploring this topic in their research to understand the treatment principles of *Ayurveda* with a modern perspective.

METHODOLOGY

In this conceptual review article, information from contemporary texts of *Ayurveda* and a gist of Modern texts in view of Anatomy, Physiology, Biochemistry, Pharmacology & Medicine have been documented to understand treatment approach of *Ayurveda* from the eyes of modern concept.

LITERATURE REVIEW

Understanding Concept of Pain & its Management as per Ayurveda through Modern Perspective

Definition & Nature of Pain in Ayurveda

In Ayurvedic texts, various terms such as, *Ruk*, *Ruja*, *Vedana* & *Shool* are commonly used for pain, however, '*Shool*' is more appropriate term amongst all which means - a condition with state of discomfort to body & mind. Thereby, the definition of *Shool* can be stated as experience similar to driving a nail into the body of the person.³ It has been further elaborated that out of *Tridoshas*, vitiated '*Vata*' is the main causative factor responsible for all painful conditions.^[4] This vitiation of *Vata* occurs in two ways, viz. *Dhatukshya Janya Vata Prakop* (increased catabolism) and *Margavarodh Janya Vata Prakop* (channel obstruction).^[5] Furthermore, the '*Ruksha*' (Dryness) and '*Chala*' (Vibrations) *Gunas* (characters) of *Vata* are mainly involved in the manifestation of pain.

Management of Pain in Ayurveda

Pain management in Ayurveda has a holistic view which incorporates several therapeutic procedures and behavioural modifications under the light of basic principles narrated in Ayurveda. Hence, prescription writing for pain in Ayurveda is varied as Ayurveda considers pain as subjective phenomenon which includes therapy to body and mind both.

Therapeutic procedures for Pain Management in Ayurveda

1. *Snehana*

In Ayurveda, *Sneha* is the best *Vatashamaka* and has been said for *Vata* and *Kapha Dosha*. *Snehan* implies oleation of the body and is described as one of the important *Purvakarma* (precursor) to *Panchkarma* as *Vata Dosha* (*Dhatukshayjanya*) gets pacified by *Sneha* (oleation). *Vata* bears properties opposite to that of *Sneha*. *Sneha* with its antagonist properties pacifies *Vata Dosha*. Oil used in *Abhyanga* enters the body through *Romakupa*, *Siramukha* and *Dhamani*.

Snehana is classified as *Abhyantar Snehana* (Internal oleation) and *Bahya Snehan* (Outer oleation). To

understand the pacification of pain by *Bahya Snehan*, we need to understand the role of *Til Tail* (Sesame Oil) and Neuro-hormonal effects within the body due to *Bahya Snehan*. *Til Tail* is considered the best among *Sthavar Sneha* (Oil derived from Plant source), and also used as base for preparations of various medicated oil, as sesame seeds has strong vitamin E activity and helps in regulation of eicosanoids that cause inflammation (production of good eicosanoids from omega 3 essential fatty acids which inhibits inflammation).^[6] Neuro-hormonal effects due to *Bahya Snehan* has been established, stating that massage increases levels of Dopamine, increases availability of serotonin, may elevate epinephrine (adrenaline) and release of endorphins. All these neuro-hormones alter brain chemistry which in turn reduces response to pain sensation.⁷ Modern science also says that absorption through the skin is increased by suspending the drug in oily medium and rubbing it into the skin. *Acharya Dalhana* says that *Sneha* gets absorbed and reaches to different *Dhatu* levels curing the disease of that *Dhatu*.

2. *Swedan*

Swedan implies hot fomentation which is also the precursor procedure to *Panchkarma* which helps in inducing sweating to the patient. This procedure is done to curb the *Vata Dosha* vitiated due to increase in its *Sheeta* property. The role of *Swedan* is best understood with Transient Receptor Potential Channels. These receptors are mainly found in nociceptive neurons of peripheral nervous system. Upon further literary search, it is known that TRPV1 channels are responsible for perception of heat and pain both thereby, facilitating the role of *Swedan* in management of pain.^{[8],[9]}

3. *Agnikarma*

Agnikarma (Intentional Heat burn therapy) is one of the most effective para surgical procedure mentioned for the management of pain which is done with the help of *Shalaka* (metal probe). This unique procedure helps in relieving pain in various painful conditions chiefly of Musculoskeletal pain like *Parshnishool* (heel pain - Calcaneal spur), *Sandhigatavata* (Osteoarthritis), *Avabahuk* (Frozen shoulder); According to Ayurveda,

due to *Ushna Guna* produced during helps in pacification of *Vata-Kapha Dosha* and helps in increasing the *Dhatvagni* thereby reducing pain. Mechanism of action of *Agnikarma* can be understood with the help of afferent spinothalamic tract. As stated earlier, the ascending neurons are the pathway for conduction of Pain (lateral spinothalamic tract - A δ & C Fibres), Pressure (ventral spinothalamic tract – Ruffini endings), Temperature (lateral spinothalamic tract). When perception of pressure and temperature factor is increased, pain perception is reduced which helps us to understand the role of *Agnikarma* in relief of pain. Moreover, another hypothesis suggests that the released heat could have caused irritation on the superficial sensory nerve endings thereby relieving pain from the concept of ‘counter irritation’. It has also been suggested that pain may be possibly caused as a result of the accumulation of metabolic waste products in the tissues, and an increased flow of blood (vasodilatation due to heat) in the region is the possible mechanism that is responsible to remove these substances and relieve pain. Another possibility is that the pain releasing mechanism is associated with muscle relaxation.^[10]

4. *Jalaukaavcharan*

Jalaukaavcharan (Hirudotherapy) is one of the therapeutic procedures of *Raktamokshan* (Bloodletting). This therapy of pain relief involves application of *Nirvish Jalauka* (Nonpoisonous Leeches – *Hirudo medicinalis*) for removal of vitiated blood at the site of pain.^[11] It is hypothesized that the strong sensory stimulus caused by the pain and burning sensation of the leech bite can alleviate the symptoms of the patient through the “gate theory”. Moreover, review of components of Medicinal Leech saliva reports Hirudin which inhibits blood coagulation by binding to thrombin, Calin inhibits collagenmediated platelet aggregation, Destabilase dissolves fibrin, Hirustasin inhibits kallikrein, trypsin, neutrophytic cathepsin G, Bdelins acts as anti-inflammatory and inhibits trypsin, Eglins acts as anti-inflammatory and inhibit activity of cathepsin G, Carboxypeptidase A inhibitors increases the inflow of blood at the bite site,

Histamine like substance, acetylcholine acts as vasodilator and Anesthetic substance which causes anesthesia at the bite site.^{[12],[13]}

5. *Vidhakarma*

Also known as *Vedhan* is one of the eight *Shastrakarma* (surgical measures) mentioned in *Sushrut Samhita*.^[14] This is a sterile procedure which includes piercing the points with special hollow needles considering the anatomy of *Marma* (vital points) as per Ayurveda. The piercing leads to painful mechanical stimulus which causes release of endorphins thereby, causing immediate pain relief. Another procedure called as *Vidhaagni* (combination of *Vedhankarma* and *Agnikarma*) is also practiced in painful conditions with varied results.

6. *Lepankarma*

Lepankarma is application of medicated paste on skin. Classical texts describe the utility of *Lepa* in treatment of *Vatrakta*. *Sushruta* has mentioned *Lepankarma* in *Twakgat Vata* (vitiated *Vata* in skin) as reference cited in *Vranshoth Chikitsa* (inflammatory condition), *Mansagata Vata* (vitiated *Vata* in muscles) and *Snayuroga* (Diseases related ligaments).^{[15],[16]}

Mode of action of *Lepankarma* can be explained with the help of Transdermal absorption of drugs. Epidermis behaves as a lipid barrier whereas; dermis is freely permeable to solutes. Inflammation increases cutaneous blood flow and also enhances absorption. Moreover, thermoreceptors in the skin have cold receptors (thin myelinated A δ fibres) and warm receptors (unmyelinated C fibres) which help in understanding the regulation of *Pralepa* and *Pradeha* respectively. Probable role of *Pralepa* can be explained with the mechanism of transduction of cold thermoreceptors as for example Menthol sensation is perceived via TRPM8 channel; whereas role of *Pradeha* can be explained with TRPV1 channels and furthermore certain Warm receptors also being sensitive to painful stimuli function as nociceptors and thus, mediate action of herbs with hot consistency.^{[17],[18],[19]}

7. Bastikarma

It is one of the chief therapeutic procedures of *Panchkarma* in which the drugs are administered into the rectum of the patient. It is multidimensional treatment procedure offering wide range of clinical benefits in different diseases due to its synergistic effects. Sensation of Pain is attributed to vitiated *Vata Dosh* and in order to correct this *Doshic* imbalance *Basti* is the chief treatment of choice as origin of *Vata Dosh* is from *Pakwashay* and hence, described *Ardhachikitsa* (as treatment of choice for numerous diseases) in *Charak Samhita*.^[20]

Probable mode of action of *Basti* and mediation in Pain management is that the rectum has rich blood and lymph supply and the drugs can cross the rectal mucosa like other lipid membrane. The unionized and lipid soluble substances are readily absorbed from the rectal mucosa. This is because short chain fatty acids are more water soluble and allows direct diffusion from epithelial cells into the capillary blood of the villi. It is proposed that *Basti* has a feature to regulate sympathetic activity, thereby, balancing the autonomic nervous system. Hypothalamus Pituitary-Adrenal axis (HPA) gets activated with the visceral afferent stimulation, involving the release of neurotransmitters from adrenal gland called cortisol, a neuroendocrine hormone, acts as a potent anti-inflammatory systemically.^{[21],[22],[23]}

Miscellaneous *Upakramas* (Modalities) for Pain Management

In addition to several therapeutic procedures discussed in length in this article, as per the location or site of pain, the specific *Upakramas* (modalities) are helpful in pain management. For pain in *Urdhwajatrugata* (supraclavicular) area, specific *Upakramas* like *Shirodhara* (Pouring of medicated oil over forehead), *Abhyang* (Massage therapy), *Pichu* (Application of medicated cotton swab) and other *Kriyakalpa* (procedures) like *Anjan* (application of medicated kohlirium), *Netratarpan* (Eye care with medicated oil), *Karnapurana* (Ear therapy with medicated oils), *Karnadhupan* (Ear therapy with medicated smoke), & *Kawal - Gandush* (holding of

medicated oil in mouth) are done as per the pain scale of the patient. In *Urasthan* (pain in chest region) *Bahya Snehan-Swedan*, *Sthanik Basti* like *Hridbasti* (external oleation at cardiac region in cardiac pain) and *Prushtabasti* (external oleation in pain at scapular region) are done. Another commonly cited example for Pain management in chest region due to *Shwas Roga* (Bronchial Asthama) application of oil mixed with *Saindhav Lavan* (salt) on *Urasthana*. As stated earlier, *Snehan*, *Snehapan* (Internal oleation, ingestion of Castor oil), *Anuloman* (Purgatives), *Abhyang*, *Virechan* (Induced purgation), *Vatanuloman* (Anti flatulent) *Dravya* (drugs) are used in *Udargata* (abdominal) region. In *Shakha* (extremities) modalities like *Abhyang*, *Sthanik Basti* (local external oleation), *Bastikarma* as mentioned earlier are prescribed as per the painful ailment.

DISCUSSION

Signals are received by the cell from its environment which can be correlated with *Chala Guna* (vibrations) of *Vata Dosh*, rightly called to be *Sarveidriyanamudyojaka* and *Sarveindriyaarthanaambhivodha* (the one who carries sensory signals & the one who perceives afferent stimulation). Perception of pain and causation of inflammation are mediated by G-Protein Coupled Receptors (GPCRs).^[25] Ligands (biomolecule) attach to the GPCRs and cause conformation of GPCRs leading to transmission of signals to the nucleus, thereby, governing the functions of the cell. *Dhatukshaya* (catabolic process of metabolic pathway) leads to *Vataprakopa* (increase in *Chala Guna* - vibrations) which leads to abnormal signal initiation (increased signals or defective signal termination) causing defect in GPCRs in turn, leading to over signalling within the cell. This over signalling causes inflammation within the cell. *Margaavrodh* (decreased signal initiation) that is defect in transmission of signals (obstruction in passage of signals) via GPCRs causes less perception of signals by the cell thereby, disrupting cell functioning leading to accumulation of metabolite toxins within the cell again leading to inflammation. This article, comprehends the role of Receptor proteins such as nociceptors, thermoreceptors in *Lepankarma*,

Transient Receptor Potential channels in *Swedan* & *Lepankarma*, Explanation of role of *Agnikarma* in pain management with the help Physiological functions of Ascending Spino-thalamic tract & localized counter irritation mechanism, Gate theory in *Jalaukaavcharan* with anaesthetic activity of saliva of Medicinal leech), role of neurotransmitters in *Snehankarma*, release of Endorphins in *Vidhankarma*, role of Autonomic nervous system and HPA axis in *Bastikarma* and explanation of Descending modulation (Placebo effect of Touch in Pain) serve the purpose of revalidating the basic concepts of *Ayurveda* in a diverse way. Besides, production of good eicosanoids thereby, reducing inflammation overlays methods of understanding action of certain herbs in management of pain.

CONCLUSION

In a nutshell, this article is an attempt to explore the concept of Pain in classical texts of *Ayurveda* in light of modern science. Re-exploring of therapeutic pain management strategies which are validated & effective treatment in *Ayurveda* of *Snehan*, *Swedan*, *Agnikarma*, *Jalaukaavcharan*, *Vedhankarma*, *Lepankarma*, *Bastikarma* are discussed to help one to understand the modulation of pain in light of modern concepts. Many other facets of vitiation *Vata Dosha* & Pain as for example treatment of *Vatavyadhi* (disorders due to vitiated *Vata Dosha*) chiefly are out of purview of this article. The management of Pain itself is still under research persistently as it is a subjective parameter with different threshold for different individuals. Current article is an attempt to cover the maximum aspects of Pain treatment & throw an emphasis on probable mode of action of the chief therapeutic procedures utilized in pain treatment in *Ayurveda* but as the symptom being subjective; it depends on the patient, site, extent and stage of the disease and hence doesn't offer the most appropriate modality for pain relief.^[29] Main aim of the treatment is to pacify vitiated *Vata Dosha*. *Ayurvedic* pain management therapies are safe and natural ways that help in the management of different kinds of pain. Increase in the pain threshold and reduction of the cause of pain is a whole new approach towards pain. To conclude, it is a Herculean task to cover entire concept of Pain management in

Ayurveda. There are treatment modalities in *Ayurveda* which needs therapeutic validation leaving a scope for future research in pain management through *Ayurveda*.^{[26],[27],[28]}

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