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## Review Article

### REVIEW OF CONCEPT OF PAIN MANAGEMENT IN AYURVEDA

Amar P. Dwivedi<sup>1\*</sup>, Anaya Pathrikar<sup>2</sup>, Anjna Kulkarni<sup>3</sup>

<sup>1</sup>Professor, Shalyatantra Department, D.Y.Patil College of Ayurveda, Navi Mumbai.

<sup>2</sup>Ph.D. Scholar, Tilak Maharashtra Vidyapeeth, Pune, Maharashtra.

<sup>3</sup>Ph.D. Scholar, School of Ayurveda, D.Y.Patil University, Navi Mumbai.

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#### ABSTRACT

In spite of very advanced researches in Science, Pain still remains the major cause of disability affecting the large number of population in the world. An integrated approach towards Pain Management should possibly answer the grief involved in treating this Symptom of varying degrees. Even Ministry of AYUSH, India has stressed upon this alarming topic and professed its theme as "Pain Management through Ayurveda" for Second National Ayurveda Day.

In this article, review of the classical text with special references to pain, and its management through Ayurvedic procedures such as *Snehan*, *Swedan*, *Agnikarma*, *Jalaukaavcharan*, *Vedhankarma*, *Lepankarma* & *Bastikarma* has been discussed in context to their utility in Pain management. Similarly, The role of *Madhur-Amla-Lavan Rasa Aushadhi* in Pain management due to *Dhatukshayjanya Vataprakopa* in view of G-PCR bio-signalling of taste and Pain modulation is also incorporated to explain role of palliative medicines.

#### INTRODUCTION

Pain is a symptom of mental and physical hurt or disease. The International Association for the Study of Pain defines pain as- 'An Unpleasant sensory and emotional experience arising from actual or potential tissue damage.'<sup>1</sup>

In Ayurvedic classical text Sushrut Samhita we found terms such as *Shool*, *Ruja*, *Vedana* and *Ruk* revealing condition of Pain. Similarly, in Charak Samhita *Angmardprashaman* (10 drugs used in treatment of Body ache), *Shoolprashaman* & *Vednasthapak Mahakashaya* is mentioned.<sup>2,3</sup>

This article elaborates various treatment modalities mentioned in Ayurveda in context to pain management such as *Snehan* (Oleation), *Swedan* (Fomentation), *Agnikarma* (Heat burn Therapy), *Jalaukaavcharan* (Leech therapy), *Vedhankarma* (needle puncturing), *Lepa* (medicated paste), *Bastikarma* (enema) is discussed. This article will be useful for the research scholars who are exploring the role of Ayurveda in the pain management.

#### THE CONCEPT 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, stating the definition of *Shool* as experience similar to driving a nail into the body of the person.<sup>4</sup> Further, it has been elaborated that out of *Tridoshas*, vitiated '*Vata*' is the main causative factor responsible for all painful conditions.<sup>5</sup> This vitiation of *Vata* occurs in two ways, viz. *Dhatukshaya janya Vata prakop* and *Margavarodh janya Vata prakop*.<sup>6</sup> Similarly, '*Ruksha*' and '*Chala*' *Gunas* (characters) of *Vata* are mainly involved in the manifestation of pain.

Classification of Pain as mentioned in Ayurveda, specifically discusses the types of *Shool* implying colic. As per Sushrut Samhita, *Shool* is classified into 13 types as per the location of visceral organs. As per *Doshas*, *Shool* is classified into 16 types in Madhavnidan (8 types as per *Doshas* + 8 types of *Parinaam shool* as per *Doshas*), 8 types in Yogratnakar & 4 types in Kashyap Samhita.<sup>7,8,9,10</sup>

**MODALITIES FOR MANAGEMENT OF PAIN**

**Snehan Karma:** *Snehan* (oleation) is mentioned as *Purvakarma* and practiced before all *Panchkarma* procedures. Due to *Sneh* (oleation) *VataDosh*a gets pacified. *Bahya Snehan* or *Abhyanga* is application of oil on the skin which is again divided into *SarvangaSnehan* (whole body massage) or *SthanikSnehan* (application of oil locally to the affected part like *Janubasti*, *Katibasti* or *Manyabasti* etc

As per the modern perspective, the Neuro-hormonal effects of *Bahya Snehan* has been established, stating that massage increases levels of Dopamine, increases availability of serotonin, may elevate epinephrine (adrenaline) and release of endorphins. (Research conducted at TOUCH Research Institute at the University of Miami). All these neuro-hormones alter brain chemistry which in turn reduces response to pain sensation.<sup>11</sup>

**Swedan Karma:** *Swedan* (hot fomentation) is also the *Poorvakarma* to *Panchkarma* which helps in inducing sweating to the patient. The role of *Swedan* can be explained with Transient Receptor Potential Channels which are mainly found in nociceptive neurons of peripheral nervous system. Role of *Swedan* in management of pain can be explained through TRPV1 channels which are responsible for perception of heat and pain.<sup>12,13</sup>

**Agnikarma Therapy:** *Agnikarma* (Heat burn Therapy) is one of the para surgical procedure described for the pain management. *Agnikarma* helps in relieving pain in painful conditions specially Musculoskeletal pain such as heel pain, Osteoarthritis, Frozen shoulder etc. *Agnikarma*, leads to pacification of *Vata* & *KaphaDosh*a, thereby reducing pain. Similarly, *Agnikarma* pacifies *Manda Dhatvagni* and facilitates *Amapachan* and increases the *Dhatvagni*, thereby, metabolite toxins are removed. Thus, pain caused by the accumulation of metabolic waste products in the tissues is immediately relieved after *Agnikarma* Therapy.<sup>14</sup>

**Raktamokshan by Jalauka:** *Jalaukaavcharan* (Leech therapy) involves application of *Jalauka* (Leeches) for removal of vitiated blood at the site of pain.<sup>15</sup> It is proved by various researches that the sensory stimulus caused by the pain and burning sensation of the leech bite can alleviate the symptoms of the patient through the "gate theory". The main components of Medicinal Leech saliva is Hirudin which inhibits blood coagulation by binding to thrombin, 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.<sup>16,17</sup>

**Viddhan karma:** *Vedhan karma* is one of the eight *Shastrakarma* (surgical measures) mentioned in Sushrut Samhita.<sup>18</sup> In *Viddha karma* the points are pierced with special hollow needles which leads to painful mechanical stimulus which causes release of endorphins thereby, causing immediate pain relief.

Few Ayurveda experts are practicing a modified *Agnikarma* procedure named- *Viddhagni*, by clubbing *Agnikarma* & *Vedhan karma* together. However, there is no validated document available to prove its supremacy over the conventional *Agnikarma* therapy.

**Lepan chikitsa:** This is application of medicated paste over the painful body parts. Sushruta has described *Lepan* in *Twakgatvata*, *Mansagata Vata* and in management of pain due to *Vranshoph*a.<sup>19,20</sup> The mechanism of action of *lepan* 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.<sup>21,22,23</sup>

**Basti chikitsa:** In *Bastikarma*, the medicinal *dravyas* are administered into the rectum of the patient. Since, every Pain is attributed to vitiated *Vata Dosh*a and in order to correct this imbalance *Basti* is the main (prim) treatment modality amongst the *Panchkarma* therapies.<sup>24</sup>

It is hypothesized that *Basti karma* 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.<sup>25,26,27</sup>

**Palliative treatment (Shaman Chikitsa) in the management of pain**

The main objective of palliative treatment is to correct the vitiated *Vata Dosh*a. Further, to resolve this *Vata* imbalance and pain *Madhur*, *Amla* & *Lavan Rasa* (taste) herbs are prescribed.<sup>28</sup>

This concept can be better understood through the knowledge of receptors on cells that mediate Taste & Pain both. G-Protein Coupled Receptors are dynamic machines for signaling Pain.<sup>29</sup> These same group of receptors (T1R2 & T1R3 receptors) are responsible for perception of Sweet taste (*Madhur*

Rasa) thereby, making us understand the role of *Madhur Rasa* in resolution of pain. As regards, *Lavan* (Salty taste - ENaC Receptors) & *Amla* (Sour taste - Two TRP channels – PKD2L1, which are also present in pain fibres responding to chemical stimuli like Capsaicin & menthol) use ion channels-proteins that form a channel through which specific inorganic ions can diffuse. Changes in cellular ion concentrations could then be detected and transmitted to the nervous system. However, Dr. Charles Zuker, meanwhile, states that current ion channel theory is not correct and GPCRs could also be involved in these perception modalities. In a nutshell, the role of GPCR in mediation of pain and mediation of taste thereby, explaining the role of *Madhur*, *Amla* and *Lavan Rasa* in the Pain management.<sup>30,31,32,33</sup>

### DISCUSSION

This article is explores the concept of Pain in classical texts of Ayurveda mitigating by modern perspective. The treatment modalities such as *Snehan karma*, *Swedan karma*, *Agnikarma*, *Raktamokshan* by *Jalauka*, *Lepan chikitsa*, *Bastikarma* are discussed followed by brief recitation of palliative medicine i.e. *Shaman chikitsa*. Sensitization of pain and process of inflammation are mediated by G-Protein Coupled Receptors (GPCRs). Ligands (biomolecule) attach to the GPCRs and cause conformation of GPCRs results in transmission of signals to the nucleus, thus, controls the functions of the cell. The *Dhatukshaya janya Vataprakopa* leads to abnormal signal initiation gives rise to defect in GPCRs in turn, leading to over signaling within the cell. This over signaling causes inflammation within the cell. *Margaavrodh* that is defect in transmission 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.

Ayurvedic formulations such as *Angamarda*, *Shool Prashaman* and *Vednasthapak Mahakashaya* are mentioned in Charak Samhita. The *Angamarda Mahakashaya* can be prescribed for *Angamarda* (body ache) in both *Dhatukshaya* and *Margavrodhjanya vataprakop*. *Shoolprashamiya Mahakashay* has *Ushan* property, hence, useful abdominal colic; whereas, *Vednasthapak Mahakashaya* has *Kashaya Rasa* and *Sheeta virya* can be used effectively in pain management due to traumatic conditions.

Further, medicines like *Ajmodadichurna*, *Shankhvat*, *Rasonadivati*, *Agnitundivati*, *Hingvadi churna* etc. are used in *Udarshool* and formulations

of *Guggul*, *Shallaki*, *Dashmool*, *Shunthi*, *Haridra*, *Ashwagandha*, *Rasna*, *Rakta Chandan*, *Aam Vateshwar* – *Vatachintramani Rasa* are used effectively in other painful condition with varied prognosis.

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**\*Address for correspondence**

**Dr. Amar P. Dwivedi**

Professor, Shalyatantra

Department,

D.Y.Patil College of Ayurveda ,

Nerul, Navi Mumbai

Mobile-9022325666, Email:

[dramar.sarc@gmail.com](mailto:dramar.sarc@gmail.com)