Role of *Agnivaishamya* in chronic pain pathogenesis with special reference to Neck and back pain - A cross sectional study

Research Article

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Abstract

Chronic back and neck pain are common clinical entities in ayurvedic practice. Most of the patients are not rendered pain free with the current ayurvedic treatment regimens. Ayurveda considers *agni* (digestive power) derangements as the basic cause for all *nija rogas* (endogenous diseases). The term *agnivaishamya* is implied for functional derangement of *agni*. Emerging evidences through modern researches point to the role of GI dysfunctions in pain pathologies. A cross sectional analysis of patients with chronic pain in the neck and back was conducted at VPSV Ayurveda college hospital to explore associations between pain and features of *agnivaishamya* in *koshta* (GIT). In the twenty eight patients analyzed, significant association has been found between pain in low back and *koshta* (GIT) features like *Arsas* (hemorrhoids) and *vibandha* (Constipation). Strength of association was more between *arsas* and low back pain with Odds ratio (OR) of 4.2 (P<0.05). In case of cervical pain, multiple features of *Koshta* like *avipaka* (feeling of indigestion), *aruchi* (anorexia), *amlodgara* (sour eructations), *urodhumayana* (chest burn) and *muhurbadha muhurdrava pureesha* (alternating constipation and loose stools) were found to be associated. Hence it can be concluded that there is significant association of *agnivaishamya* with chronic pain in neck and back.

Keywords: Cervical pain; low back pain; *koshta*; gut bacteria; *agnivaishamya*; *grahanidosha*

Introduction

Back pain is a major public health problem all over the world and constitutes one of the foremost causes for absence from work. In south India, a cross sectional study revealed that, 28.4% among 401 men and 52.9% among 403 women studied, were having low back pain (1). Chronic back pain constitutes one of the major clinical entities in Ayurvedic practice. According to National Institute of Neurological disorders and Stroke, USA, back pain persisting for more than 3 months is considered as chronic (2). In majority of these chronic back pain cases an attributable pathology like disc prolapse may not be evident. Most of the patients, even after prolonged treatment, continue to live with pain. Modern medicine suggests physiotherapy, lifestyle modification and behavioral therapy to manage such patients (3). Recently role of diet in managing chronic pain is gaining interest among modern researchers, as emerging evidences point to the role of various GI dysfunctions in pain pathologies (4). Studies have proposed the role of GIT in disorders like fibromyalgia and also the need of restricting gluten diet in chronic low back ache patients (5, 6). This study also revealed relation between celiac disease and low back pain (6). A cross-sectional analysis of survey data from the Australian Longitudinal Study on Women's Health reported that after adjustment for confounding factors, number of GI symptoms was significantly associated with back pain among all age cohorts. Odds ratios for experiencing back pain "rarely," "sometimes," and "often" increased with the number of GI symptoms (7).

In Ayurveda health is explained based on the normality of three doshas (functional units) *vatha, pitha* and *kapha* (8). Abnormality or imbalances of these bring about disease states which in turn are precipitated by *agnivaishamya* (abnormal digestive process). The term *agnivaishamya* is implied for functional imbalance of *agni* and its consequent GI manifestations. Such derangements of *agni* (digestive power) is considered under concept of *grahani dosha* (9). The deranged digestive process in *grahani dosha* leads to formation of *ama* (partially digested or undigested food) which eventually circulates all over the body leading to pain in susceptible areas. In the context of *grahani* there is reference of features like *ruja* (pain) in *parswa* (flanks), *uru* (thighs), *vamskshana* (groins), *greeva* (neck), *kati* (low back) areas as co-manifestations with *koshta* (GI) symptoms (10). In Ayurvedic practice, current understanding of pain in neck and back is based on concept of *vathavyadhi* (disorders of vatha dosha) and managed accordingly. Even with such Ayurvedic

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treatment regimens most of the patients are not rendered pain free. This may be due to the failure of addressing the root cause of the illness. Although there are ongoing studies to assess the various associations of back pain, a study to evaluate the association of *agnivaishamya* is lacking. Hence this study was planned as a cross sectional analysis of patients presented with chronic pain in neck and low back to identify the prevalence of features pertaining to *agnivaishamya* in them.

Materials and methods:

This study is conducted as a cross sectional analysis in 28 patients who presented to the OPD of VPSV Ayurveda College Hospital, Kottakkal, with complaints of chronic pain either in cervical region or low back region or both. Necessary ethical clearance has been obtained from Institutional ethics committee. After obtaining the informed consent, analysis was done using a questionnaire prepared based on features related to *agnivaishamya* explained in the description of various diseases in classical ayurvedic text books. Since there was no standardized questionnaire available to assess the *agnivaishamya*, this questionnaire was organized by compiling features pertaining to *koshta* available in the description of various diseases.

Inclusion criteria:

Patients in the age group of 20 to 50 with chronic pain either in cervical region or lower back or in both areas. (chronicity = more than 3 months)

Exclusion criteria:

Back pain of traumatic, infective or malignant causes
Patients with other systemic illness

Features of *agnivaishamya* assessed:

Following features pertaining to *agnivaishamya* were assessed in the patients using the questionnaire. Table -1

Table -1

Features	Assessed as
Avipaka	Feeling of indigestion
Aruchi	Loss of appetite
Uro dhumayana	Burning epigastrium
Amlodgara	Sour eructation
Udgara bahulya	Excessive belching
Udara shoola	Pain abdomen
Adhmana	Distension of abdomen
Arsas	Hemorrhoids
Vibandha	Constipation
Muhurbadha muhurdrava pureesha	Loose bowels altered with constipation

Data observed through the survey were analyzed statistically to identify the prevalence of features of *agnivaishamya* in the patients. Frequencies and percentages were used to summarize the data. To test the strength of association between pain and different features of *agnivaishamya*, Chi square test and calculation of odds ratio (OR) were done. Since the

sample size was small, Yates' correction was applied in calculating the Chi value.

Observations and Results:

Totally 28 patients were assessed out of which 15 were males and 13 were females. Of this 43% of patients belonged to 30-40 age group, 32% in 40-50 and 25% in 20-30 group.

Pain distribution: 46% of patients had pain in low back and 43 % of them had pain in cervical region. Only 11% had pain in both cervical as well as low back regions.

Table 2: Reported features of *agnivaishamya* in pts with cervical pain:

Features	Percentage
Avipaka	25%
Aruchi	58%
Uro dhumayana	67%
Amlodgara	58%
Udgara bahulya	42%
Udara shoola	0%
Adhmana	25%
Arsas	17%
Vibandha	25%
Muhurbadha muhurdrava pureesha	50%

Urodhumayana was the most predominant feature in patients with neck pain followed by *amlodgara* and *udgarabahulya*. 50% of the patients had constipation altered with loose stools while only few of them reported *vibandha* (25%), *adhmana* (25%) and *arsas* (17%). *Udara shoola* was not reported in any of the patients.

Table 3: Association of symptoms in patients with cervical pain.

Features	CHI	Odds Ratio	p
Avipaka	2.5	5	<0.01
Aruchi	1.94	4.2	<0.05
Uro dhumayana	1.31	3.3	<0.05
Amlodgara	1.196	2.33	<0.05
Udgara bahulya	0.58	1.8	<0.05
Adhmana	1.6	3.85	<0.05
Arsas	0.05	1.4	>0.05
Vibandha	0.08	0.55	>0.05
Muhurbadha muhurdrava pureesha	0.43	1.7	<0.05

In this *avipaka* was found to be strongly associated with pain in cervical region (OR 5, P<0.01) followed by *aruchi* (OR 4.2, P<0.05) and *adhmana* (OR 3.85, P<0.05). Features pertaining to lower part of the GIT like *arsas*, *vibandha* were not found to be associated but there was significant association of *muhurbadha muhurdrava pureesha* (OR 1.7, P<0.05) with cervical pain.

Table 4: Reported features of *agnivaishamya* in pts with pain in low back:

Features	Percentage
Avipaka	56%
Aruchi	44%
Uro dhumayana	52%
Amlodgara	52%
Udgara bahulya	64%
Udara shoola	8%
Adhmana	60%
Arsas	68%
Vibandha	68%
Muhurbadha muhurdrava pureesha	18%

68% of patients with low back pain reported *vibandha* and *arsas* while 64% had *udgarabahulya*. 52 % of them suffered from *urodhumayana* and *amlodgara* while 56 % had *avipaka*. *Adhmana* was present in 60 % of patients where as *muhurbadha muhurdrava pureesha* was present only in 18 % of them.

Table 5: Association of symptoms in patients with lowback pain.

Features	CHI	Odds ratio	p
Avipaka	0.07	0.64	>0.05
Uro dhumayana	0.0172	0.54	>0.05
Amlodgara	0.07	3	>0.05
Udgara bahulya	0.03	0.88	>0.05
Adhmana	0.152	0.75	>0.05
Arsas	0.498	4.25	<0.05
Vibandha	0.615	1.06	<0.05
Muhurbadha muhurdrava pureesha	0.0172	0.39	>0.05

In patients with pain in low back, strength of association is more between *arsas* and low back pain with Odds ratio of 4.2 ($P<0.05$) and with *vibandha* (OR 1.06, $p<0.05$). It is interesting to note that even though features of upper part of GIT like *avipaka, aruchi, urodhumayana, amlodgara, udgara bahulya* were reported in patients with low back pain, the association was not statistically significant.

Discussion:

According to current epidemiological data (1), there is higher prevalence of pain in cervical and low back in females but in the present study number of males were more, probably because of the small sample size. Most of them belonged to the middle age group 30 -40 years indicating the higher prevalence of non-traumatic back pain in that age group. Almost all patients in the study reported one or more feature

pertaining to *agnivaishamya*, whether this occurs following the onset of pain or preceding it should be determined by further studies. Patients with cervical pain reported features pertaining to the upper part of the *koshta* (GIT) like *urodhumayana* and *amlodgara* indicating the involvement of *vatha dosha* in that area and also signifies the presence of *pitha dushti*. Again whether this involvement of *pitha* is secondary to *vatha prakopa* or not is unclear. *Avipaka* was reported as a predominant feature equally by patients with pain in cervical and low back areas. *Arsas* and *vibandha* were the two predominant features in patients with pain in low back further substantiating the role of *pakwasayagatha vatha* (increased vatha seated in lower GIT) in manifestation of pain in *kati* (low back) region. References regarding pain in the cervical region and low back are available mainly in two contexts in Ayurvedic classics; one is in *vathavayadhi* and other in *grahani roga* (10). In *vathavyadhi*, pain in different areas of back is explained according to the site of *vatha prakopa* (aggravated *vatha*). *Vatha prakopa* in *amasaya* (upper part of GIT) leads to manifestation like *avipaka*, *chardi* (vomiting) and pain in abdomen whereas in *pakwasaya* (lower GIT) results in pain in low back along with features like abdominal colic, distention of abdomen and constipation(11). In the explanation of *vathaja grahani*, apart from features pertaining to the *koshta*, manifestation of pain in neck, upper back, flanks and low back is described [10]. Further, in management of diseases, normalizing the agni is the primary target to be achieved before addressing the *doshas* involved (12).

Modern medicine has also started to explore in similar direction but in a different perspective with current studies trying to identify the role of gut microbiota in pain pathologies. Studies have indicated the involvement of microbiota in considerable number of complex diseases in organs residing outside gut like fibromyalgia, atherosclerosis, obesity, allergy, autism to name a few (13). This exactly corroborates with the Ayurvedic view that all endogenous diseases are due to dysfunction in *agni*. Not undermining the role of gut microbiota in the manifestation of disorders, ultimately it is the functional imbalance in the digestive process that leads to various disease states. While modern science look at it with a reductionist view bringing down the pathology to cellular level, Ayurveda explains it with the functional view point attributing dysfunctions of *agni* and *vatha dosha.*

The prevalence of features pertaining to koshta as observed in this study point to the need of investigating the role of *agni vaishamya* and *grahani dosha* in the pathology of spontaneous onset of pain in neck and back. Also to be explored is the temporality of these symptoms so as to ascertain whether *agnivaishamya* predisposes the onset of pain or occurs as a result of *vathaprakopa.* Further in the treatment of patients with chronic pain in neck and back, the role of managing *agnivaishamya* should be investigated and if found effective, will be a new prospect in the management of patients with chronic back pain.

Drawbacks and recommendations:

The work was conducted as a pilot study and the sample size was very less. The features of *agnivaishamya* assessed were subjective and prone to individual bias. Even though significant associations have been found between pain and *koshta* features; this can only be established by a case control study. Moreover the temporality of the association should be assessed by a cohort analysis. While assessing the patients, the study considered only the Ayurvedic view point hence concentrating on the symptomatology rather than modern pathology.

Conclusion:

According to Ayurveda *Agnivaishamya* is considered as the root cause for all *nija rogas* and correcting the *agni* forms the first step in management. Modern medicine also advocates the role of GIT in pain pathologies through evidences from current researches. The present study shows significant association of features pertaining to *agnivaishamya* with chronic pain in cervical region and low back. This warrants further studies to establish the role of *agnivaishamya* in chronic pain pathologies.

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