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Study on *Agnikarma* in Pain Management W.S.R. to Chronic Low Back Pain

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Abstract— *Back pain is a frequent reason for contacts with the healthcare system and a leading cause of disability, loss of productivity, in India and worldwide. Low back pain is treated with all available modalities from analgesics to disc surgery, but the outcomes are disappointing. It is a musculoskeletal condition which is called Katishoola in Ayurveda. Acharya Sushruta advised Agnikarma in severe painful conditions of skin, muscles, veins, nerves, joints, and bones. The present study was conducted with an objective to evaluate the role of Agnikarma in management of Low back pain in comparison to Diclofenac sodium. 60 patients of Low Back Pain were taken in 2 groups of 30 patients each. Patients of one Group were administered Diclofenac sodium 50 mg orally, whereas another Group were treated with Agnikarma therapy using Panchdhatu shalaka. The results obtained were subjected for statistical analysis and conclusions were drawn.*

Keywords— *Ayurveda, Musculoskeletal condition, Katishoola, Acharya Sushruta, Panchadhatu shalaka, Diclofenac sodium.*

I. INTRODUCTION

Pain is a distressing feeling often caused by intense or damaging stimuli. According to the International Association for the Study of Pain, pain may be defined as "An unpleasant sensory or emotional experience associated with actual or potential tissue damage or described in terms of such damage" [1]. Pain is a defensive mechanism of our body which can be felt in any organs or body parts like Head, Neck, Spine, joints, Liver, Kidney etc. Among these highest numbers of pain 28.1 percent are of Low back pain. [2]

In the present era the lifestyle is gradually shifting away from healthy living leading to sedentary lifestyle, stress, improper sitting posture, travelling for a long time and other environmental factors which often leads to pressure and twisting on back, hip, improper joint movements etc. resulting in increasing number of Low Back pain. Back pain is a frequent reason for contacts with the healthcare system and a leading cause of disability in India and worldwide. Beyond suffering and discomfort there are huge financial losses, including medical care expenses, loss of work days, diminished quality and productivity of life. [3]

Ideal Primary care management of low back pain should result in early return to normal activities, with less side effects, and no recurrence. Agnikarma is such a therapy recommended by Acharya Susruta. Agnikarma can be applied in all the cases where *Vayu* afflicts the Twak (skin), Mamsa (muscles), Sira (veins), Snayu (nerves), Sandhi (joints) and Asthi (bones) resulting in *UgraRuja* (severe pain) [4].

Agnikarma seems to be a very effective procedure in the treatment of *Low back ache* because it relieves the pain quickly and patients treated with Agnikarma therapy never suffers from the disease again [5], keeping them active and enabling them to stay at work.

II. AIM & OBJECTIVE

- To conduct conceptual study on *Agnikarma* and katishoola.
- To evaluate the role of *Agnikarma* in management of Low back pain.
- To Evaluate the efficacy of *Agnikarma* in comparison to use of conventional NSAID (Diclofenac sodium) in pain Management.
- To establish an alternative, non-invasive, non medicative, afordable, Ayurvedic procedure for pain management, specially in Chronic LBP.

III. MATERIAL AND METHOD

Materials:

- *Panchadhatu Shalaka*
- Butane Gas Flame
- *Triphala kwath*
- Aloe vera
- *Ghrita, Madhu*
- *Yashtimadhu churna*
- Cotton roll

Research Design

Agnikarma is done in 30 diagnosed cases of Chronic Low Back Pain upto 4 sitting in 14 days.

Diclofenac Sodium- 50 mg (oral tablet) is given orally 8 hourly for 3 days, in 30 diagnosed cases of Chronic Low Back Pain.

Plan of Study

Source of data:

Patients attending OPD and IPD of Department of Samhita and Siddhanta, Shalya Tantra and Department of Kayachikitsa, Govt. Ayurvedic College and Hospital, Guwahati-14.

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Clinical study:

- Research design: Open Randomized Control Trial
- Sample size: 60
- Number of groups*:* 02
- Duration: 14 days.

Diagnosis of the cases is done fulfilling the criteria mentioned in ACP guideline. Illegible patients after considering Inclusion and Exclusion criteria were registered for the research work after informing them about the study and taking the consent.

Inclusion criteria:

- Age group of 16-60 years with either sexes.
- Patients having classical signs Katishoola.
- All Chronic cases of *Low Back Pain* other than exclusion criteria.

Exclusion criteria:

- Localized Fracture
- Progressive degenerating diseases and Gross neurological disorders like Spondylolisthesis, Herniation of Discs etc.
- Cases of malignancy.
- Uncontrolled Diabetes Mellitus and Hypertension.
- Pregnancy.
- Patients contraindicated for *Agnikarma* by Sushruta.

Investigations:

- Blood Sugar – Random, fasting and PP
- Viral surgical Profile.(HIV I & II, HBsAg, Anti HCV)
- X-ray and MRI (specific part if needed)
- RAT/RT-PCR for Covid 19 (Optional)

Criteria for withdrawal:

- Discontinuation of treatment by patient during trial
- Development of complication
- Development of any side effect
- Aggravation of Disease symptom
- If no improvement after 2nd sitting.

Assessment Criteria:

Assessments were done as per Universal pain assessment tool, consist of Wong Baker Facial Grimace Scale and activity tolerance test with gradation.

Subjective criteria: Pain intensity and Duration

Objective criteria: tenderness intensity and Duration

A. Subjective Parameter:

1. Pain intensity:

No pain	0
No pain at rest, but pain occurs on normal activities	1
Mild pain at rest, prevents some activities	2
Moderate Pain at rest interferes activities with concentration	3
Severe Pain at rest, intolerable pain, prevents daily activities and verbal communication	4

Visual analogue scale: 1 2 3 4 5 6 7 8 9 10

- 0-no pain
- 1-3= mild pain
- 4-7= moderate
- 8-10=severe

2. Pain Duration-

Pain relieved 0n 1st day/ 1st sitting	0
Pain relieved 0n 2nd day/ 2nd sitting	1
Pain relieved 0n 3rd day/ 3rd sitting	2
Pain relieved 0n 14th day/ 4th sitting	3

B. Objective Parameters:

1. Tenderness Intensity:

No tenderness	0
Mild / tolarable Tenderness on Deep Palpation	1
Pain On ordinary Palpation , patient not prefers to tolerate	2
More intolerable Pain on Light Palpation	3
Severe pain which may be caused by even a stimulus like a sheet , Patient does not allow touch affected part	4

2. Tenderness duration

Tenderness relieved 0n 1st day/ 1st sitting	0
Tenderness relieved 0n 2nd day/ 2nd sitting	1
Tenderness relieved 0n 3rd day/ 3rd sitting	2
Tenderness relieved 0n 14th day/ 4th sitting	3

Grouping:

Group A:

It was the *Control* Group

In this group, 30 diagnosed cases of Chronic Low Back Pain were treated with Diclofenac Sodium- 50 mg (oral tablet) 8 hourly for 3 days, along with before and after review.

Group B :-

It was the *Trial* Group.

In this group 30 diagnosed cases of Chronic Low Back Pain were subjected to *Agnikarma* Therapy as per classical method of Sushruta using *Panchadhatu Shalaka* , producing *Bindu* Dahan vishesh , maximum of 4 sittings. Before and after treatment assessment data was collected and analyzed, applying statistical methods.

Agnikarma Procedure:

The procedure of *Agnikarma* can be divided into three phases:-

- *Poorva karma*
- *Pradhana karma*
- *Paschat karma*

Poorvakarma: Pre operative procedure

- Diagnosed and illegible cases of Chronic Low Back Pain were selected for *Agnikarma* therapy.
- The patients were prepared for the procedure after proper counselling and explanation of the events of treatment.
- Proper consent in standard format is being taken from the patient or attendant.
- The most tender point of the affected part was find out by palpating.
- The area was thoroughly cleaned and painted with Triphala Kwath.
- The patient is then shifted for the *Pradhan karma*.

Pradhan karma: operative procedure

- Patients were made to lie in a comfortable position before starting the procedure.
- The *Panchadhatu shalaka* was heated upto red hot and bindu size Twaka vrana made on the most tender spot of the affected part, till the *Samyak Dagdha Lakshans* are produced. *i.e Shabda pradurbhav, Durgandhata, etc.*
- The same procedure repeated at multiple points if needed.

Paschat karma: Post operative procedure

- After producing Samyak dagdha lakshans, the Ghrita-madhu mixture or Kumari (Aloe vera) gel is applied on

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the burn wound immediately to get relief from burning sensation.
- Application of the above is repeated simultaneously immediately after every stroke of Shalaka.
- After that the Ghrita madhu mixture or Aloe vera gel is wiped off with the help of gauze pieces and dusting of *Yashtimadhu churna* is done on the site.
- A constant and careful observation was done to avoid any undesirable complication.
- Patients were advised to avoid water contact in the area for 48 hrs.
- Patients advised to review on the next day.

IV. Observation and Results

Demographic observations made on both the group recorded on the parameters of Distribution of patients according to Age, Gender, Marital status, religion, occupation, nature of work, economic status, diet and gait,

Results

Table 1: Pain Improvement in group A

Group	Criteria	Mean BT	Mean AT	Mean Diff	t_{29}	P	Remark
A	Pain	3.7 ± 0.640	2.667 ± 0.907	1.033	5.097	<0.001	H.S

T29 =5.097, P (0.001. Hence the result is Highly Significant.

Table 2: Tenderness Improvement in Group A

Group	Criteria	Mean BT	Mean AT	t_{29}	P	Remark
A	Tenderness	2.867 ± 0.499	2.267 ± 0.680	3.896	<0.001	H.S

T29 =3.896, P (0.001. Hence the result is Highly Significant.

Table 3: Overall Improvement in Group A

Criteria	Mean BT	Mean AT	Mean Diff	t_{29}	P	Remark
Pain	3.7 ± 0.640	2.667 ± 0.907	1.033	5.097	<0.001	HS
Tenderness	2.867 ±0.499	2.267 ± 0.680	1.53	3.896	<0.001	

Table 4: Pain Improvement in group B

Group	Criteria	Mean BT	Mean AT	Mean Diff	t_{29}	P	Remark
B	Pain	3.58 ± 0.555	0.7 ± 0.862	2.88	15.392	<0.001	H.S

T29 =15.392, P (0.001. Hence the result is Highly Significant.

Table 5: Tenderness Improvement in group B

Group	Criteria	Mean BT	Mean AT	Mean Diff	t_{29}	P	Remark
B	Tenderness	3.071± 0.651	0.567± 0.667	2.504	14.715	<0.001	HS

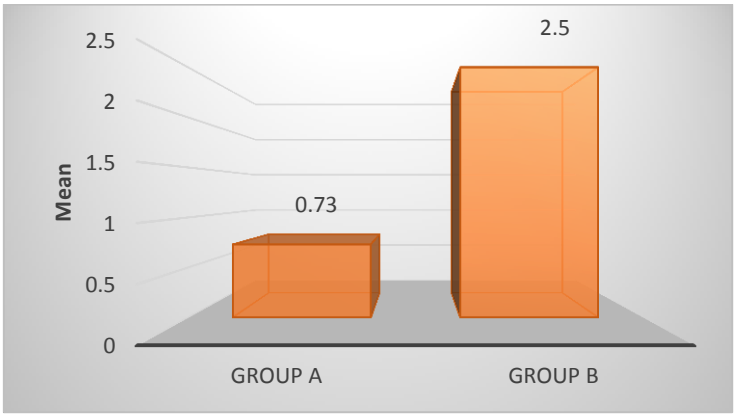
T29 =14.715, P (0.001. Hence the result is Highly Significant.

Table 6: Overall Improvement in group B

Criteria	Mean BT	Mean AT	Mean Diff	t_{29}	P	Remark
Pain	3.58 ± 0.555	0.7 ± 0.862	2.88	15.392	<0.001	HS
Tenderness	3.071 ± 0.651	0.567 ± 0.667	2.504	14.715	<0.001	

Table 7: Comparison between Group A and Group B Pain, n =30

Group	Mean BT-AT	SD	SE	Unpaired T	P value	Remarks
A	1.033	0.89	0.16	7.4247	<0.001	HS
B	2.83	0.99	0.18			



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P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be significant.

Confidence interval:

The mean of Group A minus Group B equals 1.80

95% confidence interval of this difference: From 2.29 to 1.31

Intermediate values used in calculations:

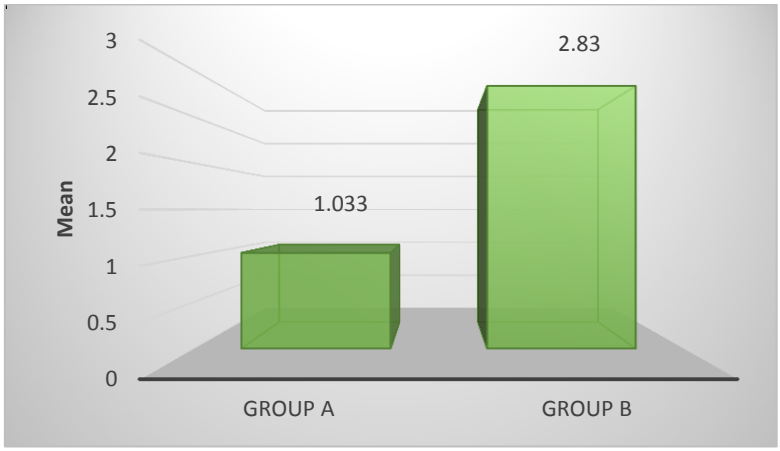
t = 7.4247

df = 58

standard error of difference = 0.242

Table 8: Comparison between Group A and Group B Tenderness, n =30

Group	Mean BT-AT	SD	SEM	Unpaired T	P value	Remarks
A	0.73	0.69	0.13	9.0211	<0.0001	ES
B	2.50	0.82	0.15			



P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be *extremely significant*.

Confidence interval:

The mean of Group B minus Group A equals 1.77

95% confidence interval of this difference: From 2.16 to 1.37

Intermediate values used in calculations:

t = 9.0211

df = 58

standard error of difference = 0.196

Discussion

Katishoola or Low back pain is one of the *Vataja Nanatmaja vikaras*[6]. There is no direct mention of disease *Katishoola* as such in *Veda*.

"*Kati Shoola"* being the most common disease in clinical practice is not even explained in any of the *Bruhatrayis.* But it is explained as a *lakshana* in different diseases. *Acharya Bhela* has classified *Vata Vyadhi* into two groups, *Sarvanga Roga* and *Ekanga Roga*. *Katishula* is considered under *Ekanga Rog*[7].

In *Gada Nigraha*, *Katishula* is treated as a separate disease in *Vata Vyadhi* and various formulations have been explained for its treatment. *Bhaishajya Ratnavali* which is com- posed during this period, chiefly contains the treatment aspects and in particular the use of *Guggulu Kalpana* in *Katishula*[9]**.**

In *Nidana Chikitsa-Hastamalaka, Prathama khanda* of author Dr. Ranjith Rai Desai, quoted an example for *Katishula* with respect to *Upashayatmaka adhyayana* i.e. with *Murchita tila taila (snigdoshna)* and *Shunthi churna (Rukshoshna)* to access the *guna of vata* which is in- volved in the actual pathology of *Katishula.* As both *ruksha guna* and *sheetha guna* can aggravate *vata* to produce *Katishula*.[10]

By observing the above mentioned references in various textbooks (oldest to the latest one), it can be understood that *Katishula* can be taken as a main disease not merely a *lakshana* (symptom) itself in various diseases based on the severity and its way of presentation. Lifestyle causes like Excessive physical exercise, Excessive jerks to the body or jerky movements, Excessive pressure or rubbing on bones, and constant use of vata aggravating factors are causative factors for the vitiation of channels for transport and transformation of Asthi dhatu. Thus by causing Dhatu (Asthi) kshaya and kha-vaigunya in the *Kati* region severe back pain occurs. Katishoola is also caused by imbalance of *vata dosha* along with the involvement of *kapha dosha* leading to Avarana in Vatavaha sroota. The involvement of *kapha* along with *vata* in its samprapti contribute to chronicity and severity of pain.

Probable mode of action of Agnikarma in Low Back pain:

Agnikarma is a parasurgical procedure mentioned in ayurveda in which a Panchadhatu shalaka is heated upto red hot to burn the superficial tissues of the body at different sites depending upon the disease condition of the patient. Thickness of the Panchadhatu shalaka plays an important role since it can retain the heat for a longer period of time and helps to produce the desired samyak dagdha vrana in *Agnikarma* therapy. *Agni* possesses *ushna, tikshna , sukshma* and *ashukari* gunas. Due to these inherited properties of agni, it is supposed to remove the *sroto avarodha* which may have occurred due to avarana of vikrita kapha over vyan vayu. It also increases the rasa rakta sambahan (blood circulation) to the localized pathology.

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Therapeutic heat increases the dhatwagni so metabolism of dhatu becomes proper and digests the ama dosha from the affected site and promotes proper nutrition. Thus the result is precipitated in the form of relief from all symptoms of Low back pain.

V. CONCLUSION

From the above study, it can be concluded that *Agnikarma* Therapy is very effective in pain management. It showed better results than conventional NSAID (Diclofenac Sodium) in relieving Chronic Low back Pain.

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