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A clinical comparative study of *Chedana Paschat Arka Pratisaraeeiya Kshara & Agnikarma* in the management of *Kadara* (Corn)

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ABSTRACT

Sushruta Samhita is the earliest known authentic treatise on Ayurveda. In *Vedic* period also there is a description of *Agnikarma* and *Ksharakarma*. In *Shalya Tantra* common procedure are *Agnikarma*, *Ksharakarma* and *Jalokavacharna* etc. *Kadara* is one among *Kshudra Roga* is claimed to be effectively dealt with *Agnikarma* and *Ksharakarma*. This is intended to offer instant relief to the patient to evolve a simple and economic management and to evaluate whether the relapse can be prevented with *Agnikarma* and *Ksharakarma*. The studies conducted with 40 patients were selected, made into 2 groups of 20 each patients. Group A patients were treated with surgical excision followed by *Arka Pratisaraneeya Ksharakarma* and Group B patients were treated with surgical excision followed by *Agnikarma*. *Arka Kshara* is prepared and applied after excision of lesion, keeping for 100 *Shatamatrakala* (100 sec), treated with *Nimbuka Swarasa*. With all aseptic measures the lesion is excised and then *Agnikarma* using *Lohashalaka*, *Madhu* and *Sarpi* is applied and bandaged. Both procedures are in single sitting, dressing for alternate day and every 15 days follow up till 45 days. After the completion of clinical trial, it was found that *Agnikarma* procedure there was highly significant results in reducing pain, discomfort, bleeding infections and healing period. Where as in *Kshara Karma* there is also significant result in reducing pain, discomfort but statically considering average mean *Kshara Karma* shows comparatively lesser effective than *Agnikarma*. By the statistical results it can be concluded that *Agnikarma* has better result when compared to *Kshara Karma* in the present study.

Key words: *Kadara, Chedana, Agnikarma, Loha Shalaka, Kshara, Arka Kshara, Corn.*

INTRODUCTION

Shalya Tantra has been hailed as the most important branch of Ayurveda. The uniqueness of *Shalya Tantra* is due to the availability of dual treatment procedures i.e. *Shastra Karma* (Surgical procedure) and

Anushastra Karma (Para-surgical procedure). Further *Shastra Karma* is eight in types and *Anu Shastra Karma* includes *Kshara Karma, Agnikarma* and *Raktamokshana*.

Kadara is one of the *Kshudra Roga* mentioned in Ayurveda. It gives more trouble for the patient and interferences with routine work. It is said that repeated injuries and friction to the sole with thorns, stones etc. or by the *Doshas* becoming aggravated together with *Meda* and *Rakta* it give rise to a tumor, hard like bolt, in the middle or at the end of feet, of size of a *Kola* (Jujube fruit), having pain and exudation.^[1]

The ancient *Acharyas* described this disease as a surgical domain. Excision followed by hot oil cauterization is recommended.^[2]

Kadara has been co-related with corn as described in modern medical sciences.^[3] A corn is localized

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hyperkeratosis with a hard centre caused by undue pressure. Histologically it is composed of keratin masses with intact basal layers. It is often caused by ill fitting and tight shoes chiefly affecting feet and toes. This commonly involves the skin on the hands and feet. Modern system of surgery has adopted several methods like Cyrotherapy, Laser and Chemical cauterization. Each with these procedures are not giving good result and are not devoid of recurrences. Apart from recurrence, bleeding, pain and post excision infections are observed frequently.

In Ayurveda, *Shalya Tantra* is imperative for its immediate action and utilisation of all *Shastra* and *Anushastra Karma*. *Sushruta* as mentioned in "*Ashtavidha Shastrakarmeeya*" about the *Chedana*,^[4] *Bhedana* etc. surgical excision is one of the treatments for *Kadara*, but by this recurrence rate is higher.

Anushastra Karma are special branch of surgery. These are special methods of managing the surgical and non surgical condition. *Anushastra Karma* includes *Kshara Karma*, *Agnikarma* and *Raktamokshana*. *Agnikarma* and *Kshara Karma* are some of the special techniques of Ayurveda, explained by our Acharyas, are used to prevent the recurrence.

Kshara^[5] as the substance possessing *Ksharana* and *Kshanan* properties and told that *Kshara* perform *Chedana*, *Bhedana* and *Lekhana* and also has the *Tridosahara* properties and act as *Shastra*, *Anushastra* and it removes diseases by root.

Kshara can be prepared with various numbers of drugs as per Ayurvedic classics. The *Arka* is one among them which is considered as one of the drugs of *Ksharastaka* and properties of *Kandughna*, *Shotahara* and *Vatahara*.

Agnikarma^[6] is selected for the present study as logically it should help in better prevention from recurrence by destroying the tissue due to its direct heat. Apart from this it also help in controlling the bleeding. There will be less pain as the nerve fibres destroyed by *Agnikarma*. Chances of infection are also less as *Agnikarma* itself being a sterile procedure.

This study is an effort to evaluate the efficacy of *Arka Pratisaraneeya Kshara*^[7] and *Agnikarma* in the management of *Kadara*.

In the present study the patients suffering from *Kadara* over the sole are selected the patients were randomly categorised into 2 Groups. Patients of one group were subjected for *Arka Pratisaraneeya Kshara* and patients of other group were subjected for *Agnikarma*. Results were compared after follow up of 45 days.

OBJECTIVES

1. To evaluate efficacy of *Chedana Paschat Arka Pratisaraneeya Kshara* in the management of *Kadara*.
2. To evaluate efficacy of *Chedana Paschat Agnikarma* in the management of *Kadara*.
3. To compare and evaluate the effect of *Chedana Paschat Arka Pratisaraneeya Kshara* and *Agnikarma* in the management of *Kadara*.

MATERIALS AND METHODS

It is a comparative clinical study done at, BLDEA's AVS Ayurveda Mahavidyalaya and Research Centre, Vijayapur. In which 40 patients of *Kadara* were selected and randomly divided into 2 groups as Group A - 20 patients and Group B - 20 patients.

Group A was subjected to all the selected 20 patients with the *Arka Pratisaraneeya Kshara* followed by *Chedana Karma*.

Group B was subjected to all the selected 20 patients with *Agnikarma* followed by *Chedana Karma*.

The signs and the symptoms will be scored on the basis of standered parameters and Analysed by statistically.

The progress was assessed for all the patients and regular follow up study was done for a period of 45 days at the interval of 15 days. On each visit, the assessment of all the patients was done on the basis of assessment parameters. The initial finding through clinical assessment parameters were described in specially prepared case sheet and compared with the

progress on 15th day, 30th day and 45th day of observations.

The data obtained will be recorded statistically. Subjective criteria were Pain, Discomfort while walking. Objective Parameters Tenderness, Hardness and Size of the wound after excision.

Method of preparation of ArkaKshara^[8]

The required drug *Arka Kshara* was prepared according to the descriptions available in *Sushruta Samhita* as described below:

Arka plant as a whole (*Panchangas*) were collected from the college herbal garden and various places around the city after ascertaining that the plants were absolutely free from insects, pests or other diseases. The healthy plants were cut into small pieces and were dried in the shade for or three months where it was completely dried and this dried pieces were transferred into a big iron pan. The pan was kept in open space devoid of wind. Now lit with fire and dried specimen was burnt and the ashes are collected.

Next 1 part of *Arka* ash is mixed with 6 parts of water, stirred well and kept overnight. The next morning, it should be macerated well and is filtered through a thick cloth. Washing is repeated 21 times with different water samples.

At last the filtration should be taken in a steel container and the steel container is heated on *Manadagni* and stirring was carried out continuously. Gradually water content was evaporated leaving behind thick semi-solid paste like material which was greyish to white in colour.

Now the steel container is removed from the fire and it was closed. After sometime, dry crystalline material was obtained and this was the component of *Arka Kshara*. It was preserved in a clean, dried and air tight glass jar and used whenever required.

Method of therapy

Group A

The selected 20 cases were taken to minor O.T, furnished with required material. Xylocaine test dose was given. Cornified part in the *Pada* was cleaned well

with antiseptic lotion. Then that part is infiltrated with xylocaine and with the help of sterilized scalpel, the elliptical incision was taken exactly on the cornified part. Then the part was held with the help of Allie's tissue holding forcep and removed. Later, the *Arka Pratisaraneeya Kshara* is to be applied over the affected area, wait for *Shatamatra Kala* and then washed with the *Nimbuka Swarasa*. Then the area should be anointed with mixture of *Madhu* and *Sarpi*. Then covered the part with cotton pad and tied with roller bandage. Alternate day dressing is to be advised.

Dose of the Drug

It depends on the size of the Corn. Total dose required was equal to the quantity to cover the entire corn surface.

Group B

The selected 20 cases were taken to minor O.T, furnished with required material. Xylocaine test dose was given. Cornified part in the *Pada* was cleaned well with antiseptic lotion. Then that part is infiltrated with xylocaine and with the help of sterilized scalpel, the elliptical incision was taken exactly on the cornified part. Then the part was held with the help of Allie's tissue holding forcep and removed. The *Loha Shalaka* is heated on gas stove. Later, *Agnikarma* is done with *Tapta Loha Shalaka* over the surgical wound till *Samyak Dagdha Lakshana* are observed. Then the area should be anointed with mixture of *Madhu* and *Sarpi*. Then covered the part with cotton pad and tied with roller bandage. Alternate day dressing is to be advised.

Precaution

After *Agnikarma* the patient should avoid in contact with water for 24 hours.

Inclusion criteria

- Patients aged between 18-60 years.
- Patients of either sex are taken.
- Patient with clinical features of *Kadara*.

Exclusion criteria

- Patients suffering from infectious diseases like- HIV, Hepatitis, Tubercular and other infectious diseases.
- Patients suffering from systemic disorders like- Diabetes Mellitus, Hypertension and other systemic diseases.
- Pregnant women.
- Patient contraindicated for *Agnikarma* and *Ksharakarma*.

Grading and Grouping

Grading and grouping to the assessment criteria and measurement scale concerned to each item categorically differentiated the findings among the patients in the clinical study. And finally the assessment as a whole was presented in percent value.

Assessment Scale

To understand the severity of any problem. It was essential to have different grading methods. Hence to assess the level of suffering and also to know the level of improvement, the following grading was considered for different selected parameters.

Pain

Pain was assessed by medical research council's method of pain grading.

G₀: Nil - Absence of pain /no pain.

G₁: Mild - Pain that can easily be ignored interferes while walking.

G₂: Moderate - Pain was present most of the time and demanding constant attention.

G₃: Severe - Totally incapacitating pain.

Discomfort during walking

G₀: No discomfort during walking.

G₁: Discomfort during walking.

Tenderness

G₀: Absent

G₁: Present

Hardness

G₀: Absent

G₁: Present

Size of the wound after excision

G₀: No wound.

G₁: Radius measuring from 0.5cm – 1cm.

G₂: Radius measuring from 1.1cm - 2cm.

G₃: Radius measuring more than 2cm.

Overall Response**Table 1: Showing the Overall response**

Class	Grading
<24%	Poor Response
25-49%	Moderate Response
50-74%	Good Response
75-100%	Excellent Response

OBSERVATIONS

The clinical observations from different aspects approaching to the treatment for patients of both Group A and B have been represented showing the incidence, statistic analysis of effectiveness along with clinical assessment of result etc. the data of each item are explained here under and have been represented in the tabular form with footnotes.

Table 2: Multiple Comparisons in Pain

Post hoc test					
Group	Comparison between		% Change	Sign difference.	Remarks
Group I	BT	15 TH Day	40%	>0.05	NS
		30 TH Day	78%	<0.001	HS

		45 TH Day	91%	<0.001	HS	
	15 th Day	30 th Day	63.6%	<0.05	Sign	
		45 th Day	84.8%	>0.001	HS	
	30 th Day	45 th Day	58%	>0.05	NS	
Group II	BT	15 TH dAY	44.6%	>0.05	NS	
		30 TH dAY	85%	<0.001	HS	
		45 TH Day	96%	<0.001	HS	
	15 th Day	30 th Day	74%	<0.05	Sign	
		45 th Day	93.5%	<0.001	HS	
	30 th Day	45 th Day	75%	>0.05	NS	
	NS-Not Significant HS-Highly Significant					

Table 3: Multiple comparisons in Discomfort while walking

Post hoc test					
Group	Comparison between		% Change	Sig.	Remarks
Group I (Kshara Karma)	BT	15 TH Day	25%	>0.05	NS
		30 TH Day	50%	<0.001	HS
		45 TH Day	75%	<0.001	HS
	15 th Day	30 th Day	33.3%	<0.05	NS
		45 th Day	66.7%	>0.001	HS

	30 th Day	45 th Day	50%	>0.05	NS
Group II (Agnikarma)	BT	15 TH Day	40%	>0.05	NS
		30 TH Day	80%	<0.001	HS
		45 TH Day	90%	<0.001	HS
	15 th Day	30 th Day	66.7%	<0.05	Sign
		45 th Day	83.3%	<0.001	HS
	30 th Day	45 th Day	50%	>0.05	NS
	NS-Not Significant HS-Highly Significant				

Table 4: Multiple comparisons in Tenderness

Post hoc test					
Group	Comparison between		% Change	Sig.	Remarks
Group I (Kshara Karma)	BT	15 TH Day	45%	>0.05	NS
		30 TH Day	80%	<0.001	HS
		45 TH Day	90%	<0.001	HS
	15 th Day	30 th Day	63.6%	>0.05	NS
		45 th Day	81.8%	>0.05	HS
		30 th Day	45 th Day	50%	>0.05
Group II (Agnikarma)	BT	15 TH Day	0%	>0.05	NS
		30 TH Day	50%	>0.05	NS

		45 TH Day	90%	<0.001	HS
	15 th Day	30 th Day	50%	0.05	NS
		45 th Day	90%	<0.001	HS
	30 th Day	45 th Day	80%	>0.05	NS
NS-Not Significant HS-Highly Significant					

Table 5: Multiple comparisons in Hardness

Post hoc test					
Group	Comparison between		% Change	Sig.	Remarks
Group I (Kshara Karma)	BT	15 TH Day	40%	>0.05	NS
		30 TH Day	70%	<0.01	HS
		45 TH Day	85%	<0.001	HS
	15 th Day	30 th Day	50%	>0.05	NS
		45 th Day	75%	>0.05	HS
	30 th Day	45 th Day	50%	>0.05	NS
Group II (Agnikarma)	BT	15 TH Day	50%	>0.05	NS
		30 TH Day	75%	<0.01	HS
		45 TH Day	90%	<0.001	HS
	15 th Day	30 th Day	50%	>0.05	NS
		45 th Day	80%	>0.05	NS

	30 th Day	45 th Day	60%	>0.05	NS
NS-Not Significant HS-Highly Significant					

Table 6: Multiple comparisons in Size of the Wound

Post hoc test					
Group	Comparison between		% Change	Sig.	Remarks
Group I (Kshara Karma)	BT	15 TH Day	43.6%	<0.05	Sign
		30 TH Day	83.6%	<0.001	HS
		45 TH Day	96.3%	<0.001	HS
	15 th Day	30 th Day	71%	<0.05	Sign
		45 th Day	93.5%	<0.05	Sign
	30 th Day	45 th Day	77.7%	<0.05	Sign
Group II (Agnikarma)	BT	15 TH Day	40.7%	>0.05	NS
		30 TH Day	79.6%	<0.001	HS
		45 TH Day	94.4%	<0.001	HS
	15 th Day	30 th Day	65.5%	<0.05	Sign
		45 th Day	90.6%	<0.001	HS
	30 th Day	45 th Day	72.7%	>0.05	NS
NS-Not Significant HS-Highly Significant					

DISCUSSION

Ayurveda being a medical science is formulated on scientific parameter available. This study was aimed at

re-establishing old facts while contemplating newer ideas and comparing their relative efficacy in *Kadara*.

Here, in this study effort is made to know the effectiveness of *Kshara Karma* along with the *Agnikarma* in the management because *Kshara Karma* is mentioned as treatment modality in the *Kshudraroga* as *Kadara* is one of the *Kshudra Roga* and *Kshara* is very important in all *Shastra* and *Anushastra Karma* because, it does *Chedya*, *Bhedy* and *Lekhana Kriya* and *Tridosahara*. *Acharya Charaka* defines *Kshara* as that which scrapes away the abnormal tissues from its deep rooted location, or drags it down after dissolving by its corrosive nature.

Moreover, in this clinical study an effort has been made here to evaluate and compare the role of *Arka PratisaraneeyaKshara* and *Agnikarma* after *Chedana Karma*.

Arka is one among the *Vanaspathi Dravyas* which is easily available mentioned in *Kshara Kalpa Vidhi* of *Sushruta Samhita*. *Arka* is described as having *Katu*, *Tikta Rasa*, *Laghuguna*, *Ushna Veerya*, *Katu Vipaka*, *Tridosha Shamaka*. It acts as a *Kaphavatahara*, *Deepana*, *Bedana*, *Krimigna*, *Vrunahara*, *Vishaghna*, *Kusthaghna*. *Arka Kshara* is one among the *Ksharastaka*. *Arka* is a drug which is available through the year.

While considering the *Gunas* of *Kshara*, it has *Tridoshaghna* property. *Sushruta* says "*Nanoushadhi Samavayat Tridoshagnaha*". Because of the presence of different medicines *Kshara* having the property of alleviating *Vata*, *Pitta*, *Kapha* and reduces pain, burning sensation and itching respectively.

Sodhana and *Ropana* - *Kshara* having cleansing property, it helps for the removal of unhealthy granulation tissues and development of healthy granulation tissues.

Lekhana - Scraping property improves circulation by removing unhealthy tissues.

Krimighna - Because of its antimicrobial property it avoids contamination and infection of the wound by the micro-organism.

It burns the affected tissue completely and avoids recurrence.

When the *Kshara* is applied on the skin or tissue, first there is irritation followed by inflammatory process resulting into oedema, sloughing, dragging pain and pressure pain causing separation of *DustaDosa* and clearing all signs and symptoms of the diseases. The presence of photolytic enzymes is capable for its corrosive, caustic, antimicrobial and bactericidal properties.

Agnikarma pacifies *Vata* and *Kapha Doshas*. When we see the *Nidana* of *Kadara*, *Vata* and *Kapha* are the chief *Doshas* responsible for its manifestation.

Agnikarma helps in decreasing pain by alleviating the vitiated *Vata*. The *Ushna Guna* of *Agni* is helpful to reduce *Sheetha Guna* of *Vata*.

Swedana is capable of decreasing the symptoms and heals easily, as *Agnikarma* is also a *Swedana Karma* heals the lesion completely and there is no recurrence.

Heat increases local circulation and tissue metabolism, reduces pain and enhances inflammation causing vasodilatation, increasing nutrition to the cells and heals the wound completely.

The *Agni* is having *Laghu* and *Ushna Guna* which helps to relieve the *Shrotorodha* and *Kandu* by reducing *Kapha*. For *Agnikarma* as we are keeping the heated *Shalaka* over the excised part, because of the heat it kills the micro-organism also. Along with the unhealthy tissues it burns some healthy tissues also by this it avoid recurrence.

In overall effect of treatment of *Ksharakarma* and *Agnikarma* in both the groups: patient responded excellently in 85 % in *Agnikarma* and 75 % in *Ksharakarma*. And no response to moderate and poor.

CONCLUSION

Aim of the present study is to find out the efficacy and applicability of *Arka Pratisaraneeya Kshara* and *Agnikarma* after *Chedana* in the management of *Kadara*. Based on the above clinical statistical data it

may be concluded as follows; In Group A, *Arka Pratisaraneeya Kshara* and in Group B *Agnikarma* both are having highly significant effect on the management of *Kadara*. There was comparatively marked improvement in Pain, Tenderness, Discomfort and Hardness in the treated Group B, as compared to Group A. Wound healing time of both the groups is highly significant. Recorded observations and results of the study reveals that maximum incidences were found between 30-50 years age gap with maximum male patients of hindu religion and from middle class socio-economic status. At the end of this clinical trial, it was found that both groups are efficient in the management of *Kadara*, but while considering statistical analysis *Agnikarma* is more effective than *Kshara Karma*.

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