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COMPARATIVE STUDY OF SHEETA AND USHNA FORM OF MANJISTHADI LEPA IN MANAGEMENT OF ANKLE SPRAIN

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ABSTRACT :

The history of an ankle sprain is usually that of an inversion-type twist of the foot followed by pain and swelling. An individual with an ankle sprain can almost always walk on the foot, albeit carefully and with pain. Approximately 85% of such sprains are inversion sprains of the lateral ligaments, 5% are eversion sprains of the deltoid or medial ligament, and 10% are syndesmotic injuries. Posttraumatic osteoarthritis is common in patients with repetitive ankle injuries. In context of *Asthi-Bhagna* and *Vrana-Chikitsa*, AcharyaSushruta describes the application of Lepa in condition having Ugra Ruja(severe pain). In classics we do not get direct reference of sprain. Acharya Sushruta in the context of Asthi-Bhagna has mentioned "*Patanabhighatadwa*" which means *Patana*(fall), *Abhighata*(trauma) or both are the main causes for *Shotha(swelling)*, where he has emphasized the use of *SheetaParisheka(cold irrigation)* and application of *SheetaPradeha*(cold application), to reduce *Vedana* and *Shotha*. The study was carried on 40 patients with 20 in each group, namely group A(Sheeta Manjisthadi Lepa application) and group B (Ushna Manjisthadi Lepa application) for seven days. In both groups marked improvement was noted in all patients. Explanation for use of Sheeta lepa is advised in text, an attempt is made to study Ushna lepa in Ankle sprain. Study revealed that Sheera lepa is beneficial acute condition and Ushna lepa in Chronic Ankle sprain.

Key words: Ankle sprain, Manjisthadi lepa, Sheeta, Ushna.

INTRODUCTION:The history of trauma can be anticipated from the date, survival of the fittest. The surgical experience of the ancient age has been compiled systematically in Sushruta Samhita, which is a first documentation of its kind. In day-to-day life, ankle is one among the most common site for acute musculo-skeletal injuries and sprains, which account for 75% of ankle injuries. Acute ankle trauma is responsible for 10-30% of sports related injuries in young athletes. Each year an estimated one million people consult the physicians with acute ankle injuries. More than 40% of ankle sprain have the potential to cause chronic problems[1]. One study estimates that approximately 12% of the overall prevalence of osteoarthritis (OA) is in fact posttraumatic OA of the hip, knee, or ankle. The financial burden is significant, estimated at $3.06 billion dollars annually[2].

Structurally ankle joint has a strong deltoid ligament medially and lateral collateral ligaments laterally, with its three bands. The ankle joint is the only Syndesmosis fibrous joint without a synovial membrane. It is relatively unstable and largely depends on the ligaments for its stability. Ankle pain is most often due to an Ankle Sprain, This is an injury that causes either stretch or tear

of one or more ligaments in the ankle joint. Ankle ligaments are probably the most sprained ligaments in the body.

In classics there are no direct references regarding sprain and its management. Acharya Sushruta in the context of Asthi-Bhagna has mentioned "Patanabhighatadwa" which means Patana, Abhighata or both are the main causes for sprain, where he has emphasized the application of Sheeta Pradeha to reduce Vedana and Shopha[3]. In classics Acharya Sushruta considers Lepa as Adhya Upakrama. In context of Asthi-Bhagna Acharya Sushruta has mentioned about Manjisthadi lepa, which is used in present study[4].

MATERIALS AND METHODS:

Source of Data

Patients attending OPD and IPD of KLE's Shri BMK Ayurved Mahavidyalaya, Belgaum. Karnataka,were selected for the study.

Inclusion criteria:

1.Patients with clinical features of Ankle Sprain.

2.Patients of first and second grade Ankle Sprain.

Grade I – Mild pain
Mild swelling
Mild joint stiffness
Little or no loss of function.

Grade II – Moderate to severe pain
Moderate swelling
Moderate joint stiffness
Moderate loss of function

Exclusion criteria:

1.Patients with fracture and dislocation of Ankle joint.

2. Patients with third grade Ankle Sprain

Grade III – Severe pain
Profuse swelling
Complete joint stiffness
Complete loss of function

Diagnostic criteria:

1. Diagnosis was done based on the history of inversion or eversion of foot and clinical features like – pain, tenderness, swelling, loss of function, discoloration and joint stiffness.
2. Radiographically absence of fracture and dislocation

Indredients of Manjisthadi lepa:

i) Manjistha *ii) Yashtimadhu*
iii) Raktachandana
ii) Shali Pishti *v) Shatadhauta Ghrita.*

Method of preparation of lepa: Sukshma Churna of all the above mentioned ingredients were taken in equal quantity in a bowl and Lepa is prepared by mixing it with cold water and this was applied to patients of Group A/ Sheeta Group.
Similarly in Group B/ Ushna Group the Lepa of above drugs is prepared by mixing it with hot water and was applied to the patients.

Intervention:

Group A – Sheeta Manjisthadi group

Selected patients were examined as per the clinical proforma prepared for the study and subjected to radiographic examination. The patients of this group underwent following procedure.

- The patients were advised for bed rest.
- Foot elevation above heart level was given.
- Freshly prepared Sheeta Manjisthadi lepa was applied over the affected Ankle in the Pratiloma Gati with a thickness of Ardra Maheesha Charma (0.4-0.8 cm).
- The Lepa was kept in situ till cracks were noted or till the patient

complained of stretching sensation, i.e. before it dried completely.

- In all the patients Lepa was applied twice daily and this procedure was followed for one week duration.
- Gradually rehabilitation was advised.

Group B – Ushna Manjisthadi Lepa:

The patients of this group were subjected for following procedure.

- All the patients in this group followed the same above mentioned procedure except that freshly prepared *Ushna Manjisthadi Lepa* was applied in this group.
- *Ushna Manjisthadi Lepa* was applied over the affected ankle joint in the *Pratiloma Gati* (in upward direction) with the thickness of *Ardra Maheesha Charma(wet skin of buffalo).*
- In all patients Lepa(ointment) was applied twice daily and time this procedure was followed for one week.

Follow up study: Patients were examined on initial day zero and further followed daily for one week. Then weekly once follow up for four weeks to note the changes in signs and symptoms of the patients based on the research proforma and also to note whether the relief provided by the therapy was sustained or not or whether there was any relapse.

Assessment Criteria:

Daily assessment of the patient was carried out based on gradings given to

a) Subjective parameters
b) Objective parameters

a) Subjective parameters: To assess the efficacy of the trial preparation or improvement in the clinical symptoms of the disease, different signs and symptoms were arbitrarily graded on the basis of severity.

The Clinical gradations of symptoms are as follows;

1) Pain

- No pain–00
- Localized feeling of pain only during movement–01
- Localized feeling of pain during movement and at rest but not disturbing the sleep–02
- Localized feeling of pain during movement and rest but disturbing the sleep–03

Swelling: Swelling was directly recorded with measuring tape in centimetres and readings were noted at the level of, above the Ankle, the mid of the Ankle and below the Ankle joint, and compared with the measurements of normal limb

2)Tenderness:

- No tenderness –00
- Patient winces on deep palpation–01
- Patient winces on superficial palpation –02
- Patient does not allow to touch the part –03

3)Loss of function:

- Normal function/ Normal gait –00
- Can walk with effort –01
- Can walk with help of support –02
- Cannot walk –03

4)Discoloration:

- NO ecchymosis/discoloration –00
- Ecchymosis / discoloration present –01

5)Dosiflexion:

- Angle of 25^0 –00
- Angle above 15^0 –01
- Angle above 5^0 –02

6)Plantarflexion:

- Angle of 35^0 –00
- Angle above 25^0 –01
- Angle above 15^0 –02
- Angle above 5^0 – 03

7)Adduction:

- Normal movement – 00
- Mild pain (movement with pain) –01
- Moderate pain (movement with difficulty) –02
- Severe pain (movement not possible) –03

8)Abduction:

- Normal movement –00
- Mild pain (movement with pain) –01
- Moderate pain (movement with difficulty) –02
- Severe pain (movement not possible) –03

9)Inversion:

- Normal movement –00
- Mild pain (movement with pain) –01
- Moderate pain (movement with difficulty) –02
- Severe pain (movement not possible) –03

10)Eversion:

- Normal movement –00
- Mild pain (movement with pain) –01
- Moderate pain (movement with difficulty) –02
- Severe pain (movement not possible) –03

Total Effect of the Therapy:

- At the end of the 7 days treatment, the overall effects of the Lepa in both the groups was assessed as follows:
- **Complete Remission:** 100% improvement in all the signs and symptoms was considered as Complete remission.
- **Marked Improvement:** Improvement between 50% and 99% was considered as Marked improvement.
- **Moderate Improvement:** Improvement below 49 % was considered as Moderate improvement.
- **Unchanged:** No improvement in signs and symptoms was considered as Unchanged.

OBSERVATION:

Table 1: Distribution of Ankle Sprain patients according to Grades

Grades	*Patients in number and %*		*Total*	*%*
	Sheeta Group	*Ushna Group*		
Grade I	11 55%	11 55%	22	55%
Grade II	9 45%	9 45%	18	45%

In the series of 40 patients 55% of them had Grade I and 45% of them had Grade II Ankle Sprain.

Table2: Distribution of Patients based on Severity of Ankle Swelling

Severity	*Patients in number and % age*		*Total*	*%*
	Sheeta Group	*Ushna Group*		
Mild	08 40%	08 40%	16	40%
Moderate	05 25%	07 35%	12	30%
Severe	07 35%	05 25%	12	30%

Out of 40 patients 40% suffered from mild swelling while 30% each had moderate and severe swelling.

Table3: Effect of Sheeta Manjisthadi Lepa on Pain of Ankle Joint Paired 't' test

Pain	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	t	P
During Treatment	*I day*	1.87	1.45	21.4%	0.50	0.11	3.63	<0.01*
	III day		0.6	66.8%	0.44	0.27	4.63	<0.001**
	VII day		0.2	88.2%	0.67	0.15	11	<0.001**
Follow-up	II Week		0	100%	0.88	0.2	9.35	< 0.001**
	III Week		0	100%	0.88	0.2	9.35	< 0.001**
	IV Week		0	100%	0.88	0.2	9.35	< 0.001**

Symptoms	Mean score		% of relief	S.D (□)	S.E (□)	't'	'P'
	BT	AT					
Pain	**1.87**	**0.2**	**88.2%**	**0.67**	**0.15**	**11**	**<0.001****
Tenderness	**1.75**	**0.25**	**85.7%**	**0.61**	**0.14**	**10.71**	**<0.001****
Swelling	**24.08**	**22.35**	**7.18%**	**1.04**	**0.23**	**7.52**	**<0.001****
Loss of function	**1.4**	**0**	**100%**	**0.50**	**0.11**	**12.73**	**<0.001****
Discoloration	**0.4**	**0**	**100%**	**0.50**	**0.11**	**3.64**	**<0.01***

**Highly significant, *Significant, SD:Standard deviation, SE:Standard error, BT:before treatment, AT:After treatment

Table4: Statistical analysis showing the result on Clinical features *after one week* treatment with Sheeta Manjisthadi Lepa

**Highly significant, *Significant, SD:Standard deviation, SE:Standard error, BT:before treatment, AT:After treatment

Table5: Statistical analysis showing results of Degrees of foot movements *after one week* treatment with Sheeta Manjisthadi Lepa

Foot Movements	Mean score		% of relief	S.D (□)	S.E (□)	't'	'P'
	BT	AT					
Dorsiflexion	**1.5**	**0**	**100%**	**0.44**	**0.09**	**13.33**	**<0.001****
Plantarflexion	**2.05**	**0**	**100%**	**0.83**	**0.19**	**10.79**	**<0.001****
Adduction	**1.15**	**0**	**100%**	**0.49**	**0.11**	**10.45**	**<0.001****
Abduction	**0.65**	**0**	**100%**	**0.59**	**0.13**	**5**	**<0.001****
Inversion	**1.15**	**0**	**100%**	**0.49**	**0.11**	**10.45**	**<0.001****
Eversion	**0.7**	**0**	**100%**	**0.57**	**0.13**	**5.38**	**<0.001****

**Highly significant, *Significant, SD:Standard deviation, SE:Standard error, BT:before treatment, AT:After treatment

Table6: showing result on Clinical features *after one week* treatment with Ushna Manjisthadi Lepa for Ankle Sprain

Symptoms	Mean score		% of relief	S.D (□)	S.E (□)	't'	'P'
	BT	AT					
Pain	**1.7**	**0.15**	**91.17%**	**0.60**	**0.13**	**11.92**	**<0.001****
Tenderness	**1.5**	**0.2**	**86%**	**0.57**	**0.13**	**10**	**<0.001****
Swelling	**23.8**	**22.13**	**7.06%**	**0.86**	**0.19**	**8.84**	**<0.001****
Loss of function	**1.2**	**0**	**100%**	**0.41**	**0.09**	**13.33**	**<0.001****
Discoloration	**0.05**	**0**	**100%**	**0.30**	**0.07**	**0.71**	**<0.01***

**Highly significant, *Significant, SD:Standard deviation, SE:Standard error, BT:before treatment, AT:After treatment

Table7: showing results of Degrees of foot movements *after one week* treatment with Ushna Manjisthadi Lepa for Ankle Sprain

Foot Movements	Mean score		% of relief	S.D (□)	S.E (□)	't'	'P'
	BT	AT					
Dorsiflexion	**1.25**	**0**	**100%**	**0.44**	**0.09**	**13.33**	**<0.001****
Plantarflexion	**1.6**	**0**	**100%**	**0.68**	**0.15**	**10.67**	**<0.001****
Adduction	**0.8**	**0**	**100%**	**0.62**	**0.14**	**5.71**	**<0.001****
Abduction	**0.4**	**0**	**100%**	**0.6**	**0.13**	**3.08**	**<0.01***
Inversion	**1**	**0**	**100%**	**0.46**	**0.10**	**10**	**<0.001****
Eversion	**0.4**	**0**	**100%**	**0.6**	**0.13**	**3.08**	**<0.01***

**Highly significant, *Significant, SD: Standard deviation, SE: Standard error, BT: before treatment, AT: After treatment

Table8: Comparative study of results of both the groups *after one week* treatment for Ankle Sprain

Characteristics	Sheeta Group			Ushna Group		
Signs and Symptoms	Mean score		% of relief	Mean score		% of relief
	BT	AT		BT	AT	
Pain	**1.87**	**0.2**	**88.23**	**1.7**	**0.15**	**91.17**
Tenderness	**1.75**	**0.25**	**85.71**	**1.5**	**0.2**	**86**
Swelling	**24.08**	**22.35**	**75**	**23.8**	**22.13**	**76.4**
Loss of function	**1.44**	**0**	**100**	**1.2**	**0**	**100**
Discoloration	**0.4**	**0**	**100**	**0.05**	**0**	**100**
Dorsiflexion	**1.5**	**0**	**100**	**1.25**	**0**	**100**

Plantarflexion	**2.05**	**0**	**100**	**1.6**	**0**	**100**
Adduction	**1.15**	**0**	**100**	**0.8**	**0**	**100**
Abduction	**0.65**	**0**	**100**	**0.4**	**0**	**100**
Inversion	**1.15**	**0**	**100**	**1**	**0**	**100**

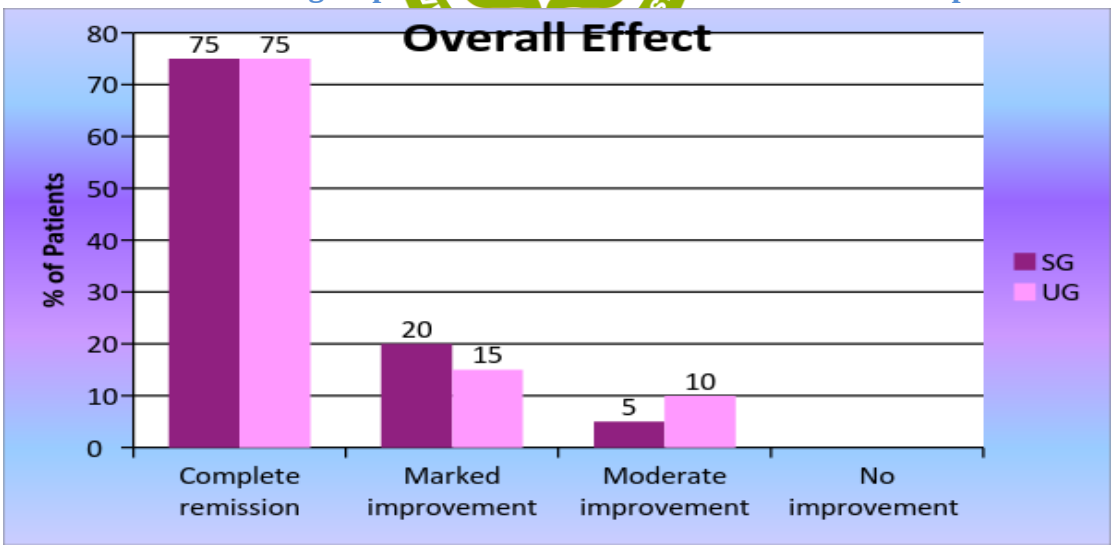
BT: before treatment, AT: After treatment

Table9: Comparative study of results of *follow up* of both the groups in Ankle Sprain

Characteristics	**Sheeta Group**			**Ushna Group**		
Signs and Symptoms	**Mean score**		**% of relief**	**Mean score**		**% of relief**
	BT	**AT**		**BT**	**AT**	
Pain	**1.87**	**0**	**100**	**1.7**	**0**	**100**
Tenderness	**1.75**	**0**	**100**	**1.5**	**0**	**100**
Swelling	**24.08**	**0**	**100**	**23.8**	**0**	**100**
Loss of function	**1.44**	**0**	**100**	**1.2**	**0**	**100**
Discoloration	**0.4**	**0**	**100**	**0.05**	**0**	**100**
Dorsiflexion	**1.5**	**0**	**100**	**1.25**	**0**	**100**
Plantarflexion	**2.05**	**0**	**100**	**1.6**	**0**	**100**
Adduction	**1.15**	**0**	**100**	**0.8**	**0**	**100**
Abduction	**0.65**	**0**	**100**	**0.4**	**0**	**100**
Inversion	**1.15**	**0**	**100**	**1**	**0**	**100**
Eversion	**0.7**	**0**	**100**	**0.4**	**0**	**100**

BT:before treatment, AT:After treatment

Overall results in the both groups after one week of treatment for Ankle Sprain



Overal Result: In groupA(Sheeta Manjisthadi group)-The study showed 88.2% improvement in pain, 85.7% in tenderness, 71.8% in swelling and 100% in loss of function and discoloration respectively. There was marked improvement in all the Parameters of Ankle Sprain with $p<0.001$ after one week treatment.

In groupB (Ushna Manjisthadi group)-The study showed 91.17% improvement in pain, 86% in tenderness, 70.6% in swelling and 100% in loss of function and discoloration respectively. There was marked improvement in all the Parameters

of Ankle Sprain with p<0.001 after one week treatment

Table 10: Total effect of Manjisthadi Lepa in both Groups after one week treatment for Ankle Sprain

Total Effect	Patients in number and %age				Total	%
	Sheeta Group		Ushna Group			
Complete remission	**15**	**75%**	**15**	**75%**	**30**	**75**
Marked improvement	**04**	**20%**	**03**	**15%**	**07**	**17.5**
Moderate improvement	**01**	**5%**	**02**	**10%**	**03**	**7.5**
No improvement	**0**	**0%**	**0**	**0%**	**0**	**0**

DISCUSSION:*Gulpha Marma*(vital points) is present at the junction of *Pada*(foot) and *Jangha*(ankle). It is *Rujakara* Marma(painful point) and produces the symptoms as *Ruja* (pain), *Stabdha Padata* (stiffness of joints) or *Khanjata* (limping) when injured[5], which are similar to the features of Ankle Sprain as pain (*Ruja*), stiffness of joint (*Stabdha Padata*), loss of function *(Khanjata*) and swelling. Generally *Ruja Sthala* is rich of nociceptive nerve endings, which are found abundantly in ligaments, tendons, periosteum and apophyseal joints. Ankle Sprain is mainly caused by inversion (85%). Most commonly anterior talo-fibular ligament followed by calcaneo-fibular ligament. Considering the *Samprapti*(pathogenesis), it is the vitiated *Rakta(blood),* which is causing *Margavarodha*(obstruction) to *Vata*(nerve conduction) producing the *Lakshanas*(symptoms) after the trauma. Hence *Vyadhi Viparita Chikitsa* (symptom opposite treatment) is followed i.e *Sheeta Pradeha*(clod anointment). In the context of benifits of *Pradeha*, Acharya Sushruta emphasizes to use *Pradeha*(clod anointment) at the site of *Marama Stitha Dosha(*vital point seated*)*. So in the present study carried based on the same principle.

Among 40 patients of Ankle sprain 40% where between 15-24 age group, of them 67.5% were female .Occupation wise 37.5% were students and 82.5% belonged to urban area. Mode of injury 80% while getting down the stairs with 85% inversion sprain. In series of 40 patients 55% had Grade I and 45% Grade II form of Ankle sprain.

Mode of action:

The reduction in swelling that accompanies the application of cold therapy following acute injury can be attributed to immediate vasoconstriction of the arterioles and venules, which reduces the circulation to the area and therefore reduces the extravasations of fluid into the interstitium. Heating results in the reduction of tension over the tissues resulting in reduction of pain. It also increases the tissue oxygen uptake by the muscles.

CONCLUSION:

- *Gulpha Marma Abhighata*(ankle vital point injury) can be co-related with Ankle Sprain.
- Seven days application of *Sheeta Manjisthadi Lepa* and *Ushna Manjisthadi Lepa* provided significant relief in the signs and symptoms of the patients of Ankle Sprain.
- The Sheeta Manjisthadi Lepa provided comparatively better relief in pain, tenderness, ankle swelling, loss of function, dorsiflexion, abduction, inversion and eversion of the ankle joint than Ushna Manjisthadi Lepa.

- Both the types of Lepa has shown statistically highly significant result with P<0.001 after one week treatment.
- Complete remission of clinical features in 75% of patients after one week and 100% in the follow up study of both groups was observed.
- Sheeta Manjisthadi Lepa is beneficial in acutesprain while Ushna Manjisthadi Lepa in chronicsprain.

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