



## Research Article

## TO EVALUATE THE EFFECT OF APAMARGA PANIYA KSHARA IN THE MANAGEMENT OF UDARASHULA WITH SPECIAL REFERENCE TO BILIARY COLIC

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### ABSTRACT

**Aim:** To evaluate the effect of *Apamarga paniya kshara* in the management of *Udarashula* with special reference to Biliary Colic.

**Objective:** 1) To find the effect of *Apamarga Kshara* in the management of *Udarashula* with special reference to biliary colic.

2) To review literature regarding *Udarashula* and biliary colic.

3) To establish concept of acute abdomen in Ayurveda and management of it with Ayurvedic principle.

**Method:** 1) Patients were registered with the help of proforma prepared for the study. 2) 20 patients were assigned in a single group for observational study.

**Types of study:** Clinical Study

**Assessment criteria:** Effect of therapy was assessed by the signs and symptoms before and after treatment. It was assessed on the basis of self-formulated scoring scale for Pain, Tenderness, Murphy's sign and Visual analogue scale.

**Period of Study:** All patients were treated with *Apamarga Paneeya kshara* 1 gram twice daily with water for seven days

**Follow Up:** on 15<sup>th</sup>, 30<sup>th</sup>, 60<sup>th</sup>, 90<sup>th</sup> day after completion of treatment.

**Results:** By using *Apamarga paniya kshara* in the management of *Udarashula* with special reference to Biliary Colic showed a significant result.

**Statistical Analysis:** The Statistical Analysis reveals that in the management of *Udarashula* with special reference to Biliary Colic the efficacy of *Apamarga paniya kshara* is effective.

**Conclusion:** *Apamarga paniya kshara* in the management of *Udarashula* with special reference to Biliary Colic showed a positive result.

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### INTRODUCTION

Ayurveda is considered to be the *Upaveda* of *Atharvaveda* and consists of eight divisions dealing with different aspects of science of life and art of healing. The ancient *Acharyas* from centuries had used herbal and mineral products together for preventing and curing various ailments. In the present era, the people are attracted towards Ayurvedic treatment modalities because of its preventive and cost effectiveness. Surgery has been dealt with in detail in

*Sushruta Samhita* when it was in the peak of its glory. On screening for surgical literature it is seen that surgery was very much advanced in ancient India in *Sushruta's* period that opened out many vistas in surgical science. *Sushruta* who was known as "Father of ancient Indian Surgery" had performed several surgeries.

Pain management has given importance since ancient days as pain disturbs normal living of a subject

affected with it. Pain is described as Shula. Different causes of Shula have been described in ancient treatises as a disease or a symptom of disease. Pain due to war injuries and post operative pain management has given importance because of the panic condition which throws patient into a miserable state and seeks immediate relief from pain. *Udarashula* is mentioned as a condition in which there is severe abdominal pain. This is elaborately highlighted in texts like *Sushruta samhita* and *Madhava Nidana* etc. The clinical features of *Udarashula* mentioned in the classics shows resemblance with acute abdomen. Acute abdomen is a challenging job in practice because it requires quick diagnosis and emergency treatment. Biliary colic is one among several different causes for acute abdominal pain. There is excruciating pain produced as a result of impaction of Gallstone in cystic duct. Incidence of Cholelithiasis or Gallbladder stone is increased in present days because of changed food habits and westernization of life style. Due to same reason biliary colic is one among the common acute abdominal conditions. Biliary colic is one of the most important indications for cholecystectomy. Being an invasive procedure cholecystectomy having its own disadvantages like bleeding, injury to surrounding organs, post operative complications like wound sepsis and near about 15% patients suffers from Post-Cholecystectomy syndrome or symptoms. Hence the conservative management of Biliary colic is having great importance. There is various treatment modalities mentioned for the *Udarashula* in the Ayurvedic classics and here an attempt was done to manage an acute abdominal condition with Ayurvedic line of treatment.

The outcome of the clinical study on selected 20 patients entitled "Effect of *Apamarga Kshara* in the Management of *Udarashula* with special reference to Biliary colic" is compiled in the form of this dissertation with the following sections, to give complete picture of the study.

### AIMS AND OBJECTIVES

**Aims:** To evaluate the effect of *Apamarga paniya kshara* in the management of *Udarashula* with special reference to Biliary Colic.

**Objectives:** 1). To find the effect of *Apamarga Kshara* in the management of *Udarashula* with special reference to biliary colic. 2). To review literature regarding *Udarashula* and biliary colic.

3). To establish concept in Ayurveda and management with Ayurvedic principle.

### MATERIALS AND METHODS

In daily practice we encounter with abdominal pain and its management. With the rise in the incidence of Cholelithiasis and Biliary colic, an associated condition with it, there was need to establish a line of treatment for this condition. For the same aim a clinical study was undertaken to evaluate efficacy of a

*Apamarga Kshara* in the management of *Udarashula* with specific reference with Biliary colic.

**Source of data:** Patients with features of Biliary Colic were selected from Outpatient and Inpatient Department of P.G. studies in Shalyatantra, S.D.M. College of Ayurveda and Hospital, Hassan.

**Methods of collection of data:** 1. Patients were registered with the help of Proforma prepared for the study. 20 patients were assigned in a single group for observational study.

### Inclusion criteria

1. Patients presenting with signs and symptoms of Biliary Colic were included for study.
2. Patients were selected in between 16-60 years of age, irrespective of sex, occupation and religion.

### Exclusion criteria

- 1) Patients with conditions like empyema, gangrene of gall bladder, hydrops, carcinoma of gall bladder, mucocele, liver failure, obstructive jaundice, perforation and fistula of gall bladder, acute pancreatitis, gall stone ileus, abdominal colics other than biliary colic were excluded.
- 2) Patients suffering from *Raktapitta*, *Jwara*, *Bhrama*, *Mada*, *Murcha*, *Timira* and those having *Pitta Prakruti*, who are *Bala*, *Vridha* and *Durbala* were excluded

**Diagnostic Criteria:** Diagnosis was established, on the basis of history, signs, and symptoms and investigations. Complete history and clinical evaluation of all the patients, were recorded in a specially designed proforma including both Ayurvedic and modern methods of examination.

**Investigations:** Following investigations were advised to patient during study period:

- Haemogram for- Haemoglobin, Total WBC Count, Differential Count.
- Urine for Bile Salts, Bile Pigments
- Liver function test- Serum Bilirubin, SGPT, SGOT, Serum Alkaline Phosphatase
- X-ray Abdomen (If necessary.)
- Ultra sonography of abdomen.
- Cholangiography (If necessary.)
- C.T. Scan of Abdomen (If necessary.)

**Treatment:** All patients were treated with *Apamarga Paneeya kshara* 1 gram twice daily with water for seven days

**Assessment criteria:** Effect of therapy was assessed by the signs and symptoms before and after treatment. It was assessed on the basis of self-formulated scoring scale for Pain, Tenderness, Murphy's sign and Visual analogue scale.

**Grading for pain**

- Grade 0 : No Pain
- Grade 1 : Patient has pain but he is capable of doing routine work
- Grade 2 : Patient cannot do routine work due to pain
- Grade 3 : Patient rolling over the bed due to pain

**Grading for tenderness**

- Grade 0 : No tenderness on pressure
- Grade 1 : Tenderness on deep palpation with tolerance to pressure
- Grade 2 : Little response to sudden pressure
- Grade 3 : Wincing of face on super slight touch
- Grade 4 : Resist to touch & rigidity

**Grading for Murphy's sign**

- Grade 0 : Murphy's sign absent

Grade 1 : Murphy's sign present

**Grading for Visual analogue Scale:**

In visual analogue scale patient can express the intensity of pain on a graph where 0 to 10 numbers are written on an axis of graph. According to number denoted by patient the readings of Visual analogue scale was graded from Grade 0 to Grade 10.

**Duration of follow up:** Every patient was checked on 15<sup>th</sup>, 30<sup>th</sup>, 60<sup>th</sup> & 90<sup>th</sup> day after completion of treatment.

**OBSERVATIONS**

In the present clinical study 20 patients of *Udarashula* (Biliary colic) were treated with *Apamarga Kshara* administered orally. The general data pertaining to the patients such as age, sex, religion as well as related to the disease is being presented here in the tabular form along with brief description of each observation. Thereafter the results obtained by treating these patients with *Apamarga Kshara* will be presented.

**Table 1: Distribution of 20 Patients of Udarashula (Biliary colic) based on Age**

Age groups in years	No of patients	Percentage
21 -30	4	20
31 - 40	3	15
41 - 50	7	35
51 - 60	6	30

**Table 2: Distribution of 20 Patients of Udarashula (Biliary colic) based on Sex**

Sex	No of patients	Percentage
Male	6	30
Female	14	70

**Table 3: Distribution of 14 female patients of Udarashula (Biliary colic) based on parity**

Parity	No of patients	Percentage
Single	2	14.30
Multi	12	85.70

**Table 4: Distribution of 20 patients of Udarashula based on Socioeconomic Status**

Socioeconomic status	No of patients	Percentage
Poor	8	40
Middle class	5	25
Upper middle class	6	30
Rich class	1	5

**Table 5: Distribution of 20 patients of Udarashula (Biliary colic) based on Occupation**

Occupation	No of patients	Percentage
House wife	12	60
Agriculture	4	20
Coolie	1	5
Teacher	1	5
Advocate	1	5
Self employed	1	5

**Table 6: Distribution of 20 patients of Udarashula (Biliary colic) based on Diet pattern**

Diet	No of patients	Percentage
Veg	8	40
Mixed	12	60

**Table 7: Distribution of 20 patients of *Udarshula* (Biliary colic) based on Religion**

Religion	No of patients	Percentage
Hindu	19	95
Muslim	1	5

**Table 8: Distribution of 20 patients of *Udarshula* based on Place of residence**

Locality	No of patients	Percentage
Rural	11	55
Urban	09	45

**Table 9: Distribution of 20 patients of *Udarshula* (Biliary colic) based on *Deha Prakruti***

<i>Prakruti</i>	No of patients	Percentage
<i>Vatapitta</i>	12	60
<i>Pittakapha</i>	5	25
<i>Vatakapha</i>	2	10
<i>Kapha</i>	1	5

**Table 10: Distribution of 20 patients of *Udarashula* (Biliary colic) based on Pain**

Grades of Pain	No of patients	Percentage
Grade0	0	0
Grade1	0	0
Grade2	8	40
Grade3	12	60

**Table 11: Distribution of 20 patients of *Udarashula* (Biliary colic) based on Tenderness**

Grades of Tenderness	No of patients	Percentage
Grade0	0	0
Grade1	0	0
Grade2	3	15
Grade3	13	65
Grade 4	4	20

**Table 12: Distribution of 20 patients of *Udarashula* (Biliary colic) based on Murphy's sign**

Grades of Murph's sign	No of patients	Percentage
Grade0	12	60
Grade1	8	40

**Table 13: Distribution of 20 patients of *Udarashula* based on Visual Analogue Scale (VAS)**

Grades of VAS	No of patients	Percentage
Grade0	0	0
Grade1	0	0
Grade2	0	0
Grade3	0	0
Grade4	0	0
Grade5	0	0
Grade6	1	5
Grade7	6	30
Grade8	7	35
Grade9	4	20
Grade10	2	10

## RESULTS

20 patients of *Udarashula* (Biliary colic) were treated with *Apamarga Kshara* administered orally in the dose of 1 gm twice a day with water for 7 days. The effects of the *Kshara* on the various parameters were as follow:

### Effect of *Apamarga Kshara* on the Pain

Before treatment all patients had severe abdominal pain with mean score of 2.6. After giving *Apamarga Kshara*, pain was reduced by 48.1% on first day. The quantum of relief further became 65.4% at the end of 2<sup>nd</sup> day, 71.15% on 3<sup>rd</sup> day, 75% on 4<sup>th</sup> day, 88.5% on the 5<sup>th</sup> day, 92.3% on 6<sup>th</sup> day and 96.15% relief was observed on 7<sup>th</sup> day of the therapy. As shown in Table-14 all these effects of the therapy were highly

significant ( $P < 0.001$ ). Before treatment 60% patients had the pain of grade 3 and 40% had Grade 2 pain. After the first day of the treatment, 10% patients had no pain i.e. 0 Grade pain, 45% patients had grade 1 pain and remaining 45% had Grade 2 pain. After two days treatment, 40% patients had grade 0 pain, 35% patient had grade 1 pain, 20% patients had grade 2 pain and only 5% patients had grade 3 pain. After the three days of the administration of the drug, 50% patient had

grade 0 pain, 35% patient had grade1 pain, 5% patients had grade 2 pain and 10% patients had grade3 pain. After five days of treatment 85 % patients had grade 0 pain & 15% patients had grade2 pain but there was no any patient having grade 3 pain. At the end of seven days treatment, 90% patients were found pain free with grade 0 & and remaining 10 % patients had grade 1 pain as shown in Table-15.

**Table -14: Effect of Apamarga-Kshara on Pain of 20 Patients of Udarashula (Biliary Colic)**

Day of treatment	Mean BT	Mean AT	%of relief	S.D.(±)	S.E. (±)	t	P
Day 1	2.6	1.35	48.1	0.79	0.18	7.11	<0.001
Day 2	2.6	0.90	65.4	0.86	0.19	8.79	<0.001
Day 3	2.6	0.75	71.15	0.81	0.18	10.18	<0.001
Day 4	2.6	0.65	75	0.83	0.18	10.56	<0.001
Day 5	2.6	0.30	88.5	0.73	0.16	14.04	<0.001
Day 6	2.6	0.20	92.3	0.68	0.15	15.77	<0.001
Day 7	2.6	0.10	96.15	0.51	0.11	21.79	<0.001

**Table -15: Effect of Apamarga Kshara on Pain Grading in 20 Patients of Udarashula**

Pain grade	BT	Day 1%	Day 2%	Day 3%	Day 4%	Day 5%	Day 6%	Day 7%
0	0	10	40	50	55	85	90	90
1	0	45	35	35	25	0	0	10
2	40	45	20	5	20	15	10	0
3	60	0	5	10	0	0	0	0

**Effect of Apamarga Kshara on Tenderness**

All patients of this series had 3.05 mean degree of tenderness before starting the treatment. But after administration of Apamarga Kshara tenderness highly significantly ( $p < 0.001$ ) decreased by 34.42% after 1 day of treatment, by 59.01% after 2 days, by 67.21% after 3 days, by 80.32% after 4 days, by 83.60% after 5 days, by 88.52% after 6 days and by 95.08% at the end of 7 days of therapy as shown in Table-16. Grade wise consideration of tenderness has been shown in Table-17. Before treatment 20% patients had tenderness of grade 4, 65% patients had grade 3 tenderness & 15% patients had grade 2 tenderness. After one day of the treatment, 30% patients had grade3 tenderness, 40% patients had grade 2 tenderness & 30 % patients had grade 1

tenderness. After two days of treatment with Kshara, 10% patients had grade 3 tenderness, 25% patients had grade2 tenderness, 45% patients had grade1 tenderness while 20% patients had no tenderness i.e. grade 0 tenderness. After the 3 days of the treatment, 10% patients had grade3 tenderness, 10 % patients had grade2 tenderness, 50 % patients had grade1 tenderness & 30 % patients had no tenderness i.e. 0 grade tenderness. After the 5 days of the treatment, 70% patients had no tenderness i.e. grade 0 tenderness, 20 % patients had grade1 tenderness and 10% patients had grade 3 tenderness. At the end of the 7 days of the treatment with Kshara, 90% patients had no tenderness i.e. of grade 0 tenderness. Only 5% patients had grade 1 tenderness and remaining 5% patients had grade 2 tenderness.

**Table 16: Effect of Apamarga Kshara on Tenderness of 20 Patients of Udarashula**

Day of treatment	Mean BT	Mean AT	%of relief	S.D. (±)	S.E. (±)	t value	P value
Day 1	3.05	2	34.42	0.60	0.14	7.76	<0.001
Day 2	3.05	1.25	59.01	0.70	0.16	11.57	<0.001
Day 3	3.05	1	67.21	0.69	0.15	13.36	<0.001
Day 4	3.05	0.60	80.32	0.69	0.15	15.96	<0.001
Day 5	3.05	0.5	83.60	0.76	0.17	15.02	<0.001
Day 6	3.05	0.35	88.52	0.80	0.18	15.07	<0.001
Day 7	3.05	0.15	95.08	0.55	0.12	23.42	<0.001

**Table 17: Effect of Apamarga Kshara on Tenderness Grading of 20 patients of Udarashula**

Tenderness grade	BT %	Day 1 %	Day 2 %	Day 3 %	Day 4 %	Day 5 %	Day 6 %	Day 7 %
0	0	0	20	30	60	70	85	90
1	0	30	45	50	30	20	5	5
2	15	40	25	10	0	0	0	5
3	65	30	10	10	10	10	10	0
4	20	0	0	0	0	0	0	0

**Effect of Apamarga Kshara on Murphy's Sign**

Among 20 patients, 40% patients were presented with positive Murphy's sign. *Apamarga Kshara* provided significant relief in this sign from the two days of the treatment though 37.5% relief was observed after one day of the treatment. In this sign mean relief of 62.5% was recorded after 2 days of the treatment, 75% after 4 days of the therapy and at the end of 7 days of the treatment 87.5% relief was observed. All these effects of the therapy were significant ( $p < 0.005$ ) after the one days on ward as shown in Table-18. Consideration grade wise improvement in Murphy's sign showed that before the treatment 40% patients presented with grade 1

Murphy's sign and 60% patient had grade 0 Murphy's sign. After giving one day treatment with *Apamarga Kshara*, 25% patients had grade 1 Murphy's sign and 75% patient had grade 0 Murphy's signs. After the two days of the treatment, 15% patients had grade 1 Murphy's sign and 85% patient had Murphy's sign of grade 0. It remained the same after the 3 days of the treatment. After the 5 days, 10% patients had grade 1 Murphy's sign and 90% patient had grade 0 Murphy's sign. At the end of seven days of the treatment 95% patients had negative Murphy's sign and only 5% patient had grade 1 Murphy's sign as shown in Table-19.

**Table 18: Effect of Apamarga Kshara on Murphy's sign of 20 Patients of Udarashula**

Day of treatment	MeanBT	MeanAT	% relief	S.D. (±)	S.E.(±)	t value	P value
Day 1	0.4	0.25	37.5	0.37	0.08	1.83	>0.05
Day 2	0.4	0.15	62.5	0.44	0.10	2.52	<0.05
Day 3	0.4	0.15	62.5	0.44	0.10	2.52	<0.05
Day 4	0.4	0.1	75	0.47	0.11	2.85	<0.05
Day 5	0.4	0.1	75	0.47	0.11	2.85	<0.05
Day 6	0.4	0.1	75	0.47	0.11	2.85	<0.05
Day 7	0.4	0.5	87.5	0.49	0.11	3.20	<0.05

**Table 19: Effect of Apamarga Kshara on Grading of Murphy's Sign in 20 Patients of Udarashula (Biliary Colic)**

grade	BT %	Day 1%	Day 2%	Day 3%	Day 4%	Day 5 %	Day 6 %	Day 7%
0	60	75	85	85	90	90	90	95
1	40	25	15	15	10	10	10	5

**Effect of Apamarga Kshara on Visual analogue scale (VAS):** The Table-20 shows the effect of *Apamarga Kshara* on mean score of Visual analogue scale (VAS). The initial mean score of VAS was 4.80, which with one day of the treatment decreased to 3.20 with 40% relief and it was highly significant ( $p < 0.001$ ). After the 3 days of the treatment patients got 70.62% relief and after 5 days of the treatment 87.5% relief. After 7 days of treatment the quantum of relief was 94.4%. The consideration of daily reduction in VAS grading showed that before the treatment, 10% patients had 10 VAS grade, 20% had 9 VAS grade, 35% patients had 8 VAS grade, 30% had 7 VAS grade and 5% patients had the grade 6. After the one day of the treatment 10% patients presented with grade 8 VAS, 15% with grade 7 VAS, 10 % with grade 6VAS, 30% with grade 5VAS, 5% with grade 4 VAS, 15 % with grade 3 VAS, 10 % with grade 2 VAS and 5 % patients had grade 0 VAS. As shown in Table-21, the improvement in VAS grade continued on 3 days onward and after the 7 days of treatment, 5 % patients had grade 5 VAS, 5% patients had grade 4 VAS and 90 % patients had grade 0 VAS.

**Table 20: Effect of Apamarga Kshara on the Score of VAS of 20 Patients of Udarashula**

Day of treatment	Mean BT	Mean AT	%of relief	S.D. (±)	S.E. (±)	t value	P value
Day 1	8	4.80	40	1.88	0.42	7.61	<0.001
Day 2	8	2.95	63.12	2.58	0.58	8.74	<0.001
Day 3	8	2.35	70.62	2.39	0.53	10.57	<0.001
Day 4	8	1.85	76.9	2.11	0.47	13.04	<0.001
Day 5	8	1	87.5	1.75	0.39	17.92	<0.001
Day 6	8	0.5	92.5	1.64	0.37	20.24	<0.001
Day 7	8	0.45	94.4	1.28	0.29	26.46	<0.001

**Table 21: Effect of Apamarga Kshara on VAS Grading in 20 Patients of Udarashula**

VASgrade	BT%	Day 1%	Day 2%	Day3%	Day 4%	Day 5%	Day 6%	Day 7%
0	0	5	40	50	55	80	90	90
1	0	0	0	0	0	0	0	0
2	0	10	10	0	5	0	0	0
3	0	15	10	30	20	10	0	0
4	0	5	10	0	0	0	0	5
5	0	30	10	5	10	0	10	5

6	5	10	0	0	5	0	0	0
7	30	15	10	5	5	10	0	0
8	35	10	5	5	0	0	0	0
9	20	0	5	5	0	0	0	0
10	10	0	0	0	0	0	0	0

**Total effect of Apamarga Kshara on Biliary Colic:** In the present study 20 patients were treated with Apamarga Kshara and the total effect of therapy was estimated on the basis of the patient’s improvement observed in all the symptoms and signs. In this series 90% patients showed complete remission and 5% patients had the marked improvement. Remaining 5% patients showed moderate response to the treatment. As shown in Table-22 none of the patients remained unchanged.

**Table 22: Total effect of Apamarga Kshara on 20 Patients of Biliary Colic**

Relief	No. of Patients	Percentage
Complete	18	90
Marked	1	5
Moderate	1	5
Mild	0	0
Unchanged	0	0

(Complete Relief= 100% Relief, Marked= 75-99% Relief, Moderate= 40-75% Relief, Mild=Below40%Relief, Unchanged= No Relief)

**FOLLOW UP STUDY:** After stopping the treatment the patients were asked to attend the OPD at the interval of 15 days, one month, two months and three months to see whether the improvement provided by the therapy was sustained or not.

**Observations on Pain during the Follow up Period:** On the first follow up of 15 days recurrence of pain was observed in only 10% patients but severity of pain was less. On the 2<sup>nd</sup> follow up of one month though 20% patients reported with pain but still the severity of pain was much less compare to mean pain before treatment. On third follow up of two months, 10% patients were presented with pain. On 4<sup>th</sup> follow up of three months, 10% patients were presented with pain but the severity of pain was less. The details have been shown in Table-23.

**Table 23: Observations on Pain during the Follow up Period**

Follow up	pain Rcrnc patients	%	Mean BT	Mean AT	%of relief	S.D. (±)	S.E. (±)	t value	P value
1 <sup>st</sup>	2	10	2.6	0.1	96.15	0.51	0.11	21.79	<0.001
2 <sup>nd</sup>	4	20	2.6	0.25	90.38	0.59	0.13	17.90	<0.001
3 <sup>rd</sup>	2	10	2.6	0.15	94.23	0.60	0.14	18.12	<0.001
4 <sup>th</sup>	2	10	2.6	0.1	96.15	0.51	0.11	21.79	<0.001

**Observations on Tenderness during the Follow up Period:** In the present study on first follow up of 15 days tenderness was present in the 10% patients but it was much less compare to before treatment tenderness. On 2<sup>nd</sup> follow up of one month 20% patients were present with tenderness but still it was much less compare to before treatment tenderness. On 3<sup>rd</sup> follow up of two months and 4<sup>th</sup> follow up of three months, 10% patients were presented with tenderness which was much less compare to mean tenderness before treatment as per shown in Table-24.

**Table 24: Observations on Tenderness during the Follow up Period**

Follow up	Rcrn in patients	%	Mean BT	Mean AT	%of relief	S.D. (±)	S.E. (±)	t value	P value
1 <sup>st</sup>	2	10	3.05	0.1	96.72	0.51	0.11	25.85	<0.001
2 <sup>nd</sup>	4	20	3.05	0.25	91.80	0.62	0.14	20.34	<0.001
3 <sup>rd</sup>	2	10	3.05	0.1	96.72	0.51	0.11	25.85	<0.001
4 <sup>th</sup>	2	10	3.05	0.1	96.72	0.60	0.14	21.81	<0.001

**Observations on Murphy’s Sign during the Follow up Period:** In present study on first follow up of 15 days only 5% patients were presented with positive Murphy’s sign. On 2<sup>nd</sup> follow up of one month, 10% patients were presented with positive Murphy’s sign. On 3<sup>rd</sup> follow up of two months and 4<sup>th</sup> follow up of three months no patient was presented with positive Murphy’s sign as shown in Table-25.

**Table 25: Observations on Murphy's Sign during the Follow up Period**

Follow up no.	MS positive in Pts.	%	Mean BT	Mean AT	%of relief	S.D. (±)	S.E. (±)	t value	P value
1 <sup>st</sup>	1	5	0.4	0.05	87.5	0.49	0.11	3.20	<0.001
2 <sup>nd</sup>	2	10	0.4	0.1	75	0.47	0.11	2.85	<0.001
3 <sup>rd</sup>	0	0	0.4	0	100	0.50	0.11	3.56	<0.005
4 <sup>th</sup>	0	0	0.4	0	100	0.50	0.11	3.56	<0.005

**Observations on VAS during the Follow up Period:** In the present study on first follow up of 15 days, pain on VAS was present in 10% patients but mean VAS was much less compare to before treatment mean VAS. On 2<sup>nd</sup> follow up of one month, pain on VAS was present in 20% patients but the mean score was much less than mean VAS before treatment. On 3<sup>rd</sup> follow up of two months, and 4<sup>th</sup> follow up of three months, pain on VAS was present in only 10% patients but mean VAS was less compare to before treatment as shown in Table-26.

**Table 26: Observations on VAS during the Follow up Period**

Follow up	VAS pts.	%	Mean BT	Mean AT	Mean difference	%of relief	S.D. (±)	S.E. (±)	t value	P value
1 <sup>st</sup>	2	10	8	0.35	7.65	95.62	1.14	0.25	30.10	<0.001
2 <sup>nd</sup>	4	20	8	0.85	7.15	89.4	1.42	0.32	22.45	<0.001
3 <sup>rd</sup>	2	10	8	0.2	7.8	97.5	1.06	0.24	33.02	<0.001
4 <sup>th</sup>	2	10	8	0.25	7.75	96.9	1.02	0.23	33.99	<0.001

## DISCUSSION

As per available data about *Udarashula*, the ancient *Ayurvedic Acharyas* has mentioned peculiar description regarding this condition and its associated clinical features. The severity of pain as explained in the classics as a penetration by sharp object is identical with pain present in acute abdomen. The associated conditions like difficulty in breathing, sweating, vomiting, burning sensation in the abdomen, restricted movements of abdomen etc. are similar to clinical features present in the different acute abdominal conditions. By the means of this we can understand that the entity of acute abdomen was elaborately described in the ancient Ayurvedic texts.

### *Udarashula* and Biliary Colic

Regarding biliary colic, as there is no any clear description regarding gallbladder and gallstones in the Ayurvedic classics, therefore we cannot get particular disease in Ayurveda with which we can compare biliary colic. But by comparing the severe pain present in the biliary colic, we can consider this condition under the *Udarashula* as it is given as a condition having severe abdominal pain in the Ayurvedic classics. Etiological factors given for *Udarashula* in ancient classics are identical with the etiological factors for cholelithiasis mentioned in modern medicine. Indirectly these factors are responsible for biliary colic as impaction of gallstone causes it. Oily food particles, high cholesterol food are the etiological factors for formation of gallstone. While mentioning etiological factors of *Udarashula* dietic factors have been given importance. In addition to this, disturbance in digestive mechanism, *Doshprakopa*, *Abhighata* and *Dhatukshaya* are also considered as etiological factors for *Udarashula*. This is more wide view regarding etiology and should be utilised for prevention of disease.

In biliary colic fatty food is considered as an initiating factor. *Taila* (oil or oily food) is given as a etiological factor for *Pittaja Shula*. Comparing *Pittaja Shula* with biliary colic oily or fatty food should be considered as a *Vyanjaka Nidana* for it. According to Ayurvedic literature *Vyanjaka Nidana* is considered as precipitating factors for disease. The nature of pain in *Pittaja Shula*, its association with food as pain get aggravated after intake of food; Its associated features like burning sensation, aggravation of pain during mid-day or mid-night, during digestion of food resembles with Biliary Colic. In some patients pain is associated with nausea and vomiting, this resembles with clinical feature of *Kaphaj Shula*. The intermittent aggravation and relief mentioned in *Vataja Shula* is similar to the pattern of pain in the colic.

According to this we can understand that the biliary colic is caused by more than one *Dosha* and not only by *Pitta*, though some author has compared this condition with *Pittajashula*. According to clinical features it can be considered as a *Pitta* predominance condition. There is no clear anatomical description about gall bladder in Ayurvedic *Samhitas* but according to available data *Kloma* can be consider as gall bladder. The position of *Kloma* on right side, near *Yakrit* means liver and its shape like *Tilaka*, also association of features like Jaundice, abdominal pain and formation of *Shila* or stone with its pathology are supportive to our hypothesis that Gallbladder may be considered as *Kloma*. The function of *Kloma* is also given as a reservoir of waste product of Blood. This also goes in favor of Gallbladder as it acts as reservoir of bile which is a by product in the process of disintegration of R.B.C.

Understanding of the concept of *Pitta* is important as present disease selected for study is related with biliary system. The physical characteristics



and qualities of the *Pitta* described in the ancient Ayurvedic texts bears a striking resemblance to hepatic bile. Rather it should be considered collectively with pancreatic secretions as both of them collectively act in the process of digestion. According to the description available such as, an increase of *Pitta* causes yellowishness of urine, feces, eyes, and skin which is seen in jaundice. Regarding *Shakhashrita Kamala*, the non excretion of the *Pitta*, which gives feces its characteristic colour, is responsible for whiteness of *Purisha* (feces). This is similar to clinical features of obstructive jaundice as clay colored stool given. The release of *Accha Pitta* in the digestion looks similar to release of bile in the duodenum. According to all these facts *Pitta* can be considered as the analogue of liver bile. There is no any description available in classics regarding *Pittashmari* or gallstones but there is reference of gallstone formed in the gall bladder of cow. This is important as we can understand the pathology of formation of gallstone was known to Ayurvedic scholars in those days. This is given to explain pathology of *Ashmari* or urinary stone. Based on this we can understand mechanism of pathology of same in gall stones and urinary stones. There are several treatment modalities mentioned in Ayurveda for the management of *Udarashula*. Among all of them *Kshara* should be treatment of choice for its different actions mentioned in the classics, easy preparation, easy availability, easy administration and cost effectiveness. Available treatment modalities in modern medicine are analgesic and antispasmodic drugs which relieves pain for short time period and patients suffers with attacks of biliary colic repeatedly. For the same patient seeks permanent relief and most of the times patients are posted for Cholecystectomy. Recurrent attack of biliary colic is a major indication for Cholecystectomy. Being an invasive procedure cholecystectomy has several disadvantages like bleeding, injury to surrounding organs, wound sepsis etc. and near about 15% patients suffers with post- cholecystectomy symptoms. For the all of these reasons medical management of biliary colic is most important. For the same reason *Apamarga Kshara* was selected for treatment of biliary colic.

**Clinical Study:** In the present study 20 patients of biliary colic (*Udarashula*) were studied. The diagnosis was mainly based on the clinical features of the disease. All the patients were treated with *Apamarga Kshara* administered orally in the dose of 1 gm twice a day for 7 days. Assessment of effect of the drug on the disease was mainly done on the basis of grading given to different parameters like pain, tenderness, Murphy's sign and Visual analogue scale (VAS).

### General Observations

**Age & Sex:** In this series, maximum patients i.e. 35 % were from the age group of 41 – 50. Modern medicine also reported that the incidence of gallstone is high in the 5<sup>th</sup> and 6<sup>th</sup> decades of life. Thus our observations regarding the age are in consistence with available data.

In this study, 70% patients were female and only 30% patients were male. This observation is also support the view of modern medicine that this disease is more common in females. In this series most of the female patients were multi-parous and that may further add to the causation of this disease.

**Social status & Occupation:** 40% patients of the present study were belonging to poor class, 30% patients to the upper middle class and 25% patients to the middle class. Only 5% patient belonged to rich class. Out of 20 patients of this series, maximum i.e. 60% were housewives, 20% were agriculturist and Teachers, Advocates, coolies and self employed were 5% each.

**Diet pattern:** In this study 60% patients were having mixed diet habit and remaining 40% patients were vegetarians. The patients who are taking mixed diet rather non-veg are more prone for developing biliary colic. The reason may be high intake of fat associated non-veg food.

**Prakruti:** Out of 20 patients of this series, 60% were from *Vata-Pitta Prakruti*, 25% patients were from *Pittakapha Prakruti*, 10% from *Vatakapha Prakruti*, while patients from *Kapha Prakruti* were 5%. As per observation, chances of biliary colic are more in patients having *Pittavata Prakruti*. Reason behind this may be combination of *Pitta* which directly related with biliary system and *Vata* which is given as main causative factor for *Udarashula* according to Ayurvedic classics.

**Pain:** Among the 20 patients of this series, 60% patients had Pain of grade 3 and 40% of patients had Pain of grade 2. As per observation more patients were presented with grade 3 pain which was severe in intensity. The accumulation of gallstone in cystic duct results in distension of gall bladder and gall bladder contracts to relieve obstruction. This contraction against obstruction leads to severe pain and for the same reason 60% patients were presented with grade 3 pain.

**Tenderness:** Among the 20 patients of this series, 65% patients had Tenderness of grade 3, 20% patients had grade 4 tenderness and 15% patients were presented with grade 2 tenderness. Most of patients were presented with Grade 3 tenderness because of rise in intra-visceral pressure and inflammation secondary to obstruction.

**Murphy's Sign:** Among the 20 patients of this series, 40% patients were having positive Murphy's sign and remaining 60% patients had negative Murphy's sign. The positive Murphy's sign is indicative of acute cholecystitis, secondary to obstruction. The presence of positive Murphy's sign in the patients of this study showed that 40% of the patients were also having acute cholecystitis secondary to biliary colic.

**Visual analogue scale (VAS):** In this series 35% patients were presented with grade 8 VAS, 30%

patients had grade 7 VAS, 20% patient had Grade 9 VAS, while 10% patients reported with grade 10 VAS and only 5% patients had grade 6 VAS. This indicates most patient were having pain grading in between grade 7 to grade 9 on VAS which was severe in intensity for the reason given above. Visual analogue scale is graph over which 1 to 10 numbers are marked on an axis. Patient can express intensity of pain over this graph. VAS is used worldwide for assessment of pain. As pain is subjective feature but it becomes objective when expressed in number on the graph provided by VAS.

**Effect of *Apamarga Kshara* on the Pain:** The results of this study showed that *Apamarga Kshara* starts providing relief in pain from the very first day of the treatment as it was found reduced by 48.1% on the first day. The drug went on reducing the pain and at the end of 7 days treatment the relief 96.15%, Before treatment 60% patients had grade 3 pain and 40% were presented with Grade 2 pain. On seventh day 90% patients were found pain free with grade 0 and remaining 10% patients had mild pain of grade-1 (Table-14). On the basis of the above results it can be clearly concluded that *Apamarga Kshara* significantly relieves the pain of the patients of biliary colic.

**Effect of *Apamarga Kshara* on Tenderness:** After administration of *Apamarga Kshara*, tenderness started significantly ( $p < 0.001$ ) reducing from very first day of the treatment and it become maximum i.e. 95.08% at the end of 7 days of the drug administration. Before treatment 20% patients had grade 4 tenderness, 65% patients had grade 3 tenderness & 15% patients had grade 2 tenderness. After the 7 days of treatment with *Apamarga Kshara* 90% patients had no tenderness and out of the remaining, 5% patients had grade 2 tenderness and 5% patients had grade 1 tenderness. It indicates that *Apamarga Kshara* significantly start reducing the tenderness from the beginning of drug administration and it become in almost all the cases except two in which it was present mild to moderate grade. So we can say that *Apamarga Kshara* possesses anti-inflammatory action due to which reduction of tenderness occurred.

**Effect of *Apamarga Kshara* on Murphy's Sign:** 8 patients of this series were presented with positive Murphy's sign. *Apamarga Kshara* works in these patients and 37.5% relief was observed on day 1, 62.5% relief on day 3, 75% relief on day 5 and on 7<sup>th</sup> day of therapy 87.5% relief was observed which was statistically significant ( $p < 0.005$ ). As Murphy's sign is indicative of acute cholecystitis, therefore reduction in this sign is indicative action of *Apamarga Kshara* in providing relief in the acute condition of this disease. If there is prolonged obstruction in cystic duct, it results in the inflammation. Tenderness and Murphy's sign were helpful to assess reduction in the inflammation. On the basis of the relief provided by *Apamarga kshara* in both of these conditions, it can be

concluded that *Apamarga Kshara* possesses anti-inflammatory action.

**Effect of *Apamarga Kshara* on Visual Analogue Scale:** In present study *Apamarga kshara* reduced pain based on visual analogue scale grading. On the first day of treatment 40% relief was observed on VAS which was highly significant ( $p < 0.001$ ). On 3<sup>rd</sup> day there was 70.62% relief, on day 5 there was 87.5% relief, and on 7<sup>th</sup> day of treatment there was 94.4% relief. On the basis of this we can conclude that *Apamarga kshara* was efficiently reduced pain expressed by patients on VAS graph. By using visual analogue scale it was found that patient can more easily express the intensity of pain on the graph provided by VAS. The reduction of pain is also assessed on the same graph and using of this means was found to be easy for assessment of subjective criteria on objective parameters.

**Total effect of *Apamarga Kshara* on Biliary Colic:** After the 7 days of the treatment with *Apamarga Kshara* 90% patients got complete relief. Out of the remaining, 1 patient (5%) got marked relief and 1 patient (5%) got moderate relief. If we look on the time taken for complete relief, on 3<sup>rd</sup> day 20% patients got complete relief, which increased to 65% patients on 5<sup>th</sup> day and finally 90% patients got complete relief.

**Observations of the follow up study:** Follow up of the patients was done for three months. On first follow up of 15 days 10% patients were reported with recurrence of biliary colic, but the severity of signs and symptoms were less in severity compare to before treatment status. On 2<sup>nd</sup> follow up 20% and on 3<sup>rd</sup> and 4<sup>th</sup> follow up 10% patients were reported with recurrence of biliary colic. In these patients also the severity of clinical features was much less compare to before treatment observations. Cause behind this may be the long lasting effect of *Apamarga Kshara*. *Apamarga Kshara* pacifies all the *Dosha* involved in this condition. The tendency of obstruction in the biliary tract which is root cause behind the pathology of Biliary colic may be reduced due to properties of *Apamarga Kshara* and for the same reason Biliary colic is not recurred in many patients. In patients reported with recurrence, the severity of clinical features found less which also indicates *Apamarga Kshara* has effect on the pathology of biliary colic.

**Probable mode of action of *Apamarga Kshara*:** Properties of *Kshara* mentioned in classics are *Katu* and *Lavana Rasa*, *Ushna Virya* and it acts as *Tridoshghna*. *Kshara* have *Ushna Virya* but it acts as *Pitta Shamaka* due *Prabhava*. *Dahana*, *Pachana*, *Darana*, *Vilayana*, *Shodana* and *Ropana* are the actions of *Kshara*. Properties of *Apamarga* are *Katu* and *Tikta Rasa*, *Laghu*, *Ruksha* and *Tikshna Guna*, *Ushna Virya*, *Katu Vipaka* and it is *Kapha- Vata Shamaka* and *Kapha- Pitta Samshodhaka*. According to properties given about *Apamarga* and *Kshara* we can understand both are having actions on all the three *Dosha*. As per *Samprapti* of *Udarashula* given in the classics, there are all the

three *dosha* takes part in the pathology. As *Kshara* is *Tridoshghna* it pacify all the *dosha* simultaniously. *Kshara* acts in diffrent modes as *Pachana*, *Darana*, *Vilayana* and *Shodana* are its actions which are helpful in removing *Sanga* i.e. obstruction which is prime cause behind pathology. According to meaning, *Kshara* is one, which scrapes the abnormal tissue from its location and destroys it after dissolving it, because of if its corrosive nature. *Apamarga Kshara* may be relieving obstruction as after administration of it, pain and tenderness reduced along with other signs and symptoms of disease. *Apamarga* is given as *Shothghna* and *Vedana Shamaka* in *Ayurvedic* classics. In recent *Ayurvedic* texts its effect on cholangitis and gallstones is highlited. These properties are also helpful to relief biliary colic. In a study conducted on guinea pigs *Apamarga* showed spasmolytic action against various spasmogenes on intestine and uterine muscle. The anti-spasmodic action of *Apamarga* may be the reason behind the action of *Apamarga Kshara* on biliary colic.

### CONCLUSION

In this study total 20 cases of *Udara Shula* (Biliary colic) were treated with *Apamarga Paneeya Kshara*. On the basis of observation and results of the study following conclusions can be drawn:

- Patients were presented with nausea, vomiting, severe pain abdomen, burning sensation etc. were similar to the features of *Udara Shula* given in the classics.
- The clinical features of *Pittaja Shula* show more resemblance with biliary colic.
- *Kloma* can be considered as Gall bladder according to available *Ayurvedic* literature regarding site, shape and function of it.
- Administration of *Apamarga Kshara* promptly reduces the pain in biliary colic patients shows spasmolytic action.
- After taking *Apamarga Kshara*, tenderness & Murphy's sign is relieved significantly this shows its anti-inflammatory effect.
- Recurrent attacks of biliary colic is not seen in three months follow up study.
- *Apamarga Kshara* is economic, easily available, better acceptable, non invasive and long lasting effect.

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