

## Medicinal treatment of multiple renal calculi (*Hisat-E-Kulyah*) and bilateral ureteric calculi (*Hisat-E-Halib*) by Unani Pharmacopoeial formulations – A Case Study

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### Abstract

*Hisat-e-Kulyah* (nephrolithiasis) is one of the most common urological diseases affecting approximately 15 % population worldwide and about 2.3% population of India. It results from a complex process of several physicochemical events including supersaturation, nucleation, growth, aggregation and retention with the kidney. A kidney stone is a hard crystalline mineral material formed within the kidney or urinary tract. Various dietary, non-dietary and urinary risk factors contribute to their formation. High fluid intake and adopting healthy lifestyle measures are some of the cost-effective measures in preventing renal stones. The present paper deals with a case study was conducted on a 13 years old male having multiple calculi (8-10) in left kidney and bilateral ureteric stones, were treated with *Qurs-e-Kaknaj*, *Qurs Kushta Hajrul Yahood*, *Sharbat-e-Bazoori Motadil*. The efficacy of the drugs was assessed based on subjective and objective parameters. Ultrasonography (USG) of the abdomen was performed at baseline and after treatment of 1 month. The follow-up observation was 1 week and the duration of the study was 4 weeks. The clinical improved response was excellent and significant after 7 days of treatment. USG finding was suggestive of the absence of any calculus in the left kidney and ureter after 1 month of Unani treatment without any surgical intervention. The formulations were found to be safe, effective and to prevent urinary supersaturation of lithogenic substances.

**Keywords:** Diuretic Activity; Lithotriptic Activity; Renal Stone; Ureteric Stone; Unani Medicine

### 1. Introduction

The urinary stone disease was first noticed by Egyptian mummies dated to 4800 BCE in human being history. Hippocrates in the 4<sup>th</sup> century BCE noted renal stones together with a renal abscess and wrote in the Hippocratic Oath "I will not cut the stone [1]." Urolithiasis is one of the most common urological diseases affecting approximately 15 % population worldwide and about 2.3% population of India [2]. It is more prevalent in men than women with a peak incidence of 20 years and 40 years [3]. It is a multicomplex process that results from supersaturation of solute in urine, nucleation, growth, aggregation and retention within the renal tubules [4]. *Ibn-e-Sina* (Avicenna) described that the stone is formed in the kidney by *Quvat-e-Fayelah* (active power) which is the raised temperature rather than the normal temperature of the kidney, and *Maaddat-ul-Hisat* (lithic matter) which is a vicious and sticky substance, may be either phlegm or viscous blood or pus. When the expulsive power of the kidney becomes weak due to altered temperament, hot inflammation or ulcer, then despite excreting out they are retained in the calyces of the kidney. Thus, the lithic substance dried by the *Quvat-e-Fayelah* (active power) of the kidney to form crystal and gradually becomes stone [5]. Once recurrent, the subsequent relapse risk is raised and the interval between recurrences is shortened [6]. Spontaneous passage of small ( $\leq 5$  mm) urinary stones has been reported in several studies, but large stones almost always require urological intervention which can be treated with ureteroscopy, extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotomy (PCNL) and surgery. [7,8] Since ancient times the urolithiasis is treated through

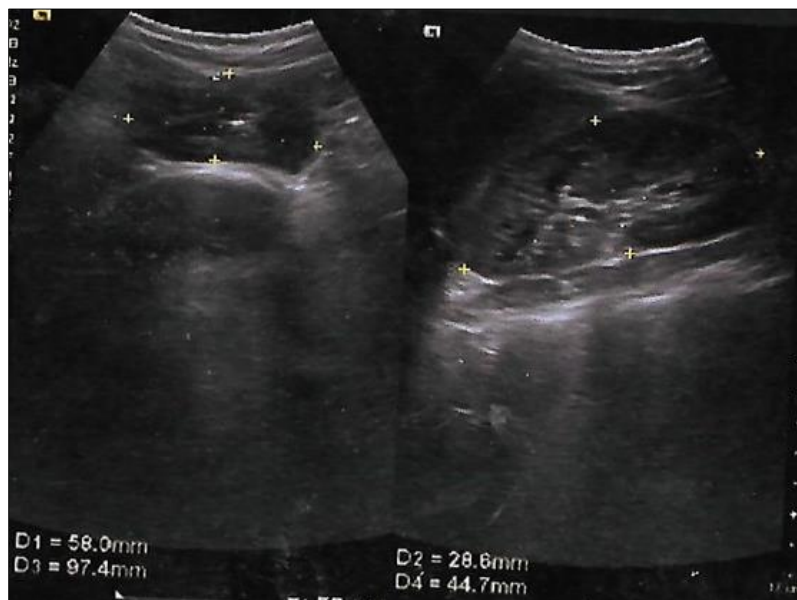
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Unani therapy with herbo-animo-mineral origin medicines traditionally to avoid surgery by adopting principles like excessive hydration, *Tafteet-e-Hisat* (Litholytic / Lithotriptic), *Idrar-e-Baul* (Diuresis), *Tahleel-e-Waram* (Resolution), along with *Taqwiyat-e-Kulyah* (Nephroprotective) [9].

## 2. Material and methods

### 2.1. Case Presentation

A 13 years old male child visited to Government Unani Dispensary, Bheemganj Mandi, Kota North, Rajasthan, India, for the treatment of urolithiasis. He was suffering from recurrent colicky pain in right and left iliac region of the abdomen, radiating towards the suprapubic region, scrotum, tip of penis and thigh, associated with nausea, vomiting, and increase the frequency of urination, dysuria, and sometimes burning micturition with foul-smelling in the last 2 months acutely, while he affected from nephrolithiasis for 11 years and previously involved when he was just 2 years old. He had no history of Diabetes Mellitus, Hypertension, blood transfusion, any operation or any other systemic ailment. His family history of nephrolithiasis was negative.

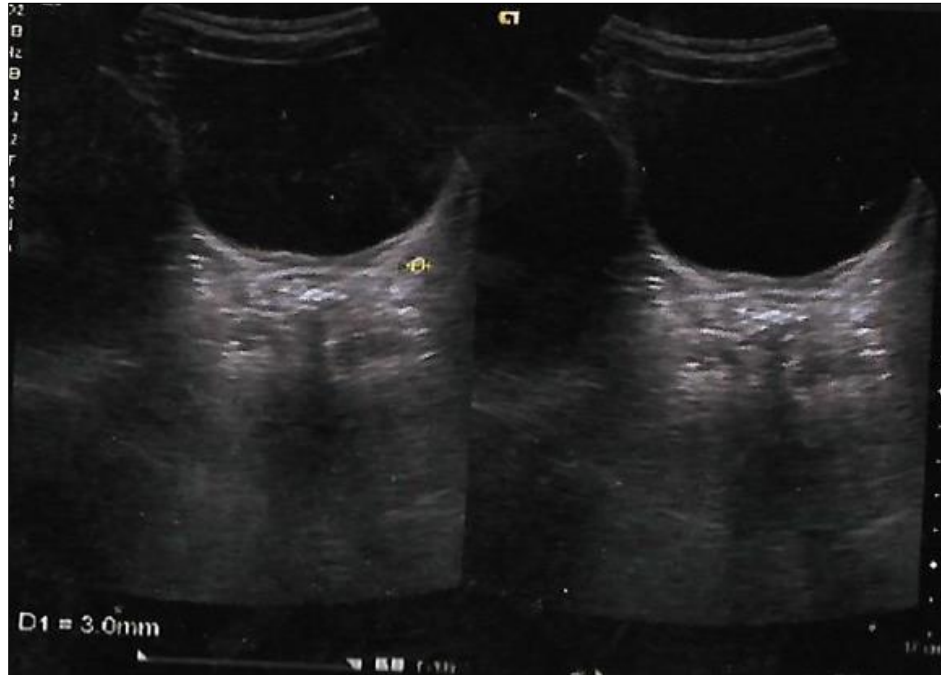


**Figure 1A** Right Small Ectopic Kidne and Left Kidney containing Multiple (8-10) tiny calculi of 3-4mm

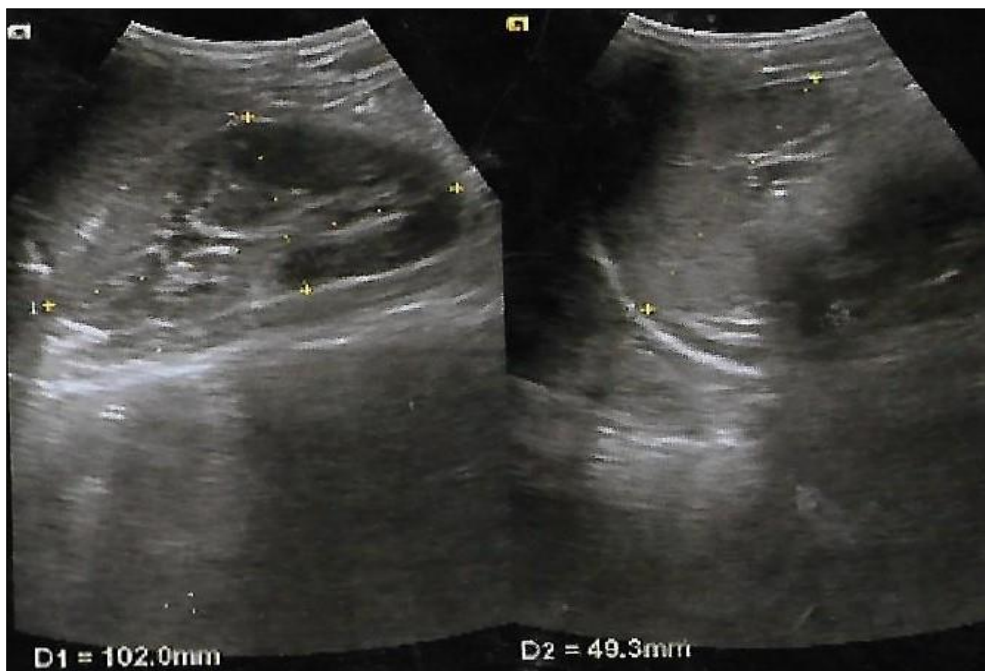


**Figure 1B** Right Ureteric Calculus

His personal history was taken also as shown in Table 1. His vitals were found normal as shown in Table 2. On systemic examination of the abdomen, no sign of any abnormality was found. The diagnosis was confirmed by Ultrasonography (USG) scan; findings were suggestive of the relatively small ectopic right kidney containing multiple (8-10) tiny calculi of size 3-4 mm in calyces (Figure 1A), a calculus of 4.5 mm size at uretero-vesicular junction of the right ureter, (Figure 1B), and calculus of sizes 3 mm at uretero-vesicular junction of left ureter (Figure 1C). Informed written consent has been taken from the patient before starting treatment.



**Figure 1C** Left Ureteric Stone



**Figure 2A** No Calculus in Left kidney



**Figure 2B** No Calculus at uretero-vesicular Junction of Right and Left Ureter

## 2.2. Therapeutic Intervention

The patient advised to take 2 tablets of *Qurs Kaknaj*, 2 tablets of *Qurs Kushta Hajrul Yahood*, and 20 ml of *Sharbat Bazoori Motadil* twice a day on empty stomach with plain water. The follow-up observation was one week and duration of study was 4 weeks. Efficacy of the drugs was evaluated assessing the subjective and objective parameters as shown in Table 3, Table 4A & Table 4B. All Unani drugs prescribed were pharmocoepeial and marketed by GMP certified Company, Hamdard, New Delhi prepared as per *Bayaz-e-Kabir*, Volume II [10].

**Table 1** Personal Information

<b>Age/Sex</b>	<b>13yrs/Male child</b>
Religion	Islam
Occupation	Student
<i>Mizaj</i> (Temperament)	<i>Damwi</i> (Sanguinous)
Blood group	A +ve
Dietary Habits	Mixed
Water Intake	1-3 Glasses per day
Appetite	Normal
Salty food	Prefer moderately
Spicy food	Medium
Non-vegetarian	Weekly / mostly chicken
Milk	300 ml per day
Bowel Habits	constipation
Urine	Inadequate volume
Sleep	8-10 hours
Any Addiction	None

**Table 2** Vitals & General Examinations

<b>Vitals</b>	
Pulse Rate	82/min
Respiratory Rate	18/min
Blood Pressure	118/78mm/Hg
Temperature	98.6°F
<b>General examinations</b>	
Built	Lean thin
Gait	Normal
Pallor	Absent
Icterus	Absent
Cyanosis	Absent

**Table 3** Assessment Criteria

<b>Subjective Symptoms</b>	<b>Gradation</b>			
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Pain in Flank	No pain	Bearable pain, medicines not require	Bearable pain and require oral medication	Unbearable pain
<i>Ushr-ul- Bol</i> (Dysuria)	No dysuria	Occasional dysuria	Regularly medicine not required	Regular dysuria, required medication
<i>Ih'tibas-ul-Baul</i> (Retention of Urine)	No Retention	Occasional retention	Regular partial retention	Regular complete retention
<i>Kasrat-e-Bol</i> (Increased Frequency of Micturition)	Up to 6 times	7-9 times	10-12 times	>12 times
<b>Objective Symptoms</b>				
Size of Stone	No change	<5mm	5-10 mm	>10 mm
No of stone	No change	1 stone	2 stones	≥ 3 stones

**Table 4A** Efficacy of the Drugs on Subjective Parameters

<b>Symptoms</b>	<b>Pre-Treatment</b>	<b>Post Treatment</b>
Pain in Flank	3	0
<i>Ushrul Bol</i> (Dysuria)	3	0
<i>Bol-ud-Dam</i> (Hematuria)	1	0
Turbid Urine	3	0
<i>Kasrat-e-Bol</i> (Increased Frequency of Micturition)	3	0

**Table 4B** Efficacy of the Drugs on Objective Parameters

Symptoms	Before Treatment	After Treatment
Size of Stone	1	0
Number of stones	3	0

### 3. Results and discussion

The clinical improvement was excellent and significant after 7 days of treatment, while examining radiologically after 1 month, Ultrasonography (USG) scan findings were impressive of no evidence of any calculus in the left kidney (Figure 2A) and ureter of both sides (Figure 2B). All Unani pharmacopeial formulations were found to be safe, effective and to prevent urinary supersaturation of lithogenic substances. The beneficial amelioration of these formulations can be exhibited through a combination of litholytic and lithotriptic, diuretic, antispasmodic, anti-inflammatory activities present in their phytoconstituent.

*Qurs Kaknaj* has been indicated as a diuretic (*Mudirr-e-Bol*), litholytic (*Mufattit-e-Hisat*), lithotriptic (*Mukhrij-e-Hisat*), renal and urinary bladder wound healer [11, 12]. Its chief constituent *Habb-e-Kaknaj* (*Physalis alkekengi* fruit) is commonly used since ancient times in Unani Medicine as a diuretic, lithotriptic, anti-inflammatory and nephroprotective [13-14]. *Kushta Hajrul Yahood* is useful as a diuretic and a lithotriptic [13, 15]. *Kushta Hajrul Yahood* is a rich source of Magnesium hydroxide [Mg(OH)<sub>2</sub>], which reacts with Calcium Oxalate Calculus and forms Magnesium oxalate soluble complex, this process consequently helps in reducing the concentration available for Calcium Oxalate precipitation [16]. *Sharbat Buzoori Moatadil* is mainly expressed as a diuretic (*Mudirr-e-Bol*) and is claimed to have an anti-urolithiatic agent. It can prevent the recurrence of stone formation by forming soluble calcium compounds with citric acid. It also has an alkalizing effect [11, 17]. Its chief ingredient *Beikh-e-Kasni* (*Cichorium intybus* root) possesses anti-inflammatory and nephroprotective activities [18, 19]. *Tukhm-e-kheera* (*Cucumis sativus*) was revealed to have anti-urolithiatic activity by hastening the process of dissolving the stones in the kidney. It prevents oxalate-induced lipid peroxidation and causes regeneration of renal epithelium [20].

Khan et al determined that *Qurs Kaknaj*, *Qurs Kushata Hajrul Yahood*, *Arq Kasni* and *Sharbat Buzuri Moatadil* orally are safe and effective for the treatment of a single calculus of 16 mm at the mid pole of the right kidney and multiple calculi of 7-11 mm at calyces of left kidney, in a 33 years old male patient as he got free from stone after 60 days of Unani treatment [21]. In another study, Khan demonstrated that *Qurs Kaknaj*, *Kushta Hajrul Yahood*, *Jawarish Zaruni*, *Sharbat Buzoori Motadil* and *Sharbat Aloo Balu* as oral administration are safe and more effective in a 25 years old male patient associated with the right ureteric stone of 8 mm size, as flushed out in three broken parts at 6<sup>th</sup> day of Unani treatment [22]. Khan et al reported that *Qurs Kaknaj*, *Qurs Kushata Hajrul Yahood*, *Jawarish Zaruni*, and *Sharbat Buzuri Moatadil* orally are safe and effective for the treatment of multiple calculi (10-12) of size 3-4 mm in left kidney and a single stone of sizes 4.5 mm at lower end of left ureter in a 36 years old male patient as he relieved from stones after 4 months of Unani treatment [23].

### 4. Conclusion

The need of the hour is to develop an effective, safe and standardized Unani formulation for the management of urolithiasis. The present study shows that Unani Pharmacopeial Drugs; *Qurs Kaknaj*, *Qurs Kushta Hajrul Yahood*, and *Sharbat Buzoori Motadil* are safe and effective in the treatment of *Hisat-e-Kulyah* (Renal Stone) as these de-crystallizes and helps in flushing out the urinary stone. Hence, these Unani formulations can be the best medicinal treatment option for *Hisat-e-Kulyah* (Renal stone) and *Hisat-e-Halib* (ureteric calculus) with no adverse effect to avoid surgery. Further systemic research with large sample size is needed to validate the efficacy of drugs with a good interdisciplinary approach.

### Compliance with ethical standards

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*Disclosure of conflict of interest*

Authors declare that there is no any conflict of interest.

*Statement of informed consent*

Informed consent was obtained from the patient included in the study.

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