



## POLYCYSTIC KIDNEY DISEASE-CHRONIC KIDNEY DISEASE AND IT'SAYURVEDIC CLINICAL SUCCESSIVE STORY

Vimarsha S.<sup>1\*</sup> and Abdul Khader<sup>2</sup>

<sup>1</sup>PG Scholar, Department of PG studies in Kayachikitsa, Sri Kalabyraveswaramy Ayurvedic Medical College and Hospital & Research Centre, Bengaluru.

<sup>2</sup>MD, Ph. D. (Ayu) Professor, Department of PG studies in Kayachikitsa, Sri Kalabyraveswaramy Ayurvedic Medical College and Hospital & Research Centre, Bengaluru.

**\*Corresponding Author: Dr. Vimarsha S.**

PG Scholar, Department of PG studies in Kayachikitsa, Sri Kalabyraveswaramy Ayurvedic Medical College and Hospital & Research Centre, Bengaluru.

Article Received on 23/10/2021

Article Revised on 13/11/2021

Article Accepted on 03/12/2021

### ABSTRACT

Polycystic Kidney Disease is an inherited disorder characterized by cystic expansion of the Kidneys producing progressive Kidney enlargement and renal insufficiency, in addition to various extrarenal manifestations. The disease can be inherited in Autosomal Dominant and Recessive forms in which Autosomal Dominant Polycystic Kidney Disease (ADPKD) is characterized by slow but progressive enlargement of the kidneys with Renal failure occurring by the fifth to sixth decade of Life. The disease occurs in approximately 1:400 to 1:1000 people and accounts for 5% to 10% of all cases of End-Stage Renal Disease. The available treatment modalities in conventional system of medicine are still evolving and no satisfactory results has been found and also it has been reported to have various sideeffects showing its own limitations in the condition like ADPKD-CKD. Considering those, Alternate remedies for curing and curbing the disease progression are being worldwide welcomed. Though in *Ayurveda*, there is no specific reference available for this disease, we can compare the disease on the basis of general signs and symptoms. In this regard *Ayurveda* provides leads through its holistic line of management by incorporating dietary & lifestyle invention and bio-balancing effects of *Ayurvedic* Treatment and Drugs. Hence the Present case study was taken up to draw the possible understanding of the disease in terms of *Ayurveda* and a therapeutic protocol with promising result totally treated through *Ayurveda* has been discussed.

**KEYWORDS:** Autosomal Dominant Polycystic Kidney Disease, End-Stage Renal Disease, CKD, *Ayurveda*.

### BACKGROUND

Autosomal Dominant Polycystic Kidney Disease (ADPKD) is the most common monogenic kidney disease which is characterised by progressively enlarged bilateral fluid-filled cysts. Enlarging cysts destroy the structure of nephrons, ultimately resulting in the loss of renal function eventually leading to End-stage renal disease (ESRD) in adults by fourth to sixth decade of age.<sup>[1,2]</sup> The disease is a consequence of mutations in PKD1 or PKD2, encoding polycystin 1 (PC-1) in approximately 85% of cases and polycystin 2 (PC 2) in approximately 15% of cases, respectively. The course of the disease is characterized by multiple growing cysts in bilateral kidneys. The cysts are derived mainly from renal tubular epithelium. As the cyst gets larger, the cysts compress the normal renal parenchyma, thus resulting in the destruction of the normal renal structure and function.

ADPKD was first described more than 300 years ago. Population-based epidemiologic studies with ascertainment of autopsies have estimated that ADPKD affects 1 in 400 to 1,000 live births,<sup>[3]</sup> or 12.5 million

people worldwide in all ethnic groups. Other studies based on clinical registry data suggest lower prevalence rates, ranging from 1 in 543 to 1 in 4,000. ADPKD affects both sexes equally and occurs in all ethnicities.<sup>[4]</sup> It accounts for 5% to 10% of patients with End-Stage Renal Disease, making it the fourth leading cause of kidney failure and constituting a major health burden.<sup>[5]</sup> In the United State, incidence rates of ESRD due to ADPKD are higher in men than in women (8.2 compared to 6.8 per million, respectively).

In *Ayurveda*, there is no specific reference available for this disease and is also not fairly known in *Ayurveda* which proclaims that naming of disease is not necessary but the mainstay of incorporating appropriate therapeutic intervention includes in accessing the *dosha*, *dushya*, *prakriti*, *vaya*, *adhishtana*, *rupa* along with the *Bala* of the disease and the patient. It is also indicated that there is a description of all emerging diseases in *Ayurveda* which are explained under various contexts which needs to be analysed based on the symptoms and also it is not necessary all the time that a disease will have all the

symptoms. It depends upon the *Yukti* of the physician to derive an exact correlation of the disease as per *Ayurveda* parlance and arrive at a correct conclusion. And also one should not hesitate to consider and treat the unnamed disease.<sup>[6]</sup> *Ayurveda* considers *Vrikka vikara* as the diseases related to kidney organs. The vitiation of *Tridoshas* in the body leads to morbidity and vitiation in the *Tridoshas* of *Mutravaha Srotas* leading to *Vrikka vikaras* i.e; Kidney Diseases.

Although many treatment protocols has been adopted in the management of Polycystic Kidney disease in the conventional medicine however it still remains unrewarded with many side-effects and not satisfactory results. Hence its management is difficult and challenging task faced by the Conventional medicine. *Ayurveda* through its totalistic and holistic measures helps in the management of such kind of disease. Hence, the present case study was taken up with the aim to understand this disease in ayurvedic perspective and also in management of such diseases. This article is a small beginning in this regard wherein the potential of *Ayurveda* can be peeped vividly.

#### **Current Treatment and Its limitation that require to establish Safe and Holistic treatment through *ayurveda***

The treatment Strategies for ADPKD in conventional medicine shows no effective treatment presently and the existing drugs have their own limitations. And the management measures are focussed mainly on managing the complications of the disease and not only on slowing the cyst development or preventing progression to Kidney Failure. At Present, TOLVAPTAN, the first FDA-approved drug is available clinically which acts as a V2R antagonist, and functions by downregulating intracellular cAMP level to inhibit the abnormal proliferation in ADPKD kidneys. However, a signal of liver toxicity risk emerged with Tolvaptan application which is marked by extremely elevated ALT level and need to be carefully monitored during the therapy Another family of drugs are the analogs of somatostatin, lanreotide and octreotide which slow the progression of ADPKD by inhibiting the chlorine channel. However they did not show any significant effect on the renal function in clinical trials. In addition, Interventions to the abnormal signaling pathways, metabolic & dietic approach are also regarded as possible strategies for ADPKD drug development. Few includes, mTOR inhibitors (everolimus and sirolimus), Metformin (an agonist of AMPK), 2-deoxy glucose (a glucose analog that can paralyze the glycolytic pathway), tyrosine kinase inhibitors (bosutinib and tasevatinib) are all reported to retard cyst growth in ADPKD patients to different extent. But none of these drugs mentioned above is considered as satisfactory therapeutic agents for their drawbacks such as unstable effects on slowing the progression of the disease, little effect on the loss of renal functions and because of severe liver toxicity exhibited. And also with progressive end-stage disease, restoration of Kidney

function can only be possible with dialysis or Kidney transplant which is very expensive and may not be affordable by all. Therefore searching for effective, stable and safe medicines is imperative. *Ayurveda* is a medical system using complex treatment approaches in which combination of different treatment elements exerts synergistic effects and is benevolent for the outcome.

#### **Prognosis of ADPKD**

The Prognosis in patients with ADPKD covers a wide spectrum. ADPKD causes a progressive renal dysfunction, resulting in grossly enlarged kidneys eventually leading to Kidney Failure by the fourth to sixth decade of Life. There is an inverse association between the size of Polycystic Kidneys and the level of glomerular filtration.<sup>[7,8]</sup> Until age 40 to 60 years, Kidney function may remain within the normal range making GFR ascertainment less useful in monitoring the disease in its early stages.

#### **Medical history**

The summarized form of medical case history of the patient was as follows:

A 46 years old Female Patient by name Hamsaveni with the history of Polycystic Kidney disease with a known case of HTN and dyslipidemia approached to the Out Patient department of *Kayachikitsa* at *Sri KalabyraveshwaraSwamy Ayurvedic Medical College Hospital & Research Centre, Vijayanagar, Bangalore* on 15/02/2021 with OPD No-I7187 & IPD No -1043/21 with complaints of pain in the right flank region and lower back region since many years but aggravated severely since past 15 days and also the pain aggravates during activity and on cough. Patient also complaints of difficulty in breathing, puffiness of face, Loss of appetite, generalised weakness and reduced urinary output.

According to the Patient words, Patient was apparently normal 10 years back later one day she had complaint of frequent onset of High grade Fever with chills, increased frequency of micturition associated with blood, loss of appetite, nausea, fatigue, pedal oedema, puffiness of face and also had complaint of pain in the Right Hip joint & thigh region which was associated with difficulty to sit and get up off for which she visited Victoria Hospital for the evaluation, where she was treated with antipyretics & analgesics and was put on oral medications as a symptomatic management of the undergoing condition of the patient for 5 days. But the patient didn't find any relief hence she was advised to undergo for few Blood Investigations and USG abdomen & pelvis scanning after a week where it showed the impression of Polycystic Kidney disease and hence was diagnosed as ADPKD. She was then treated accordingly for the condition and found symptomatic relief.

After 5 years patient had complaints of pain in temporal region on & off throughout the day, pain was dullache in nature associated with heaviness in head region and

giddiness and consulted nearby Hospital where she underwent vitals monitoring, ECG and Blood investigations. Blood Pressure was found to be 180/100mmhg and thereby Physician diagnosed as Hypertensive and with Dyslipidemia and was prescribed with anti-hypertensive and antihyperlipidemic drugs since then regularly.

Patient had visited other hospitals for its management but there was no improvement found, hence approached SKAMCH & RC, Bengaluru for the further management.

#### Negative history

No history of Diabetes Mellitus, Thyroid dysfunction, Tuberculosis, Bronchial Asthma, Cardiac Ailments.

#### Purva vyadhi Vruttanta/ Past history

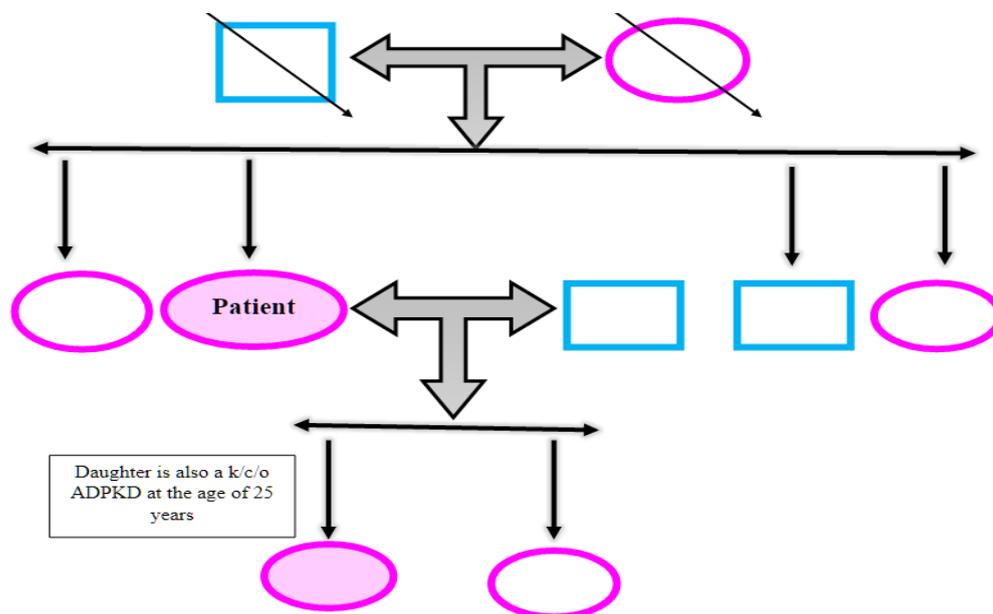
Patient had a surgical history of Tubectomy 20 years back and of Hysterectomy one year back.

#### Chikitsa Vruttanta/ Medicine history

Patient was on following medications  
Tab Zurig 40mg 1-0-0; Tab Amlong 5mg 1-0-1; Tab Atorvastatin 5mg 0-0-1; Tab Elcitol 0.25mg 1-0-1; Tab Lanum 1-0-1; Tab Becozinc 0-1-0; Injection Iron once in 3 months; Injection Anfoe 10000IU once every two weeks.

#### Family history

No any relevant family history. But the patient's daughter is also a known case of Polycystic Kidney Disease.



#### Clinical examination

On General Examination, the patient was moderately built and nourished with fair general condition. Temperature was afebrile, Blood Pressure measured 150/90 mm of Hg, Pulse rate was 82 beats/ min with Respiratory rate of 18 cycles/min. She had a slightly coated tongue, with massive Pallor and Pedal oedema with Facial puffiness. on examination bulbar conjunctiva, the Icterus was absent. Central Cyanosis, Digital clubbing, and cervical & mandibular lymphadenopathy were absent.

#### Physical examination

General Condition of the patient was Fair with Moderately Built and Nourished; Tongue was slightly coated; Pallor was massively Present; Icterus, Cyanosis, Clubbing was Absent; Pedal oedema with pitting type in Bilateral limbs and facial puffiness was present, Cervical and mandibular Lymph nodes was not palpable. The patient Height was 4.9 feet with Weight of 60kgs. Thus, BMI was 25.6.

#### Systemic examination

##### Central nervous system

Patient was Well oriented to person, place and time with intact higher mental functions; All Cranial Nerve examinations Intact; Motor System was Intact with Normal Deep Tendon Reflexes ; Sensory System was Intact with normal Sensory functions of touch, pain, temperature & pressure; Both Superficial and Deep Tendon Reflexes were Normal.

##### Cardio-vascular system

Shape of the Chest is Bilaterally symmetrical with no scar marks, distended blood vessels over neck & chest seen on Inspection; Apex beat felt at 5th left Intercostal space medial to mid Clavicular line on Palpation; Cardiac dullness heard on left side on Percussion; S1 S2 heard with No abnormal murmurs or added sounds heard on Auscultation

##### Respiratory system

Bilaterally symmetrical with normal movement of chest on breathing with no any scar and no abnormal pulsation

seen on Inspection; Trachea Centrally placed and No any local tenderness and palpable mass felt on Palpation; Normal Resonate note over lung fields except cardiac dullness heard on Percussion; Bilateral Normal vesicular breathe sounds heard on Auscultation.

#### Musculo-skeletal system

Gait was normal; All Range of movements of all joints was possible except Hip Joint and Spine. Temperature, Pain and Swelling of both Right & Left Hip joints was absent. Range of Movements of Hip joint with Flexion & Extension was Possible with Pain; Adduction & Abduction was Possible with difficulty and Pain; Internal Rotation was Possible whereas External Rotation was Possible with difficulty and Pain. Curvature of Spine seemed to be Normal with the Range of movement of Spine with Flexion & Extension Possible with Pain within the normal range of movements and Lateral Bending Possible with Pain. Superficial and Deep Tendon Reflexes appeared to be Normal.

#### Gastrointestinal system

Normal Scaphoid shape of Abdomen with surgical scar mark and stretch marks seen in lower abdomen on Inspection; Soft, Tenderness present over Right iliac region and Right Hypochondrium region, more over Right flank and less severe over left. Costovertebral tenderness present over Right and Left Costovertebral angle on Palpation. On Deep Palpation, enlarged Renal masses with irregular consistency was palpable in the same. Bilaterally enlarged ballotable kidney was elicited through Ballotment of Kidney. Tympanic sound heard in all quadrants of abdomen on Percussion; Bowel sounds 7 per minute heard on Auscultation.

#### Urogenital system

Examination of Genitalia on Inspection, Pubic hair showed normal hair growth pattern, Clitoris-Labia was normal and healthy. No mass felt externally. Per Vaginal examination includes examination of Cervix which on palpation was anteverted, firm, mobile, no cervical motion tenderness was felt, absent bleeds on touch, Lateral and Posterior fornices were free and non-tender. Per speculum examination Cervix OS showed normal, healthy with no white discharge per vagina, no cervical erosion, no congestion visualised.

#### Local examination

On Inspection, overlying skin was smooth, shiny, taut and hairless, no normal skin wrinkles was seen. Absence of normal dorsal finger joint creases, loss of normally appearing edges of medial malleoli. Rubor was absent and Tumor was present. On Palpation, pitting type of oedema was seen on the dorsum of foot, 5 cms above medial malleoli and shin of Tibia. Feeling of "Valleys b/n hills" was noticed. Pit Refilling time i.e; PRT was more than 50 seconds. Dolor and Calor was absent. Peripheral pulse examination of Dorsalis pedis and Tibialis posterior was feeble bilaterally. Stemmar's sign

was negative on both foot. Assessment of oedema-Circumference at the level of medial malleolus was 18cms on the right and 19cms on the left with an indentation on pressure of about 4mm in right and 5mm in left lasting for >50 seconds. Fullness of extremities was present in both the foot.

#### Vayaktika Vruttanta/ Personal history

Patient was taking Mixed Diet with habits of taking coffee 3 to 4 times in a day. Sleep was disturbed usually and patient had a habit of doing *Divaswapna* i.e; Day sleep for about 1 to 2 hours daily. Patients Bowel habits was constipated (once in 2 days) & irregular and Micturition was less output with frothy urine, used to pass 3 to 4 times in a day and one time in the night hours.

#### Rajo & Prasava Vruttanta/Gynaecological & Obstretic history

Patient attained Menarche at the age of 13 years; Patient had regular menstrual cycles every month with the average flow for about 3-4 days with mild abdominal pain associated with cramps. No abnormal vaginal bleeding and discharge was seen. Patient had a marriage life of 14 years with obstretic history of G2 P2 L2 A0 D0 with Normal Full term Vaginal Delivery.

G1- Female/ 30 years/ Normal Full term Vaginal Delivery; G2- Female/ 26 years/ Normal Full term Vaginal Delivery; Hysterectomy was done in the year 2020

#### Investigations revealed

##### Blood Report: HB%- 10gm %

Urine Analysis with microscopic studies showed the presence of 20-30/ hpf pus cells and presence of Albumin +++. Serum Biochemistry including Renal function Test, Liver Function Test, Electrolytes, Calcium, Phosphorous and alkaline phosphatase was normal. Blood Urea, Creatinine, Potassium level was increased from the normal ranges. Sodium level was slightly decreased from the normal range.

USG Abdomen & Pelvis Impression showed Bilateral Polycystic Kidney with Right kidney involving Cortex and Medulla measuring about 16.7 cms and Left Kidney measuring about 17.2 cms. Parenchymal thickness of both Right and Left Kidney showed about 1.8 cms.

#### Ashtavidha pareeksha (Eight fold examination)

- *Nadi* – Kapha Vata
- *Mala* - Vibhadda and irregular
- *Mutra*- Alpa and Phenila
- *Jihva*- Lipta Jihwa
- *Shabda*- Prakruta
- *Sparsha*- Anushna Sheeta
- *Drik*- Heena
- *Akruti* - Madhyama.

**Dashavidha pareeksha (Ten fold examination)**

- **Prakruti** - Kapha Vata
- **Vikruti** - Kapha Pradhana Tridoshaja

**Hetu** – Katu Teekshna Ahara Sevana, Snigdha- Guru Ahara Atisevana, Divaswapna, Matruja beejabhagaavayava dushti

**Dosha**- Kapha Pradhana Tridoshaja

**Dushya**- Rasa, Rakta, Mamsa, Meda

**Desha**- Jangala desha

**Kala**- Shishira Rutu

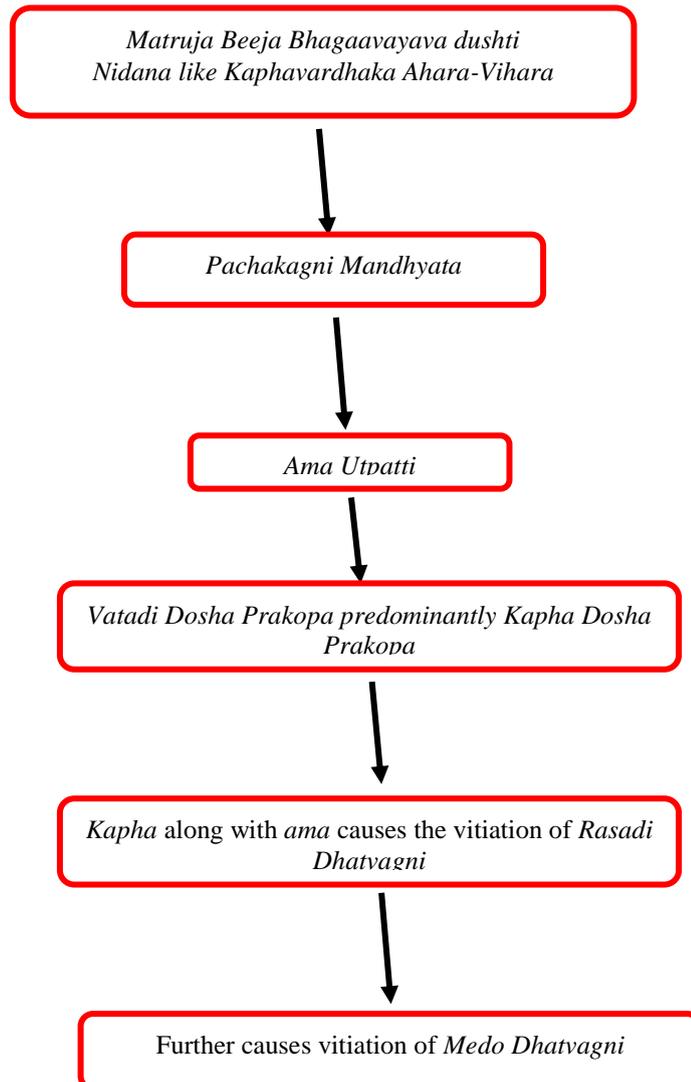
**Bala**- Avara

- **Sara**- Madhyama
- **Samhanana** -Madhyama
- **Satmya** - Ekarasa Satmya
- **Satva** - Madhyama
- **Pramana** - Madhyama
- **Aahara shakti** –

**Abhyavaharana shakti**- Avara

**Jarana shakti**- Avara

- **Vyayama Shakti** -Heena
- **Vaya** – Madhyama

**Samprapti-****Roga pareeksha-nidana**

- **Matruja Beejabhagaavayava dushti**
- **Guru, Snigdha, Katu- Teekshna, Abhishyandi Ahara Ati-Sevana, Divaswapna,**
- **Katu Teekshna Ahara Sevana, Snigdha-Guru Ahara Atisevana**

**Poorvarupa**

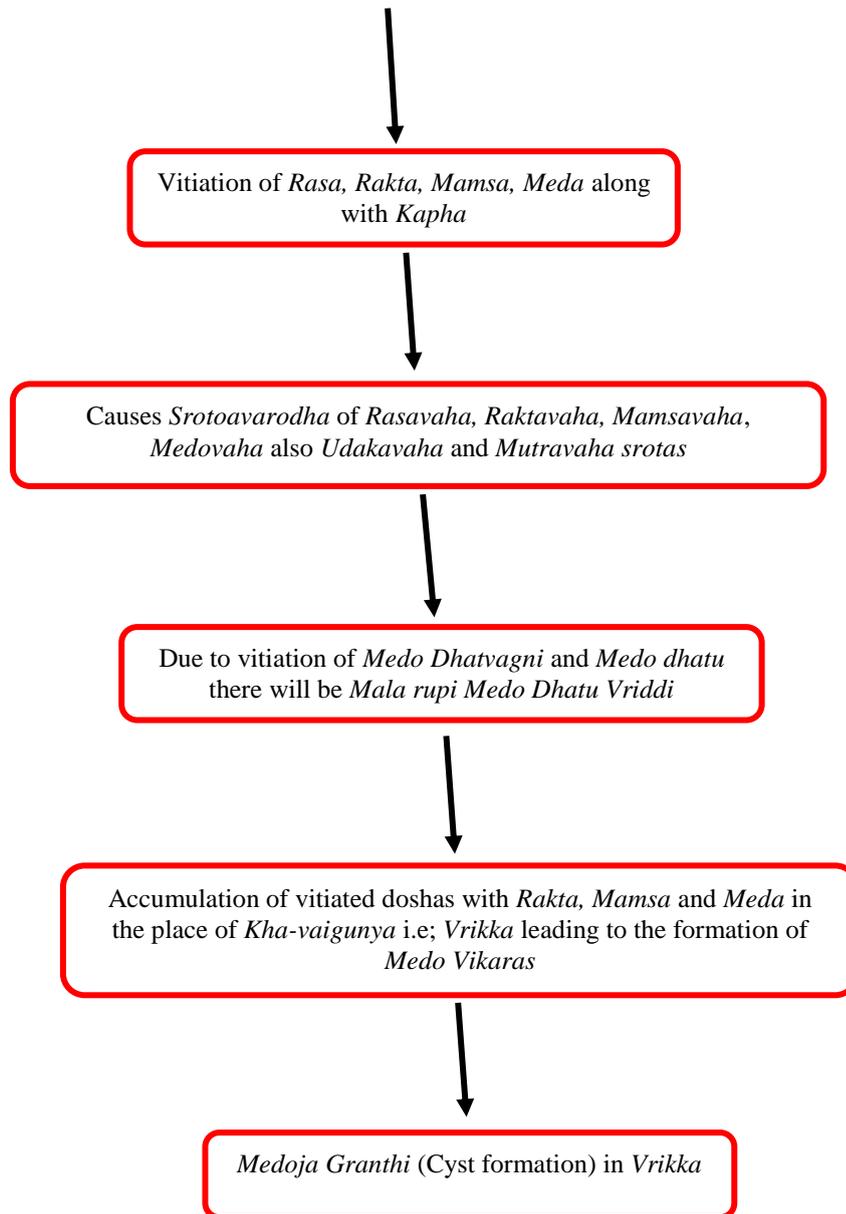
- **Avyakta** i.e; Nothing Significant symptoms was noticed.

**Rupa**

- Pain in the right flank region, lower back region, pedal oedema, puffiness of face, difficulty in breathing, loss of appetite, generalized weakness and reduced urinary output with frothy urine

**Samprapti**

The Probable pathology involved in this disease is depicted below following *Samprapti Ghatas* mainly associated with the disease pathogenesis-



#### Samprapti ghataka

- **Dosha-** Kapha Pradhana Tridosha
- **Dushya-** Rasa, Rakta, Mamsa, Medo Dhatu
- **Agni-** Jataragni Mandhya Janya Ama, Dhatwagni Mandhya Janya Ama
- **Agni dushti-** Jataragni Mandhya, Dhatwagni Mandhya
- **Srotas-** Udakavaha, Rasavaha, Raktavaha, Medovaha, Mutravaha Srotas
- **Srotodushti-** Sanga, Vimarga gamana, Sira Granthi
- **Udbhava Sthana-** Pakwashaya
- **Vyakta Sthana-** Sarvanga
- **Vyadhi Marga-** Madhyama Rogamarga
- **Adhishtana-** Vrikka
- **Sadhya asadhyata-** Yapy

#### Vyadhi Nirnaya/ Diagnosis

Based on History, Physical Examination and Investigations, the case was diagnosed as ADPKD-CKD

and Matruja Adibalapravrutta Vrikka Medoja Granthi in Ayurveda.

#### Treatment given at the time of admission

After thorough physical and systemic examination along with laboratorial investigations, the patient was admitted in Female Semi-Special ward and the following Ayurvedic treatment was given for 14 days from 15/02/2021 to 28/02/2021-

- 1) Kati basti with Murivenna taila and Kottumchukkadi taila
- 2) Sarvanga Udwartana with Triphala Churna, Kolakulathadi Churna and Manjishta Churna
- 3) Sarvanga Takradhara with Musta Kwatha Churna, Amalaki Kwatha Churna, Asanadi Kwatha Churna and Takra
- 4) Triphala- Dashamoola Niruha Basti- 240ml

**Orally**

- 1) *Veeratharadi Kashaya*
- 2) *Varunadi Kashaya*
- 3) *Pippalyasava*
- 4) *Bhringarajasava*
- 5) Tab. *Shilapravanga* with gold 1-0-1 After Food
- 6) Cap. *Cruel plus* 1-0-1 After Food

8tsp- 8tsp- 8tsp Before Food

**Diet**

Patient was adviced to restrict salty, fried, spicy, heavy

and oily food items and protein rich diet during the course of treatment.

The Treatment response was assessed on the basis of clinical symptomatology and relevant investigations after a course of medicines for 15 days and significant improvement was found in the associated symptoms and relevant investigations.

**Investigation wise results**

Sl. no.	Investigation	Before treatment 15/02/2021	After treatment 29/02/2021
01.	Hb (gm%)	10.0 gm%	10.8 gm%
02.	Blood urea (mg/dl)	96.3 mg/dl	75.23 mg/dl
03.	Serum creatinine (mg/dl)	8.2 mg/dl	5.21 mg/dl
04.	Serum sodium (meq/l)	136.8 mmol/l	139.2 mmol/l
05.	Serum potassium (meq/l)	6.2 mmol/l	4.3 mmol/l
06.	Urine analysis- Albumin	Present- +++	Nil
07.	Urine analysis- Pus cells	10-20/ hpf	5-10/ hpf

**Mode of action of the treatment**

*Ayurveda* offers a comprehensive approach in the treatment of ADPKD-CKD where there is already *beejabhaga avayava dushti* of *Vrikka* and by advising abstinence from the causative factor i.e; *Nidana Parivarjana*. Management of Systemic Derangements i.e; *Bheshaja Chikitsa* aims at treating *Amotpatti* by increasing *Jatharagni* thereby removing *Srotorodha*.

*Kati Basti* is a procedure in which comfortably warm medicated oil is kept over the lumbosacral area with the help of a specifically formed frame ring prepared from black gram powder.<sup>[9]</sup> It is considered as *bahirparimarjana chikitsa* which is a part of classification of *Basti*<sup>[10]</sup> helps to relieve pain, stiffness, swelling and inflammation in the low back, also in the bones & soft tissues of low back. It increases blood circulation to the affected area and also pacifies the morbidity of *Vata*, *Pitta* and *Kapha* in the affected joints, muscles and soft tissues thereby improving the movement and strengthening the muscle in the affected area. It also causes sweating, helps the release of toxins and brings about lightness & a sense of health in the affected joints, muscles and soft tissues showing its high effectiveness in the management of pain. But the importance of procedure lies in the usage of medicated oils having analgesic and anti-inflammatory properties. Content of *Murivenna taila*<sup>[11]</sup> may be subdivided into two categories one having *Ushna Virya*, *Tikta-Katu-Madhura rasa*, *Laghu-Ruksha-Tikshna guna* and the other one having *Sheeta Virya*, *Madhura-Katu rasa*, *Guru-Snigda guna* when administered by *Kati Basti*, acts as a *Snehana* and *Swedana*. Thus locally at *Kati Pradesha* it does *dosha vilayana*, *Kledana* due to *taila* application and *Srotovishodhana*, *Swedapravartana* due to its warm temperature.<sup>[12]</sup> *Murivenna taila* is *Vata Shamaka* hence it relieves pain, stiffness, tenderness and gives muscle strength. The active principle in *Murivenna*

*taila* provides synergistic action in relieving the symptoms which is due to the add-on effect of the same and also the anti-inflammatory effect of it which has been proved experimentally and clinically is found to reduce pain, tenderness and swelling. The overall effect of *Murivenna* is *Tridosha Shamana* mainly *Vata Shamaka* which is found to be very effective in relieving pain, stiffness, tenderness and thereby provides muscle strength. And more than this *Yoga prabhava* of the drug acts significantly. *Kottumchukkadi Taila*<sup>[13]</sup> has *Tikta-Katu rasa*, *Laghu-Ruksha guna*, *Ushna Virya*, *Katu Vipaka* due to which it does *dosha vilayana* and *srotoshodhana* which helps in relieving *margavarana* of *vata* thereby reducing the pain. *Shothahara* (Anti-inflammatory) and *Shoolahara* (Analgesic) action of the ingredients present in this *taila* has been found to relax local stiffness by physical effect of heat thereby reducing pain and inflammation.

*Udwartana* is a procedure of rubbing dry powder over the body with tolerant pressure in opposite direction of hair roots. It helps in *Kapha* and *Meda vilayana*. It is a type of *rukshana karma* where *Vayu Mahabhutapradhanyata* is observed thereby it does *shoshana karma* by removing excess of water and fat. To enhance the *medo vilayana karma*, *Triphala churna* and *Kolakulathadi churna* having *Katu-Tikta rasa*, *Ushna virya*, *Laghu-Ruksha-Tikshna guna* is used. Due to this property of *dravya* and procedure, it acts as *Medohara* and also helps in absorption of *Kleda* which is beneficial in combating the *Samprapti* of ADPKD disease condition.

*Sarvanga Takradhara* is a specialised *Panchakarma* therapy in which medicated *Takra* is processed with medicinal herbs is used in the form of an external remedy which is continuously poured over the full body in a specific manner. It is one of the forms of *Rukshana Karma* which is highly effective in alleviating the

disorders of *Mutra doshas* and *Vataadidosha prakopaavastha*. *Takra* contains all *Pancha rasa* except *Lavana rasa* and is *Ushna Virya*, *Amla Vipaka* and has *Vata-Kapha nashaka* properties which is useful in the management of the condition. It consists of ingredients like *Amalaki*<sup>[14]</sup> and *Musta*,<sup>[15]</sup> *Asanadi* which has anti-inflammatory and anti-oxidant properties which helps in combating the pathogenesis associated with this disease condition.

*Samshodhana Chikitsa* is helpful in removal of morbid *Doshas* which thereby helps in achieving equilibrium of *Doshas* in the body. *Basti* being the best modality of treatment helps in preventing recurrence and further progression of disease and also it is mostly effective on *Pakvashaya* in which urine formation is carried out<sup>[16]</sup> *Ayurveda* emphasizes the importance of *Trimarma* (*Sira*, *Hridaya* and *Basti*) which are to be protected, if not it may lead to death. *Basti Marma* although structurally similar to bladder but here the entire renal functioning is to be considered among which kidneys plays a major and vital role. So, considering *Basti Marma* is affected in ADPKD-CKD and keeping in mind importance of *Marma Paripalana*, *Basti Karma* can be considered as the best treatment of choice. And also In ADPKD, there is gradual loss of nephrons which further deteriorates the condition leading to ESRD, so there is definite involvement of *Vata Dosha* which are leading to degenerative changes in Kidney. So *Basti* being the best modality in treatment of *Vata Vikaras* may play an excellent role here in controlling the further progression of disease.

#### Probable mode of action of *Basti* can be understood by following mechanisms

- By absorption mechanism
- By system biology concept
- By neural stimulation mechanism
- By excretory mechanism.

Pharmacodynamics outcome of *Basti Karma* may be due to functioning of the one or combined effect of all the four mechanisms.<sup>[17]</sup> *Kashaya Basti* is hyper osmotic solution which causes movement of solvent from cells of colon to the lumen containing *Basti dravya* facilitates the absorption of endotoxin and produce detoxification during elimination.<sup>[18]</sup> This is probably how *Basti* expels toxins from the body and cleanses colon. Intestines being highly innervated, *Basti Dravya* stimulates the nerve ending of rectum and colon thereby activating autonomic nervous system and thus helps in excretion of vitiated *Doshas* and *Malas*.

Here, *Triphala Kashaya Basti* is used as it has *Medohara*, *Lekhana* and *Medo Upashoshana* properties which may reduce the increased *Kapha* and *Meda* and simultaneously pacify the *Vata dosha* which is the main aggravating factor in the pathogenesis of *Medoja Granthi* in *Vrikka* which is a *Meda Pradhana Kaphaja Vyadhi* by virtue of its *Pancha rasa* except *Lavana*, *Laghu-Ruksha*

*guna*. *Dashamoola Kashaya* consists of *Laghu* and *Brihat Panchamoola* which has properties like *Ama pachana*, *Kapha-Pitta-Anila hara* and *Jwarahara*<sup>[19]</sup> and it is also mentioned under *Shvayathu hara dashemani gana*.<sup>[20]</sup> It also has rich source of gallic acid, tannins which exhibits anti-oxidant, anti-inflammatory and detoxification activities. It acts as *Rasayana*, by its *tridosahara* and *amapachaka* action it helps in rejuvenating damaged capillaries apart from improving blood circulation and GFR. *Dashamoola Kashaya* has *Ushna virya*, *Tikta Kashaya*, *Madhura rasa*, *Laghu guna*, *Tridosha prashamana*, *anaha hara* and *Mutrala Properties*<sup>[21]</sup> hence its usage as *Basti* acts as *Tarpana*, *Ama pachaka*, *Balya*, *Rasayana* and does *Sroto shodhana* thereby helps in rejuvenation of damaged capillaries and further stops its progression thus acting beneficial in combating this diseased condition and also in its clinical features.

Kidney i.e; *Vrikka* is *Matruja Avayava* and it is *Rakta Meda Pradhana*, so we need drugs which not only helps in *Basti Shodhana* and *Rakta Prasadhana* but also not *Teekshana* in nature. So this Combination of *Triphala* and *Dashamoola Kashaya Basti* not only does *Basti Shodhana* but also helps in regeneration of tissues of Nephrons which can be helpful in the patients of ADPKD-CKD to stop its further progression.

#### ➤ *Varunadi kashaya*<sup>[22]</sup>

*Varunadi Kashaya* is a formulation which consists of *Varuna*, *Gokshura*, *Shunti* and *Yavakshara* possess all the needful properties like *Kaphahara*, *Lekhana*, *Mutrala*. The ingredients of the compound pacify the *Kapha dosha* and *Medo dhatu* by virtue of their *Ruksha Guna*, *Katu Vipaka* and *Ushna veerya* and also possess '*Lekhana*' property due to *Ushna Veerya*. The *Lekhana karma* is further enhanced by *Lekhana dravya* which is one of the ingredient present in the formulation i.e; *Yavakshara*.<sup>[23]</sup> The *vatanulomana*, *Shothahara* and *Mutrala* properties helps to relieve pain and *Sthanika Shotha*. *Deepana* property of drug helps to increase the *Agni*, which further checks the formation of *Ama* at *Jataragni* level.<sup>[24]</sup> Remaining drugs of the compound act as *Mutrala* (diuretic) by virtue of their '*Sheeta Veerya*' and *Madhura Rasa*. Mainly *Varunadi Kashaya* with enriched source of tannins from *Varuna* extends a *Lithontriptic*, *nephroprotective* and *diuretic* activity, and in return is responsible for promoting the renal functioning and GFR thus relieving symptoms from ADPKD associated CKD.

#### ➤ *Veerataradi kashaya*<sup>[25]</sup>

*Veerataradi Kashaya* contains *Veerataru*, *Sahachara dravya*, *Darbha*, *Vrikshaadani*, *Gundra*, *Nala*, *Kusha*, *Kasha*, *Ashmabheda*, *Agnimantha*, *Murva*, *Basuk*, *Vasir*, *Bhalooka*, *Kurantaka*, *Kamala*, *Kapot Vanka*, *Gokshura*. All these drugs have *Vata-kaphahara* properties like *deepana-pachana*, *Srotoshodhana*, *Lekhana*, *Shophahara*, *Basti shodhana* properties along with *Mutrala* properties helps to crack the *samprapti* of the

disease thereby extends the beneficial activity in combating the clinical features of the disease.

➤ **Pippalyasava**<sup>[26]</sup>

*Pippalyasava* contains ingredients *Pippali, Maricha, Chavya, Haridra, Chitraka, Musta, Vidanga, Kramuka, Lodhra, Dhatri, Patha, Elvaluka, Ushira, Chandana, Kushta, Lavanga, Tagara, Mamsi, Twak, Ela, Patra, Priyangu, Nagakesara, Guda, Dhataki, Draksha* among which most of the drugs are *ushna veerya, tikta rasa, katu vipaka, laghu guna* which helps to increase *agni* thereby helps to digest *ama dosha* which is mainly seen associated in the further progression of the disease condition. Among the 23 drugs of *Pippalyasava*, *Pippali* is an important one which is mainly responsible for action facilitation, potentiation of other drugs and also has an important alkaloid called piperine which is proved to act as an bioavailability enhancer which is attributed to the interaction of piperine with enzymes that participate in drug metabolism thus allowing faster penetration of the phytomolecules. Piperine is helpful in improving capillary permeability which can improve intra or inter cellular transportations thereby limiting the kidney damage associated with the ADPKD disease condition.

➤ **Bhringarajasava**

*Bhringarajasava* is a compound herbal formulation consisting of *Bhringaraja* as a active ingredient along with *Haritaki, Pippali, Jatiphala, Lavanga, Twak, Ela, Tamalapatra, Nagakesara* and *Gudam*.<sup>[27]</sup> It possesses dynamic properties and is capable of correcting and restoring errors of the *Koshtagni* and *Dhatwagni*. *Bringaraja* present in *Bhringarajasava* with the presence of flavonoids extend anti-oxidant, anti-inflammatory and anti-microbial activity and thus extends chronic non specific UTI associated with ADPKD disease condition. It also includes other properties like *Balyam, Brimhanam, Rasayanam, Hridyam, Vishaharam* and *Krimignam* which also plays a beneficial role in this diseased condition.

➤ **Tab. Shilapravanga vati**<sup>[28,29]</sup> with gold

*Shilapravanga* with gold is a herbo-mineral formulation with chief ingredients is *Shilajatu*<sup>[30]</sup>, *Pravala Pishti, Vanga bhasma, Suvarna makshika bhasma, Suvarna bhasma, Mouktika Pishti, Guduchi satva, Ashwagandha, Shatavari, Gokshura, Balamoola, Amalaki, Akarakarabha, Jatiphala, Karpoora, Latakasturi Beeja, Kraunch Beeja, Makaradhwaja*. It has a properties of *Balya, Dahanashaka, Kaphahara, Mutrala, Rasayana* which is found to be useful in the management of this diseased condition.

➤ **Cruel capsule**

Cruel Capsule is an Ayurvedic proprietary medicine whose constituents include extracts of various plants and several *bhasmas* with claimed beneficial anti-oxidant activity. Its ingredients includes *Sarveshwara Parpati, Suvarna Bhasma, Rasa Karpoora, Swetha Maricha, Abhraka Bhasma, Punarnava, Yashtimadhu, Vasa, Hira*

*Bhasma, Rasa Sindhura, Tamra Bhasma, Lavanga, Panna Bhasma, Saragava, Rohitaka, Guduchi* and Excipients. All the constituents of cruel capsule have reported to enhance the immune response thereby promotes immunity & thus restores the energy. It has also shown to have nephroprotective effect and antioxidant effect which is seen beneficial in this disease condition. The formulation contains minerals such as *Sarveshwara Parpati, Suvarna Bhasma, Rasa Karpoora, Abhraka Bhasma, Hira Bhasma, Rasa Sindoor, Tamra Bhasma* and *Panna Bhasma* which is found to be effective in increasing the nutrients of the bodily tissues thereby strengthens the tissues and the nutritional supply of blood vessels thus leading to increase in the Hb% which is in demand in the patients affected with ADPKD. All the *Bhasmas* which are used in this herbomineral formulation also have the ability to reduce the three doshas or imbalances related to *Vata, Pitta, Kapha dosha*. This formulation also checks the progressive cystic degeneration of the renal tubules and the nephrons associated with ADPKD disease condition and thereby promotes its regeneration.

**DISCUSSION**

*Vrikka* is compared with that of kidney in contemporary science which regulates the removal of wastes from the blood in the form of urine. The kidney diseases mentioned in Modern science and their common symptoms, pathology related to it can be correlated with *Vrikka Roga* mentioned in *Bhaishajya Ratnavali* 93<sup>rd</sup> Chapter which explains about the *Nidana, Poorvaroop, Lakshana, Upadrava* and *Chikitsa*.

*Vrikka* is derived from the root word “*Vrikkadane*” which means to take. *Acharya Sushrutha* has clearly mentioned about *Vrikka* and also says that *Vrikka* are made out of the essence part of *Rakta* (blood) and *Meda* (Fat)<sup>[31]</sup> which is closely related to *Medovaha Srotas*. *Acharya Charaka* has described the anatomical location of *Vrikka* and considers to be the important organ among the 15 *Koshtangas* mentioned in the *Samhita. Ashtanga Sangraha, Kashyapa Samhita* and *Bhela Samhita* also opines that *Vrikka* is one among the *Koshtangas*. In Ayurveda, *Vrikka* is considered to be originated from *Matruja bhava* and due to the *beeja bhaga avayava dushti* of *Matruja bhava* it has led to the development of *Vrikka Roga*. It can be considered under the type of *Adibala Pravrutta Vyadhis* which are caused by the vitiation of *Dosha* in the *Shukra* and *Shonitha* of the Parents. If a Mother or Father is indulging in the *Dosha prakopakara ahara* and *vihara* then there will be vitiation of *Shukra* or *Shonitha*, leading to *Dushta lakshanas* which may be carried to the offspring. As *Vrikka* is derived from *Matruja Bhavas*, it can be considered to be vitiated in this disease due to which these *Bhavas* gets transmigrated to the offspring in which there will be *Khavaigunyatha* in the *Vrikka* of the offspring leading to the manifestation of the *Vyadhi* related to *Vrikka*. This shows the possibility of genetic predisposition or the hereditary transfer of the disease.

Because of the already existing *Khavigunya* in the *Vrikka* as the genetic predisposition acts as a *utpada nidana*, where it may require the *vyanjaka nidanas* to have a full blown up picture of a disease which is done by the indulgence in *Kapha vardhaka Ahara- Vihara janya Nidanas*, as a result there will be *Mandagni* leading to the formation of *Ama*. This *Ama* along with the vitiated *Kapha dosha* further vitiates the other *doshas* i.e; *Vata & Pitta* and *Rasa, Rakta, Medo Dhatus* thereby causing *avarodha* in the *Srotas* of *Rasavaha, Udakavaha, Raktavaha, Medovaha, Mamsavaha and Mutravaha*. Aggravated *Kapha dosha* and *Ama* having vitiated *dhatu*s moves towards *Medodhatu* as *Kapha, Ama* and *Medas* have similar qualities. Hence they have mutual affinity towards each other and thereby get attracted to each other. *Medo Dhatus* being the *Moola sthana* of *Vrikka* and it is also one of the first *dhatu*s to reflect a *Kapha* aggravation predominantly. *Medodhatu* being affected by the presence of aggravated *Kapha dosha* and *Ama* causes *Medovridhi* which results in the manifestation of *Medo Vikaras* such as *Medoja Granthi* which can be compared with the modern terminology of cyst formation which means an abnormal closed epithelial-lined in any part of the body, containing liquid or semi-solid material. In ADPKD, there will be progressive enlargement of renal cysts to macroscopically visible fluid filled cavity bordered by single layer epithelium in the kidneys due to mutation in PKD1 and PKD2 genes.

Thereby, we can consider this case as the *Matruja Adibala Pravrutta Medoja Granthi Vrikka vikara* which can only be controlled by further deterioration & progression of disease but cannot be completely cured. This concept can be considered in the genetic disorder of Autosomal Dominant Polycystic Kidney Disease.

## CONCLUSION

By the above article we can draw a conclusion with such understanding of ADPKD in *Ayurvedic* pretext. Better understanding of any disease enables the physician to treat it more efficiently. Autosomal Dominant Polycystic Kidney Disease as such is not explained *vis-à-vis* in our *Samhitas* but *Acharyas* have made their point regarding treatment based on the clinical symptomatology of the disease condition. Early diagnosis and early starting *Ayurvedic* treatment can give satisfactory result in the diseases conditions like ADPKD-CKD. Basti used in the present study is very much effective in improving the kidney functions because of its *sroto vishuddhi* property mainly. The Kidneys are made up of principally the "Rakta" and "Meda" *dhatu*s. Every physician will address to maintain the imbalance between these two *dhatu*s Basti karma and *shamanaushadhis*. In the above Case study, *Triphala-Dashamoola Kashaya Basti* along with various *Shamanaushadhi*'s has resulted in the reversal of the Kidney factors thus improving the normal functioning of Kidney, alleviating the clinical features associated with the disease and in recovery from it thereby also improving the general condition of the

Patient. This action may be tribute to its various *Shothagna* (anti-inflammatory), *Mutrala* (Diuretics), *Kapha-Medohara*, *Lekhana* (Scraping) and *Rasayana* properties whose treatment approach is found to be safe and effective in the case of ADPKD-CKD. Recovery in the present case was promising and worth documenting. However it may be proved as a mile stone for the treatment of this crucial, challenging and fatal disease. Whilst this requires enormous scope for further study to be conducted in a large sample to establish the facts with more statistical and scientific strength.

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