Revitalizing Renal Health: A Case Study of Integrative *Ayurvedic* Treatment for Chronic Kidney Disease in a Patient with Hypertension, Diabetes and Fatty Liver

¹Acharya Manish, *²Dr. Gitika Chaudhary, ³Dr. Richa, ⁴Dr. Amandeep Singh and ⁵Dr. Tanu Rani

¹Director, Meditation Guru, Jeena Sikho Lifecare Limited, India.

*2Senior Consultant, General Surgeon, BAMS, PGDIP, PGDGS, MS (Ay.), Jeena Sikho Lifecare Limited, India.

³Senior Research Officer, BAMS, PGDIP, CICR, CAIM, CMW, Jeena Sikho Lifecare Limited, India.

⁴Consultant, BAMS, Jeena Sikho Lifecare Limited Hospital, Amritsar, Punjab, India.

⁵Research Associate, BAMS, Jeena Sikho Lifecare Limited, India.

Abstract

Chronic Kidney Disease (CKD) is a significant global health issue, affecting approximately 10% of the population worldwide. In low-income regions, the incidence is particularly high, exacerbated by limited access to kidney replacement therapies (KRT). In India, 17.2% of the population is affected by CKD, with diabetic nephropathy being the primary cause. Hypertension, diabetes, and obesity are major risk factors for the disease, which often progresses silently without noticeable symptoms. This case study evaluates the impact of *Ayurvedic* interventions in managing CKD in a 54-year-old female patient with a known case of CKD, hypertension, Type 2 Diabetes Mellitus (T2DM), and fatty liver. The patient, under the care of Jeena Sikho Lifecare Limited Hospital, Amritsar, Punjab, received a combination of *Panchakarma* treatments, including *Abhyangam* with *Dhanwantaram Tail*, *Shirodhara* with *Ksheer Bala*, and *Matra Basti* with *Sehacharadi Oil*, alongside *Ayurvedic* formulations to improve kidney function, regulate blood sugar, and support liver health. After a 7-day treatment period, significant improvements were noted in the patient's renal function, with a decrease in serum creatinine and urea levels, as well as enhanced eGFR. The patient also reported relief from symptoms like frothy urine and disturbed sleep. This case highlights the potential benefits of integrating *Ayurvedic* therapies with conventional treatment for CKD management, suggesting a promising approach for improving patient outcomes.

Keywords: Chronic Kidney Disease (CKD), *Ayurveda*, *Panchakarma*, Hypertension, Type II Diabetes Mellitus (T2DM), *Vataj pandu, Madhumeha, Mutraj vyadhi*.

Introduction

Chronic kidney disease (CKD) poses a major global health concern, affecting about 10% of people worldwide. Its incidence is increasing, particularly in low-income regions where the impact is most severe. Ranking as the seventh leading cause of global mortality, CKD underscores the urgent need for strategies focused on early detection and management [1, 2]. Approximately 13% of the global population is affected by CKD, with older individuals being more susceptible [3]. The condition imposes a significant economic strain on healthcare systems, especially due to the high costs associated with kidney replacement therapy (KRT), which remains inaccessible in many low-resource settings [4]. In India, CKD affects 17.2% of the population, with diabetic nephropathy identified as the primary cause [5, 6]. Hypertension, diabetes, and obesity are major risk factors, and early diagnosis is critical, as CKD often progresses without

noticeable symptoms ^[7]. The growing prevalence of non-communicable diseases, coupled with inadequate access to dialysis and transplants, exacerbates this challenge ^[8, 9].

Modern medicine acknowledges the growing prevalence of CKD, primarily driven by diabetes and hypertension. Timely detection and intervention are vital, as CKD typically remains asymptomatic in its early stages. According to the SEEK study, 6% of CKD cases in India were found to be in stage 3 or beyond ^[5]. Although advances in dialysis and kidney transplants have been made, these treatments are often unaffordable or unavailable in resource-limited settings, contributing to the healthcare burden.

Hypertension, diabetes, and obesity are the primary risk factors for CKD. Early detection is paramount since the disease often advances silently without evident symptoms. Modern medicine has highlighted significant barriers in managing CKD, especially in low-resource settings where

access to kidney replacement therapy is limited. The increasing prevalence of non-communicable diseases has further compounded these challenges. Despite technological advancements in dialysis and kidney transplants, gaps in affordability and accessibility persist ^[7, 8]. Current public health efforts are directed at enhancing early detection, expanding treatment access, and mitigating the strain on healthcare systems. Contemporary research emphasizes addressing diabetes and hypertension as critical factors in reducing CKD prevalence.

In Ayurvedic medicine, CKD is associated with Vataj Pandu due to the resemblance of symptoms. Classical texts highlight the necessity of understanding Nidaan and Samprapti for effective CKD management. Ayurvedic treatment strategies aim to correct imbalances in Dosha, Dushya, and Srotas, which are integral to the progression of CKD. Treatment plans are customized based on individual factors such as Bala, Prakriti, Agni, and Oja, all of which influence disease management and quality of life [10].

Ayurvedic interventions include dietary adjustments, Ayurvedic formulations, and lifestyle changes that target oxidative stress, inflammation, and kidney function [11, 12]. These approaches can complement or, in some cases, replace conventional treatments, especially for CKD linked to type II diabetes, where Dosha imbalances play a central role [11]. Ayurveda's integrative approach seeks to address the

underlying causes of CKD and restore physiological balance, offering a valuable adjunct in managing this multifaceted condition ^[10, 13]. This study aims to assess the impact of *Ayurvedic* interventions combined with conventional treatments for *Vrikk rog* with hypertension, Type 2 Diabetes Mellitus and fatty liver in a 54-year-old female patient.

Case Report

On February 19, 2024, a 54-year-old female known case of CKD for 1 year, hypertension for 1 year, fatty liver for 2 year and Type 2 diabetes mellitus for 15 years visited Jeena Sikho Lifecare Limited Hospital, Amritsar, Punjab. The patient was diagnosed with Mutragata rog and Madhumeh. A comprehensive medical history, family history, physical examination, and diagnostic evaluations were all part of the methodical and thorough examination. She has a history of Colectomy. She experienced general weakness, decreased frothy urine, disturbed sleep, abdominal bloating and gastritis. She was taking insulin. The initial assessment during the treatment is detailed in Table 1. The initial examination is noted in Table 2. The lipid profile examination during the treatment period is mentioned in Table 3. The Liver Function Test on February 19, 2024 is mentioned in Table 4. The laboratory investigations during the treatment period is provided in Table 5.

Table 1: The initial assessment during the treatment

Date	Blood Pressure (mmHg)	Weight	SpO2	Pulse/min
19-02-2024	160/80	73 Kg	99%	88
20-02-2024	140/70	73 Kg	99%	80
21-02-2024	140/80	73 Kg	98%	80
22-02-2024	150/90	73 Kg	99%	80
23-02-2024	140/80	73 Kg	97%	80
24-02-2024	130/80	73 Kg	98%	80
25-02-2024	130/90	73 Kg	98%	88
26-02-2024	140/80	73 Kg	99%	84
05-03-2024	150/80	71 Kg	99%	94
25-03-2024	110/80	72 Kg	96%	84

Table 2: The initial examination on February 9, 2024

Parameter	Findings
Jivha	Saam
Nadi	Vataj pittaj
Drik	Avikrita
Nakha	Avikrita

Table 3: The lipid profile examination during the treatment period

Parameter	Date 19-02-2024	Date 06-03-2024
Total Cholesterol	109 mg/dL	167 mg/dL
Triglycerides	187 mg/dL	181 mg/dL
HDL	31.8 mg/dL	41.9 mg/dL
LDL	39.8 mg/dL	88.9 mg/dL
VLDL	37.8 mg/dL	36.2 mg/dL
LDL/HDL ratio	1.25	2.12
HDL/LDL ratio	0.8	0.47
Cholesterol/HDL Ratio	3.43	3.99

Table 4: The Liver Function Test on February 19, 2024

Parameter	Findings
Total Bilirubin	0.31 mg/dl
Conjugated Bilirubin	0.16 mg/dl
Unconjugated Bilirubin	0.15 mg/dl
SGOT	29.5 IU/L
SGPT	25 IU/L
Alkaline phosphatase	160 IU/L
Total protein	8.56 gm/dl
Albumin	4.82 gm/dl
Globulin	3.74 gm/dl
A/G ratio	1.29

Table 5: The laboratory investigations during the treatment

Parameters	Date 19-02-2024	Date 21-02-2024	Date 06-03-2024
Haemoglobin	11.6 gm/dL	10.6 gm/dL	12 gm/dL
Urea	184 mg/dL	120.6 mg/dL	70.4 mg/dL
Creatinine	9.32 mg/dL	6.26 mg/dL	4.63 mg/dL
Uric acid	4.30 mg/dL	4.70 mg/dL	7.40 mg/dL
Sodium	135.7 mmol/L	135.5 mmol/L	138 mmol/L
Potassium	5.08 mmol/L	5.1 mmol/L	6.10 mmol/L
TLC	10.39 th/cumm	8.9 th/cumm	8.53 th/cumm
RBC	4.21 mill/cumm	4.38 mill/cumm	4.36 mill/cumm
Platelet count	224 th/cumm	233 th/cumm	-
eGFR	4.68 ml/min	10.49 ml/min/1.73 m ²	10.49 ml/min/1.73 m ²
ESR	-	18 mm/1 hr	16 mm/1 hr
CRP	-	7.2 mg/dL	0.32 mg/dL
BUN	86 mg/dL	33 mg/dL	33 mg/dL

The patient was admitted for 7 days. During the IPD, Ayurvedic therapies were administered to the patient. The

health conditions during the IPD is mentioned in Table 6. The basic vitals during discharge is noted in Table 7.

Table 6: The health conditions during the IPD

Conditions	20-02-2024	21-02-2024	22-02-2024	23-02-2024	24-02-2024	25-02-2024	26-02-2024
General weakness	✓	✓	✓	✓	✓	✓	✓
Bowel	3–4 times (clear)	Clear	Normal	Clear	Clear	Clear	Clear
Urine	Reduced	Reduced	Reduced	Reduced	Frothy/micturition	Reduced foamy	Better
Sleep	Disturbed	Disturbed	Disturbed	Disturbed	Mild disturbed	Mild disturbed	Normal
Chest	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Abdomen	Bloated	-	-	-	Disturbed	Disturbed	Clear
Gastritis	✓	-	-	-	-	-	-
Apetite	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Table 7: The basic vitals during discharge

Parameter	Findings
Blood Pressure	135/90 mm of Hg
Pulse Rate	80/min
Weight	73 Kg
Nadi	Vataj Pittaj
Mutra	Prakrita
Shabda	Spashta
Mala	Avikrita
Drik	Prakrita
Sparsh	Samasheetoshna
Akriti	Avikrita
Jihwa	Niram

An accurately designed DIP Diet was provided to the patient to complement the *Ayurvedic* treatments administered for CKD ^[14]:

Treatment Plan

1. Diet Plan:

Dietary Guidelines from Jeena Sikho Lifecare Limited Hospital:

- Avoid wheat, refined foods, dairy, coffee, tea, and packaged foods.
- Do not eat after 8 PM.
- When eating solid foods, take small bites and chew each bite 32 times.

Hydration:

- Sip water slowly, mindful of the amount consumed each time.
- Aim to drink 1 liter of alkaline water 3 to 4 times a day.
- Incorporate herbal tea, living water, and turmeric-infused water into your daily routine.
- Boil 2 liters of water and reduce it to 1 liter before drinking.

Millet Consumption:

- Include five types of millet in your diet: Foxtail, Barnyard, Little, Kodo, and Browntop millet.
- Cook the millets in mustard oil using stainless steel cookware.

Meal Timing and Structure:

- Early Morning (5:45 AM): Begin with herbal tea along with raw ginger and turmeric.
- Breakfast (8:30-9:30 AM): Have fruits (Apple/Papaya) and a fermented millet shake.
- Morning Snacks (11:00-11:20 AM): 100 gm of sprouts and 150 ml of red juice and soaked almonds.
- Lunch (12:30 PM 2:00 PM): Two plates—Plate 1: steamed salad; Plate 2: cooked millet-based dish.
- Evening Snacks: Green juice (100-150 ml) and 4-5 almonds.
- Dinner (6:15-7:30 PM): Plate 1: raw salad, chutney, green garden delight, and soup; Plate 2: millet khichdi/fermented millets/millet *chapati*.

Fasting:

It is recommended to fast for one day.

Special Instructions:

- Offer thanks to the divine before eating or drinking.
- Practice Vajrasana after every meal.
- Take a slow 10-minute walk after each meal.

Diet Types:

- The diet includes low-salt solid, semi-solid, and smoothie options.
- Suggested foods include herbal tea, red juice, green juice, a variety of steamed fruits, fermented millet shakes, soaked almonds, and steamed salads.

2. Lifestyle Recommendations

- i). Include meditation as a method for relieving stress.
- ii). Practice Yoga (Sukhasana and Sukshma Pranayama) between 6:00 AM and 7:00 AM.
- iii). Go for a brisk 30-minute barefoot walk.

- iv). Aim for 6-8 hours of restful sleep each night.
- v). Follow a structured daily routine to maintain balance and organization in your life.

3. Panchakarma procedures administered to patients

i). Abhyangam with Dhanwantaram Tail [15]

Procedure

- 100 ml of *Dhanwantaram Tail* was warmed to body temperature.
- The warm oil was applied gently to the entire body for 30 minutes, starting with the head and progressing to the arms, torso, abdomen, and legs, using circular motions over joints and long strokes along limbs.
- The *Abhyangam* massage was performed with rhythmic, soothing strokes and moderate pressure, focusing on tension areas and the head for relaxation.
- The patient was allowed to relax for 5–10 minutes. Warm water or a damp towel was offered to cleanse excess oil.

Physiology and Mode of Action

- Abhyangam stimulates blood flow and lymphatic drainage, promoting the removal of metabolic waste and toxins from tissues, leading to improved muscle tone and overall detoxification.
- The soothing massage activates the parasympathetic nervous system, reducing stress and promoting relaxation, better sleep, and hormonal balance, while improving mood and mental clarity.
- The warm *Dhanwantaram Tail* nourishes muscles and joints, relieving stiffness, improving flexibility, and providing moisture to the skin, promoting elasticity and reducing dryness.
- The anti-inflammatory and analgesic properties of *Dhanwantaram Tail* help reduce muscle pain, joint inflammation, and tension, providing therapeutic relief from conditions like arthritis and muscle soreness.
- Regular use of *Dhanwantaram Tail* enhances vitality, strengthens the body, and supports long-term health by nourishing tissues, improving skin texture, and promoting overall rejuvenation.

ii). Shirodhara with Ksheer Bala

Procedure:

- The patient was positioned on their back with the head slightly elevated, and the area around the forehead and scalp was cleaned.
- 2 liters of *Ksheer Bala*, a medicated milk mixture, was prepared by warming it to a comfortable temperature for the procedure.
- A special vessel was used to pour the warm *Ksheer Bala* in a steady stream onto the forehead, focusing on the *Aina* area.
- The treatment lasted 45 minutes while the patient remained relaxed with closed eyes.

Physiology and Mode of action

- Shirodhara with Ksheer Bala activates the parasympathetic nervous system, reducing stress, anxiety, and insomnia.
- The warm milk improves circulation, relaxes the scalp muscles, and promotes calmness.
- It balances stress hormones, enhancing mental clarity and emotional stability.

• *Ksheer Bala* nourishes the scalp, strengthens the nervous system, and promotes rejuvenation [16, 17, 18].

iii). Matra Basti with Sehacharadi oil (60 ml) Procedure

- The 60 ml of Sehacharadi oil was warmed to body temperature.
- The person lay on their left side in a comfortable position and the lubricated enema nozzle was gently inserted into the rectum
- The oil was slowly released into the rectum using an enema bag or bulb, and held for 15-20 minutes for absorption.

Physiology and Mode of Action

- Sehacharadi oil, absorbed through the rectal mucosa, lubricates and hydrates the intestines, promoting smoother bowel movements and reducing constipation.
- It calms the nervous system, balances *Vata dosha*, and supports colon cleansing.
- The oil nourishes gastrointestinal tissues, reduces inflammation, and alleviates conditions like hemorrhoids and anal fissures. [19, 20]

iv). Sarwang swedan with Dashmool Kwath Procedure:

- The Dashmool Kwath was prepared by boiling the formulation and warming the decoction to a comfortable temperature.
- The patient was instructed to lie down comfortably, covered with a towel, leaving the head exposed to the steam.
- Steam from the *Dashmool Kwath* was directed towards the patient's body, ensuring a safe distance and allowing the steam to cover the body. Gentle circular massage was applied during the steam therapy.
- After 25 minutes, the patient's body was wiped with a clean towel to remove sweat, and they were allowed to rest.

Physiology and Mode of Action

 The heat from the steam therapy induces vasodilation, improving blood flow to the skin and underlying tissues.

- This enhanced circulation helps in the delivery of nutrients and the removal of metabolic waste, leading to better tissue health and detoxification.
- The steam helps to activate the lymphatic system, promoting the movement of lymph fluid, which aids in the removal of toxins from the body. This supports the immune system and overall detoxification processes.
- The warmth of the steam penetrates the muscles and joints, relaxing tense muscles and alleviating stiffness. The *Ayurvedic* constituents of *Dashmool* have analgesic and anti-inflammatory properties, providing relief from muscle pain, joint stiffness, and conditions like arthritis.
- The sweat induced by the steam helps to expel toxins from the body through the skin. This detoxifying effect improves skin tone, texture, and elasticity. The *Dashmool*, known for their purifying properties, help cleanse the body of accumulated impurities.
- The heat and steam stimulate the parasympathetic nervous system, inducing a state of deep relaxation. This reduces stress, calms the mind, and promotes emotional well-being, enhancing the overall rejuvenating effects of the therapy [21].

Medicinal Interventions

The *Ayurvedic* treatment employed in this case included Chander Vati Tablet, Nephron Plus, CKD Syrup, Liver Tonic, DM Capsule, 32 Herbal Tea, Liv DS, Amal Pitt Har Powder, Liver Tonic, JS BP cure, Dr. Shuddhi Powder and Divya Shakti Powder along with *Panchakarma* therapies.

She was on IPD for 7 days, during that period she received consolidated *Ayurvedic* treatments. This treatment procedure encompassed *Panchakarma* therapies such as *Abhyangam with Dhanwantaram Tail, Shirodhara with Ksheer Bala, Matra Basti with Sehacharadi oil (60 ml) and Sarwang swedan with Dashmool Kwath.* The *Ayurvedic* medications advised during IPD is detailed in Table 8. The *Ayurvedic* medications advised during the discharge is mentioned in Table 9. The patient returned on March 05, 2024. The medications advised during the visit is detailed in Table 10. The patient revisited on March 25, 2025 for regular followup, and the medications provided are described in Table 11.

Table 8: The medicine advised during the IPD

Medicine Name	Ingredients	Dosage	Therapeutic Effects
	Kapoor Kachri (Hedychium spicatum), Vacha (Acorus calamus), Motha (Cyperus rotundus), Kalmegh (Andrographis paniculata), Giloy (Tinospora cordifolia), Daruhaldi (Daruhaldi), Dev Daru (Dev Daru), Dev Daru Haldi (Curcuma longa), Atees (Aconitum heterophyllum), Daru Haldi (Berberis aristata), Pipla Mool (Piper longum root), Chitraka (Plumbago zeylanica), Dhaniya (Coriandrum sativum), Harad (Terminalia chebula), Bahera (Terminalia bellirica), Amla (Emblica officinalis), Chavya (Piper chaba), Vayavidang (Embelia ribes), Pippal (Piper longum), Kalimirch (Piper nigrum), Sonth (Zingiber officinale dried ginger), Gaj Pipal (Gaj Pipal), Swarn Makshik Bhasma (Swarn Makshik Bhasma), Sujjik Khar (Potassium carbonate - traditional alkali preparation), Sendha Namak (Rock salt), Kala Namak (Black salt), Choti Elaichi (Elettaria cardamomum small cardamom), Dalchini (Cinnamomum verum), Tejpattra (Cinnamomum tamala), Danti (Baliospermum montanum), Nishothra (Operculina turpethum), Banslochan (Bambusa silica), Loh Bhasam (Loh Bhasam), Shilajit (Asphaltum punjabianum), Guggal (Commiphora wightii)	2 TAB TDS (Adhobhakta with kosha jala)	Improves urine outflow, boosts immunity, helps in cell rejuvenation, enhances digestion and boosts metabolism
(K I) Symin	Kasani (Cichorium intybus), Gokhru (Tribulus terrestris), Shatavari (Asparagus racemosus), Giloy (Tinospora cordifolia), Sorbitol, and	`	

	Shilajit (Asphaltum punjabianum)	jala)	with kidney issues.
JS BP cure	Sarpgandha (Rauvolfia serpentina), Arjuna (Terminalia arjuna), Shigru (Moringa oleifera), Haritaki (Terminalia chebula), Vibhitaki (Terminalia bellirica), Amla (Emblica officinalis), Godanti Bhasma (Gypsum)	1 CAP BD (Adhobhakta with Kosha jala)	Maintain a healthy heart functioning, kidney function, and improve digestive health
Liver Tonic	Lal Punarnava (Boerhavia diffusa), Safed Punarnava (Boerhavia diffusa), Bala (Sida cordifolia), Atibala (Abutilon indicum), Patha (Cyclea peltata), Giloy (Tinospora cordifolia), Chitrak (Plumbago zeylanica), Kakoli (Lilium polyphyllum), Vasa (Adhatoda vasica), Nagarmotha (Cyperus rotundus), Ajwain (Trachyspermum ammi), Sonth (Zingiber officinale), Kali Mirch (Piper nigrum), Long (Piper longum), Methi (Trigonella foenum-graecum), White Jeera (Cuminum cyminum), Roheda Chhal (Tecomella undulata), Dalchini (Cinnamomum verum), Tejpattra (Cinnamomum tamala), Badi Elaichi (Amomum subulatum), Choti Elaichi (Elettaria cardamomum), Jaiphal (Myristica fragrans), Nagkesar (Mesua ferrea), Kankol (Piper cubeba), Mulethi (Glycyrrhiza glabra), Chokel (Balanites aegyptiaca), Mahua (Madhuca longifolia)	2 TSF BD (Adhobhakta with sama matra kosha	Helps in improving overall liver health.

Table 9: The Ayurvedic medications advised during the discharge on 26 February 2024

Medicine name	Ingredients	Dosage	Therapeutic Effects
Chander Vati Tablet	Kapoor Kachri (Hedychium spicatum), Vacha (Acorus calamus), Motha (Cyperus rotundus), Kalmegh (Andrographis paniculata), Giloy (Tinospora cordifolia), Devdaru (Cedrus deodara), Desi Haldi (Curcuma longa), Atees (Aconitum heterophyllum), Darvi Haldi (Berberis aristata), Puja Mool (Piper longum root), Chitrak (Plumbago zeylanica), Dhamiya (Coriandrum sativum), Harad (Terminalia chebula), Bahera (Terminalia bellirica), Amla (Phyllanthus emblica), Chavya (Piper chaba), Yavakshar (Enicostema ribes), Pippali (Piper longum), Kachri (Piper nigrum), Sonth (Zingiber officinale dried pieces), Gaj Pipali (Scindapsus officinalis), Swarn Makshik Bhasma (Gold iron pyrite ash - Ayurvedic preparation), Sujji Khar (Potassium carbonate - traditional alkali preparation), Senda Namak (Rock salt), Kala Namak (Black salt), Choti Elachi (Elettaria cardamomum small cardamom), Dalchini (Cinnamomum verum), Tejpat (Cinnamomum tamala), Danti (Baliospermum montanum), Nishothra (Operculina turpethum), Banslochan (Bamboo silica), Loh Bhasm (Iron ash - Ayurvedic preparation), Shilajit (Asphaltum punjabianum), Guggal (Commiphora wightii).	1 TAB TDS (Adhobhakta with koshna jala)	Improves urine outflow, boosts immunity, helps in cell rejuvenation, enhances digestion and boosts metabolism
CKD Syrup	Rasasni (Cichorium intybus), Gokhru (Tribulus terrestris), Shatavari (Asparagus racemosus), Giloy (Tinospora cordifolia), Sorbitol, and Shudh Shilajeet (Asphaltum punjabianum).		Provides relief from pain and discomfort associated with kidney issues.
Liver Tonic	Lal Punarnava (Boerhavia diffusa), Safed Punarnava (Boerhavia diffusa), Bala (Sida cordifolia), Atibala (Abutilon indicum), Patha (Cyclea peltata), Giloy (Tinospora cordifolia), Chitrak (Plumbago zeylanica), Kakoli (Lilium polyphyllum), Vasa (Adhatoda vasica), Nagamotha (Cyperus scariosus), Arjuna (Terminalia arjuna bark), Sonth (Zingiber officinale), Kali Mirch (Piper nigrum), Long (Piper longum), Methi (Trigonella foenum-graecum), White Jeera (Cuminum cyminum), Rohida Chhal (Tecomella undulata), Dalchini (Cinnamomum verum), Tejpatta (Cinnamomum tamala), Badi Elachi (Amomum subulatum), Choti Elachi (Elettaria cardamomum), Jaiphal (Myristica fragrans), Nagkesar (Mesua ferrea), Kankol (Piper cubeba), Multhi (Glycyrrhiza glabra), Shekel (Balamites aegyptiaca), Mahuua (Madhuca longifolia).	2 TSF BD (Adhobhakta with soma matra koshna jala)	Helps in improving overall liver health.
JS BP cure	Sarpagandha (Rauvolfia serpentina), Arjuna (Terminalia arjuna), Shigru (Moringa oleifera), Haritaka (Terminalia chebula), Vibhitaka (Terminalia bellirica), Amla (Emblica officinalis), Godanti Bhasma (Gypsum).	(Adhobhakta with	Maintain a healthy heart functioning, kidney function, and improve digestive health.
32 Herbal Tea	Gauzaban (Echium amoenum), Kulanjan (Alpinia galanga), Choti Elaichi (Elettaria cardamomum), Laung (Syzygium aromaticum), Badi Elaichi (Amomum subulatum), Badiyan Khtay (Illicium verum), Banafsha (Viola odorata), Jufa (Clerodendrum serratum), Ashwagandha (Withania somnifera), Mulethi (Glycyrrhiza glabra), Punarnava (Boerhavia diffusa), Brahmi (Bacopa monnieri), Chitrak (Plumbago zeylanica), Kali Mirch (Piper nigrum), Adoosa (Adhatoda vasica), Saunf (Foeniculum vulgare), Shankh Pushp (Evolvulus alsinoides), Tulsi (Ocimum sanctum), Arjuna (Terminalia arjuna), Motha (Cyperus rotundus), Senave (Cuscuta	30 gram (Adhobhakta with koshna jala)	Deepan and pachan

reflexa), Sonth (Zingiber officinale), Majeeth (Rubia cordifolia),	
Sarfoka (Sphaeranthus indicus), Dalchini (Cinnamomum verum),	
Gulab (Rosa spp.), Green Tea (Camellia sinensis), Giloy	İ
(Tinospora cordifolia), Tej Patta (Cinnamomum tamala), Lal	
Chandan (Pterocarpus santalinus), White Chandan (Santalum	
album), Pudina (Mentha spicata).	

Table 10: The medications advised during the visit on March 05, 2024

Medicine name	Ingredients	Dosage	Therapeutic Effects
Chander Vati Tablet	Kapoor Kachri (Hedychium spicatum), Vacha (Acorus calamus), Motha (Cyperus rotundus), Kalmegh (Andrographis paniculata), Giloy (Tinospora cordifolia), Devdaru (Cedrus deodara), Desi Haldi (Curcuma longa), Atees (Aconitum heterophyllum), Darvi Haldi (Berberis aristata), Pipla Mool (Piper longum root), Chitrak (Plumbago zeylanica), Dhaniya (Coriandrum sativum), Harad (Terminalia chebula), Bahera (Terminalia bellirica), Amla (Phyllanthus emblica), Chavya (Piper chaba), Vayavidang (Embelia ribes), Pippal (Piper longum), Kalimirch (Piper nigrum), Sonth (Zingiber officinale dry-ginger), Tej Patra (Cinnamomum tamala), Swarana Makshika Bhasma (Ayurvedic parade. formulation), Swarna Suji (K shell potassium carbonate - traditional alkali preparation), Sada Namak (Rock salt), Kala Namak (Black salt), Choti Elaichi (Elettaria cardamomum - small cardamom), Dalchini (Cinnamomum verum), Tejpatra (Cinnamomum tamala), Dana (Balsamodendron pentandrum), Nishotha (Operculina turpethum), Banslochan (Bambusa arundinacea), Loh Bhasam (Iron ash - Ayurvedic preparation), Shilajit (Asphaltum punjabianum), Guggul (Commiphora wightii).	1 TAB TDS (Adhbhoktra with kozhna jala)	Improve outflow, boosts immunity, helps in cell rejuvenation, enhances digestion and boosts metabolism.
Nephron Plus	Hazroolyahood (<i>Lapis judaicus</i>), bhasma, Chandrapha powder and pashanbheda (<i>Bergenia ligulata</i>).	2 CAP BD (Adhbhoktra with kozhna jala)	Beneficial to kidney diseases and urinary problems.
CKD Syrup	Kasani (Cichorium intybus), Gokhru (Tribulus terrestris), Shatavari (Asparagus racemosus), Giloy (Tinospora cordifolia), Sorbind, and Shudh Shilajeet (Asphaltum punjabianum).	3 TSF BD (Adhbhoktra with kozhna jala)	Provides relief from pain and discomfort associated with kidney issues.
Liver Tonic	Lal Punarnava (Boerhavia diffusa), Sufed Punarnava (Boerhavia diffusa), Bala (Sida cordifolia), Ashoka (Albizia lebbeck), Patha (Cissampelos), Giloy (Tinospora cordifolia), Chitrak (Plumbago zeylanica), Kakoli (Lilium polyphyllum), Jasa (Adhatoda vasica), Nagarmotha (Cyperus rotundus), Ajwain (Trachyspermum ammi), Sonth (Zingiber officinale), Kali Mirch (Piper nigrum), Long (Piper longum), Methi (Trigonella foenum-graecum), White Jeera (Cuminum cyminum), Roheda Chhal (Tecomella undulata), Dalchini (Cinnamomum verum), Tejpatta (Cinnamomum tamala), Badi Elaichi (Amomum subulatum), Chotti Elaichi (Elettaria cardamomum), Jaiphal (Myristica fragrans), Nagkesar (Mesua ferrea), Kankol (Piper cubeba), Multhi (Glycyrrhiza glabra), Shekel (Badamites axoepyrica), Malna (Malvaceae longifolia).	2 TSF BD (Adhbhoktra with sama matra kozhna jala)	Helps in improving overall liver health.
DM CAPSULE	Amba Haldi (Curcuma amada), Giloy (Tinospora cordifolia), Sufed Mulil (Chlorophytum borivilianum), Methi (Trigonella foenum-graecum), Neem (Azadirachta indica), Karela (Momordica charantia), Jamun (Syzygium cumini), Bilva Patra (Aegle marmelos), Gulmar (Gymnema sylvestre), Shudh Shilajeet.		Helps to stimulate insulin production. Beneficial for managing blood glucose levels and increases metabolism and energy levels.
JS BP cure	Sarpgandha (Rauvolfia serpentina), Arjuna (Terminalia arjuna), Shigru (Moringa oleifera), Haritaki (Terminalia chebula), Vibhitaki (Terminalia bellirica), Amla (Embelica officinalis), Godanti Bhasma (Gypsum).	1 CAP BD (Adhbhoktra with Kozhna jala)	Maintain a healthy heart functioning, kidney health and improve digestive health.
32 Herbal Tea	Gauzan (Echium amoenum), Kulanjan (Alpinia galanga), Choti Elaichi (Elettaria cardamomum), Laung (Syzygium aromaticum), Badi Elaichi (Amomum subulatum), Badi Kian Khtay (Illciun vermum), Banafisha (Viola odorata), Jufa (Clerodendrum serratum), Ashwagandha (Withania somnifera), Mulethi (Glycyrrhiza glabra), Punarnava (Boerhavia diffusa), Brahmi (Bacopa monnieri), Chitrak (Plumbago zeylanica), Kali Mirch (Piper nigrum), Adoom (Sanskrit name), Ajwain (Trachyspermum ammi), Shudh Patp (Evolvulus alsinoides), Tulsi (Ocimum tenuiflorum), Sunth (Zingiber officinale), Motha (Cyperus rotundus), Seave (Cueszta reflexa), Sonth (Zingiber officinale), Majetha (Rubia cordifolia), Saroka (Sphaeranthus indicus), Dalchini (Cinnamomum verum), Gulab (Rosa spp.), Green Tea (Camellia sinensis).	30 gram (Adhbhoktra with <i>kozhna jala</i>)	Helps to enhance immunity, hyper acidity, kidney, liver and CA.

Liv DS	Bhumiainla Ext. (Bocrhavia prionitis), Kasani Ext. (Cichorium intybus), Himswa (Leptadenia reticulata), Punarnava Ext. (Boerhavia diffusa), Guduchi Ext. (Tinospora cordifolia), Kakamachi (Solanum nigrum), Arjuna (Terminalia arjuna), Biranjasipha (Berberis aristata), Kasamardaru (Solanum xanthocarpum), Vidanga (Embelia ribes), Chitraka (Plumbago zeylanica), Kutki (Picrorhiza kurroa), Haridaki (Terminalia chebula), Bhingraj (Eclipta prostrata).	1 Tab BD (Adhobhakt with koshna jala)	Used for liver disease, CHT, GERD and loss of appetite
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Table 11: The medications prescribed during the follow up on 25 March, 2024

Medicine name	Ingredients	Dosage	Therapeutic Effects
Chander Vati Tablet	Kapoor Kachri (Hedychium spicatum), Vacha (Acorus calamus), Motha (Cyperus rotundus), Kalmegh (Andrographis paniculata), Giloy (Tinospora cordifolia), Devdaru (Cedrus deodara), Deyu Haldi (Berberis aristata), Atees (Aconitum heterophyllum), Daru Haldi (Berberis aristata), Pipla Mool (Piper longum root), Chitraka (Plumbago zeylanica), Dhaniya (Coriandrum sativum), Harad (Terminalia chebula), Bahera (Terminalia bellirica), Amia (Phyllanthus emblica), Chavya (Piper chaba), Yavasajang (Embelia ribes), Pippal (Piper longum), Kalmirch (Piper nigrum), Sonth (Zingiber officinale dried ginger), Gaj Pipal (Scindapsus officinalis), Swarn Makshik Bhasma (Gold Iron pyrite ash - Ayurvedic preparation), Sujji Kshar (Potassium carbonate - traditional alkali preparation), Senda Namak (Rock salt), Kala Namak (Black salt), Choti Elaichi (Elettaria cardamomum - small cardamom), Dalchini (Cinnamomum verum), Tejpatra (Cinnamomum tamala), Danti (Baliospermum montanum), Nishothra (Operculina turpethum), Banslochan (Bamboo silica), Loh Bhasam (Iron salt - Ayurvedic preparation), Shilajeet (Asphaltum punjabianum), Guggul (Commiphora wightii).	1 TAB TDS (Adhobhakt with koshna jala)	Improves urine outflow, boosts immunity, helps in cell rejuvenation, enhances digestion and boosts metabolism
Nephron Plus	Hazrool yahood (Lapis judaicus), bhasma, Chandprabha powder and pashanbheda (Bergenia ligulata)	2 CAP BD (Adhobhakt with koshna jala)	Beneficial to kidney diseases and urinary problems
CKD Syrup	Kasani (Cichorium intybus), Gokhru (Tribulus terrestris), Shatavari (Asparagus racemosus), Giloy (Tinospora cordifolia), Sorbitol, and Shudh Shilajeet (Asphaltum punjabianum)		Provides relief from pain and discomfort associated with kidney issues.
Liver Tonic	Lal Punarnava (Boerhavia diffusa), Safed Punarnava (Boerhavia diffusa), Bala (Sida cordifolia), Atibala (Abutilon indicum), Patha (Cyclea peltata), Giloy (Tinospora cordifolia), Chitrak (Plumbago zeylanica), Kakoli (Lilium polyphyllum), Vasa (Adhatoda vasica), Nagarmotha (Cyperus rotundus), Ajwain (Trachyspermum ammi), Sonth (Zingiber officinale), Kali Mirch (Piper nigrum), Long Pippal (Piper longum), Methi (Trigonella foenum-graecum), White Jeera (Cuminum cyminum), Roheda Chhal (Tecomella undulata), Dalchini (Cinnamomum verum), Tejpatta (Cinnamomum tamala), Badi Elaichi (Amomum subulatum), Chhoti Elaichi (Elettaria cardamomum), Gajpippal (Myristica fragrans), Tagara (Messua ferrea), Kankol (Piper cubeba), Mulethi (Glycyrrhiza glabra), Shekel (Balantiies aegyptiaca), Madhuca (Madhuca longifolia)	3 TSF BD (Adhobhakh with sama matra koshna jala)	Helps in improving overall liver health.
DM CAPSULE	Amba Haldi (Curcuma amada), Giloy (Tinospora cordifolia), Safed Musli (Chlorophytum borivilianum), Methi (Trigonella foenumgraecum), Neem (Azadirachta indica), Karela (Momordica charantia), Jamun (Syzygium cumini), Bilva Patra (Aegle marmelos), Gudmar (Gymnema sylvestre), Shudh Shilajeet.	2 CAP BD (<i>Prashobhoka</i> with	Beneficial for managing blood glucose levels and increasing metabolism and energy levels
32 Herbal Tea	Gauzaban (Echium amoenum), Kulanjan (Alpinia galanga), Choti Elaichi (Elettaria cardamomum), Lavang (Syzygium aromaticum), Badi Elaichi (Amomum subulatum), Badiyan Khatay (Illicium verum), Banaksha (Viola odorata), Jufa (Clerodendrum serratum), Ashwagandha (Withania somnifera), Mulathi (Glycyrrhiza glabra), Punamava boos (Boerhavia diffusa), Brahmi (Bacopa monnieri), Chitrak (Plumbago zeylanica), Kali Mirch (Piper nigrum), Adoosa (Adhatoda vasica), Saunt (Foeniculum vulgare), Shankh Pushp (Evolvulus alsinoides), Tulsi (Ocimum sanctum), Arjuna (Terminalia arjuna), Motha (Cyperus rotundus), Senaye (Cascata reflexa), Sonth (Zingiber officinale), Majeeth (Rubia cordifolia), Sarjoka (Sphaeranthus indicus), Dalchini (Cinnamomum verum), Gulab (Rosa spp.), Green Tea (Camellia sinensis), Giloy (Tinospora cordifolia), Tej Patta (Cinnamomum tamala), Lal Chandan (Pterocarpus santalinus), White Chandan (Santalum album), Pudina (Mentha spicata).	30 gram (<i>Adhobhakh</i> with <i>koshna jala</i>)	Helps to enhance immunity, hyper acidity, kidney, liver and CA
Liv DS	Bhumiainla Ext. (Boerhavia prionitis), Kasani Ext. (Cichorium intybus), Himswa (Leptadenia reticulata), Punarnava Ext. (Boerhavia		Used for liver disease, CHT, GERD and loss of appetite

	diffusa), Guduchi Ext. (Tinospora cordifolia), Kakamachi (Solanum nigrum), Arjuna (Terminalia arjuna), Biranjasipha (Berberis aristata), Kasamarda Jhavuka (Solanum xanthocarpum), Vidanga (Embelia ribes), Chitraka (Plumbago zeylanica), Kutki (Picrorhiza kurroa), Haridaki (Terminalia chebula), Bhingraj (Eclipta prostrata).		
Amal Pitt Har Powder	Shunti (Zingiber officinale), Maricha (Piper nigrum), Pippali (Piper longum), Amalki (Phyllanthus emblica), Bibhitaki (Terminalia belerica), Haritaki (Terminalia chebula), Musta (Cyperus rotundus), Shatavari (Asparagus racemosus), Vatsak (Tacca amomum verum), Vidanga (Embelia ribes), Vidarikanda (Pueraria tuberosa), Shatapushpa (Anethum graveolens), Trivita (Tribulus terrestris), Sharkara (Saccharum officinarum).	1/2 TSF HS (<i>Nishikal</i> with <i>koshna jala</i>)	Improves Digestive Health, Helps in Maintaining Balance and Improves a Sense of Wellness

Result

The patient underwent IPD for 7 days, after the treatment she experienced noteworthy development in symptoms, which denotes the interventions used in the study are effective against CKD, hypertension and T2DM. At the time of discharge, the patient was well oriented and there was relief from pain, weakness, burning micturition, frothy urine, disturbed sleep, abdominal bloating and gastritis which shows that the *Ayurvedic* interventions used in the case study are effective for CKD. The laboratory investigations as mentioned in Table 5 done during treatment period.

Laboratory tests conducted during the treatment showed significant improvements in renal function. Serum urea levels decreased gradually from 164.5 mg/dL to 70.4 mg/dL, indicating enhanced kidney function. Similarly, serum creatinine levels reduced from 6.85 mg/dL to 4.63 mg/dL. The eGFR increased from 4.68 ml/min/1.73 m² to 10.49 ml/min/1.73 m². These results underscore the potential efficacy of *Ayurvedic* therapies in managing CKD.

A CKD patient with hypertension, T2DM and fatty liver was the subject of the current investigation, which produced encouraging findings. However, a more thorough assessment is necessary because of the small sample size of just one case. Future studies should use randomized controlled trials and bigger sample sizes to verify the safety, effectiveness, and dependability of the integrated *Ayurvedic* treatments. These kinds of investigations will be essential for creating standardized therapeutic standards and methods.

Discussion

Ayurvedic treatment integration for CKD offers a viable substitute for conventional medical methods. This case study describes the application of several Ayurvedic treatments to a 54-year-old woman who has been diagnosed CKD with T2DM for 15 years, Hypertension, and fatty liver. The patient's symptoms including general weakness, frothy micturition, disturbed sleep, abdominal bloating and gastritis were found to be reduced. The samprapti [22, 23] for this case study is depicted in Fig 1.

Implications for Future Research

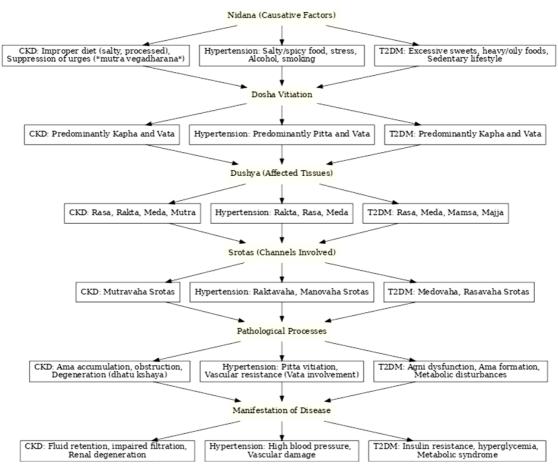


Fig 1: The samprapti for this case study

During her 7 days IPD, she underwent *Panchakarma* treatments as part of the *Ayurvedic* therapy regimen.

- i). Abhyangam with Dhanwantaram Tail (15): Abhyangam enhances circulation and lymphatic drainage, aiding in detoxification and improved muscle tone. The warm Dhanwantaram Tail nourishes muscles, joints, and skin, relieving stiffness and dryness while offering pain and inflammation relief through its anti-inflammatory properties. Regular use of this oil strengthens tissues, promotes rejuvenation, and enhances vitality.
- **ii).** Shirodhara with Ksheer Bala: 2 liters of warm Ksheer Bala was poured in a steady stream onto the forehead, focusing on the Ajna area for 45 minutes while the patient remained relaxed. Shirodhara induces parasympathetic activation, reducing stress, anxiety, and insomnia. The warm milk promotes circulation, relaxes the scalp, and nourishes the nervous system, improving mental clarity and emotional stability.
- iii). Matra Basti with Sehacharadi Oil (60 ml): The Sehacharadi oil was warmed to body temperature and slowly administered into the rectum while the patient lay on their left side, holding the oil for 15-20 minutes for absorption. Sehacharadi oil lubricates the intestines, promoting smoother bowel movements and reducing constipation. It calms the nervous system, balances Vata dosha, and supports colon health by reducing inflammation and nourishing gastrointestinal tissues.
- iv). Sarwang Swedan with Dashmool Kwath: The steam induces vasodilation, improving circulation and detoxification. It activates the lymphatic system to remove toxins, supports muscle relaxation, and relieves joint stiffness. Dashmool's anti-inflammatory properties help alleviate pain and inflammation, while the steam induces deep relaxation, reducing stress and enhancing emotional well-being.

The Ayurvedic treatment plan in this case included a comprehensive regimen of various Ayurvedic formulations and Panchakarma therapies aimed at addressing multiple health concerns. Chander Vati Tablet is primarily used for managing high blood sugar and related complications, enhancing overall metabolism. Nephron Plus is designed to support kidney function, improving filtration detoxification processes, crucial for maintaining kidney health. CKD Syrup serves as a vital formulation for individuals with CKD, promoting renal function and reducing complications associated with the condition. Liver Tonic (administered twice) is used for improving liver health by detoxifying the liver, supporting liver cell regeneration, and enhancing overall digestive function. The DM Capsule is effective for managing diabetes mellitus, addressing issues such as insulin resistance and blood sugar regulation. 32 Herbal Tea contains a blend of medicines that support overall digestive health, detoxification, and immune system enhancement. Liv DS is another liver-supporting formulation that improves liver function, reduces acidity, and promotes healthy digestion. Amal Pitt Har Powder is used to balance excess pitta dosha, relieving symptoms such as acidity, indigestion, and inflammatory conditions. JS BP Cure supports the management of high blood pressure by promoting vascular health and aiding in blood pressure regulation. Dr. Shuddhi Powder is a detoxifying agent used for cleansing the body of toxins and rejuvenating the digestive and metabolic systems. Finally, Divya Shakti Powder is used to enhance vitality, improve energy levels, and support overall

immune function. Together, these medications are complemented by *Panchakarma* therapies, which aim to detoxify the body, balance the doshas, and enhance the therapeutic effects of the *Ayurvedic* formulations. This holistic treatment approach supports multiple organ systems, promotes detoxification, and restores overall health.

This case study highlights the benefits of combining traditional medical treatments with *Ayurvedic* therapy for managing CKD. *Ayurvedic* treatments offer a cost-effective approach targeting underlying imbalances, improving renal function, and addressing coexisting conditions like diabetes and hypertension. Further research is needed to confirm their effectiveness and safety in CKD management.

Conclusion

This case study evaluating the treatment of CKD with hypertension, fatty liver and T2DM through *Ayurvedic* interventions yields the following findings:

Symptoms: Upon admission, the patient presented with general weakness, low micturition, frothy urine, disturbed sleep, abdominal bloating and gastritis. After IPD *Ayurvedic* treatment, significant improvements were observed. The patient reported relief from frothy urine, disturbed sleep with no new symptoms emerging, suggesting a marked improvement in kidney function and overall health.

Vitals: The patient's vital signs fluctuated during the treatment period. Blood pressure varied from 145/80 mmHg to 130/80 mmHg. The patient's weight was maintained throughout the treatment, and there was a notable reduction in sleep issues and frothy urine, reflecting positive changes in both lifestyle and diet.

Investigations: Laboratory tests conducted during the treatment showed significant improvements in renal function. Serum urea levels decreased gradually from 164.5 mg/dL to 70.4 mg/dL, indicating enhanced kidney function. Similarly, serum creatinine levels reduced from 6.85 mg/dL to 4.63 mg/dL. The eGFR increased from 4.68 ml/min/1.73 m² to 10.49 ml/min/1.73 m². These results underscore the potential efficacy of *Ayurvedic* therapies in managing CKD.

The Ayurvedic treatment for CKD showed positive results, improving lab tests, vital signs, and symptoms. Ayurvedic treatments focus on restoring balance and addressing imbalances, enhancing renal health. Further clinical trials are needed to confirm these findings and establish standardized treatment methods for CKD.

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