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Evaluating the Impact of Ayurvedic Interventions on Renal Health in Chronic Kidney Disease: A Case Study Analysis

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ABSTRACT

Chronic kidney disease (CKD) is a global health issue that has attracted attention owing to its increasing mortality rate. The disease is classified into five stages according to the glomerular filtration rate (GFR). It is difficult to diagnose CKD in its early stages (stages I and II) because the GFR might remain normal. The exact cause of CKD remains unclear; however, lifestyle changes and dietary factors are often associated with its development. A multidisciplinary treatment approach is considered the most effective for managing CKD. Panchakarma encompasses detoxification and rejuvenation techniques that aim to balance the doshas, enhance kidney function, and promote overall wellness. Despite the availability of advanced technologies and treatments, early detection remains elusive in developing and middle-income countries. This case report focuses on a 69-year-old male patient with CKD for 7 months and hypertension for 20 years who received Ayurvedic treatment at Jeena Sikho Lifecare Limited Hospital, Derabassi. CKD is prevalent in the elderly population owing to age-related physiological changes, increased comorbidities, and cumulative exposure to risk factors such as hypertension and diabetes. The treatment regimen administered to him integrated personalized Ayurvedic principles and Panchakarma therapies, resulting in a significant improvement in his symptoms, kidney function, and overall quality of life. After six days of therapy, the patient demonstrated an improved glomerular filtration rate (GFR) and reported considerable relief from pain and other related symptoms. These results highlight Ayurveda's potential as an affordable treatment modality that can complement or even replace conventional therapies, particularly in individuals with limited financial resources seeking advanced healthcare options. Despite these promising findings, additional stuies incorporating larger randomized controlled trials are necessary to further assess the efficacy and safety of these Ayurvedic approaches for CKD.

Keywords:Chronic Kidney Disease (CKD), Glomerular Filtration Rate (GFR), Ayurveda therapies, Panchakarma, Hypertension, Nocturia

Introduction

The explanation of Chronic Kidney Disease (CKD) has changed over time. According to current international guidelines, CKD is defined as a glomerular filtration rate (GFR) of less than 60 mL/min per 1.73 m^2, the presence of a kidney damage marker, or both symptoms, with at least 3 months' duration, irrespective of the primary cause [1]. CKD is classified into five stages according to GFR. Patients may be asymptomatic or have common symptoms, such as loss of appetite, itching, and lethargy. In most cases, the diagnosis is made after the symptoms become more severe. Based on these studies, hypertension is prevalent in CKD patients, approximately 60% to 90%, depending on the stage and cause of CKD [2]. Age is a key factor in the development of CKD. After 65 years, individuals with or without diabetes or hypertension show a GFR that falls under stage 3 or above, but the reason behind this remains unclear. The prevalence in individuals aged >65 years in

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the US was much higher (39.4%) than in those aged <60 years [3].

CKD is a growing health concern among older adults, and its prevalence increases with age. This is due to age-related physiological changes, comorbidities, and the complexity of diagnosing CKD in the older population. The prevalence of CKD increases with age and is often underdiagnosed because of misconceptions about kidney function decline as a normal part of aging [4]. Older adults often have higher rates of comorbid conditions such as diabetes and hypertension, which exacerbate kidney impairment [5,6]. Diagnostic challenges include the use of biomarkers, such as eGFR and albuminuria, which may be misleading due to age-related physiological changes. Lifestyle factors, such as improved cardiovascular health, also have a negative association with CKD, particularly in those aged ≥65 years [7,8].

CKD is a complex condition that is influenced by a combination of medical conditions and environmental factors. Diabetes and hypertension are the most common conditions, accounting for two-thirds of the cases. Other causes include glomerulonephritis, polycystic kidney disease, autoimmune diseases, and chronic use of pharmaceuticals. Environmental factors, such as heavy metals and agrochemicals, particularly in low- to middle-income countries, have been linked to CKD. The major medical causes include diabetes, hypertension, and glomerulonephritis. Environmental factors such as heavy metals and agrochemicals, particularly in rural areas, also contribute to CKD. Further research is required to understand these factors [9,10].

Studies have suggested integrated treatment for CKD through immunotherapies, combination therapies, and targeted interventions, focusing on 32 proteins involved in immunity-related pathways and protein-protein inter-actions [11]. A multidisciplinary approach includes nutri-tional management, early nephrologist referral, social support, exercise, and mental health.

Collaboration among renal dietitians, social workers, and healthcare providers is essential for comprehensive patient care [12]. An inte-grated approach considers biological, psychological, social, cultural, and economic aspects, promoting dietary guide-lines, healthy eating practices, and understanding individ-ual patient needs [13].

Integrated Ayurveda treatment for CKD involves a holis-tic approach that includes dietary modifications, herbal remedies, detoxification techniques, and lifestyle changes. Panchakarma, a detoxification technique, is crucial for expelling uremic toxins and improving kidney health [14]. Personalized dietary plans and lifestyle changes are also essential for managing CKD [15]. Clinical outcomes show significant improvements in kidney function markers following Ayurvedic interventions. This case study emphasizes the derivation of a holistic treatment method for CKD with Ayurveda.

CASE REPORT

A 69-year-old male with a history of CKD for 7 months and hypertension for 20 years with premature coronary artery disease visited Jeena Sikho Lifecare Limited Hospital, Derabassi (Chandigarh) on May 10, 2024. He reported symptoms such as constipation, backache, and nocturia. His condition initially presented with general weakness and frothy urine. He was diagnosed with hypertension 20 years prior to his hospital admission. A thorough and methodical evaluation was carried out, together with medical history, physical checkup, and diagnostic tests. The vital signs and investigation report during the first day of the visit are detailed in **Table 1**.

.Table 1 Vitals during the initial examination on first day of the visit

Parameter	Findings
Temperature	98.2 °F
Blood Pressure	168/92 mm of Hg
Pulse Rate	86/min
Weight	62 Kg
Oxygen Saturation	99%
Nadi	VatajKaphaj
Mala	Vibandha
Nidra	Prakruta
Mutra	Phenila Mutra
Agni	Mandya

The patient was admitted for 6 days, during that period he received Ayurvedic treatments including Panchakarma therapy. This therapy encompassed Panchakarma therapies such as Awagaha Swedan, Gokshuradi and Punarnava Siddha Sneha Basti, Kashaya Basti, chest and back lepam with Dashmool and Dashang and Shiropichu &Shiroabhyangam with Brahmi oil.

The patient was advised to take Chander Vati tablet, Castor oil, Renal support syrup and GFR powderthroughout the IPD Treatment. Vitals observed throughout the treatment are detailed in **Table 2**. The medications taken during IPD are listed in **Table 3**. The pain scoring during the IPD is showed in **Table 4**. Ecosprin tablet is given once in a day orallyduring IPD period as prescribed previously. After 6 days of treatment, the patient got relief from pain, frothy urine, nocturia and constipation with mild general weakness.

Table 2 Vitals observed throughout the treatment

Investigation on the date of admission

Parameter	Findings			
Date	10/05/2024	11/05/2024	14/05/2024	15/06/2024
Haemoglobin	8.7 gm/dL	-	8.1 gm/dL	8.5 gm/dL
Pulse	80/min	86/min	74/min	88/min
SpO2	99%	99%	99%	98%
Blood Pressure	150/80 mmHg	130/80 mmHg	140/90 mmHg	160/80 mmHg
Urea	145.01 mg/dL	-	173.27 mg/dL	117.0 mg/dL
Creatinine	8.64 mg/dL	-	8.99 mg/dL	4.39 mg/dL
Uric acid	2.09 mg/dL	-	5.93 mg/dL	7.18 mg/dL
Sodium	137.7 mEq/L	135.8 mEq/L	136.3 mEq/L	-
Potassium	6.05 mEq/L	5.50 mEq/L	5.34 mEq/L	-
Chloride	104.9 mEq/L	102.6 mEq/L	101.6 mEq/L	-
Total RBC count	3.18 Mill/Cumm	-	2.96 Mill/Cumm	-
PCV/HCT	27.80%	-	25.30%	-
MCH	27.2 pg	-	27.5 pg	-
MCHC	31.20%	-	32.10%	-

Table 3 Medications taken during the IPD

Medicine name	**Ingredients**	**Dosage**	**Dates of intake**
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*), Daru Haldi (*Berberis aristata*), Pipla Mool (*Piper longum* root), Chitraka (*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*), Gaj Pipal (*Scindapsus officinalis*), Swarn Makshik Bhasma, Sujji Kshar, Senda Namak, Kala Namak, Choti Llayachi (*Elettaria cardamomum*), Dalchini (*Cinnamomum verum*), Tejpatra (*Cinnamomum tamala*), Danti (*Baliospermum montanum*), Nishothra (*Operculina turpethum*), Banslochan, Loh Bhasam, Shilajit (*Asphaltum punjabinum*), Guggal (*Commiphora wightii*).	2 TAB BD (Adhobhakta with koshna jala)	10/05/2024-15/05/2024

GFR Powder	Bhoomi Amla (*Phyllanthus niruri*), Badi Harad (*Terminalia chebula*), Bahera (*Terminalia bellirica*), Kasni (*Cichorium intybus*), Makay (*Zea mays*), Punarnava (*Boerhavia diffusa*), Gokshur (*Tribulus terrestris*)	Half a teaspoon BD (Adhobhakta with koshna jala)	10/05/2024-15/05/2024
Renal support syrup	Nimba (*Azadirachta indica*), Arjuna (*Terminalia arjuna*), Gokshura (*Tribulus terrestris*), Hareetaki (*Terminalia chebula*), Ashwagandha (*Withania somnifera*), Karanja (*Pongamia pinnata*), Chirayata (*Swertia chirayita*).	20 ml BD (Adhobhakta with samamatra koshna jala)	10/05/2024-15/05/2024
Castor oil	_	50 ml HS (Nishikal with koshna jala)	10/05/2024-15/05/2024

Table 4. Pain scoring during the IPD (0 to 10 degrees)

Date	Pain scoring chart (0 to 10)	
	Before therapy	After therapy
10/05/2024	2	1
11/05/2024	2	1
12/05/2024	2	1
13/05/2024	1	0
14/05/2024	1	0
15/05/2024	0	0

The vitals observed during the IPD treatment on a daily basis are detailed in **Table 5**.Investigations were conducted on May11, 2024, on the2nd day of treatment as mentioned in**Table 2**. The vitals fluctuated throughout the IPD treatment. Vitals including Nadi during the date of discharge is mentioned in **Table 6**.The patient was afterward discharged on 15May 2024. Medication advised during the time of discharge is given in **Table 7**.

Table 5. Daily vitals observed during the IPD treatments

Date	Time	Weight in Kg	Temperature	Blood Pressure (mmHg)	Pulse per min	Respiration/min	SpO2
10/05/2024	2:00 PM	61 Kg	98.2˚ F	150/80	80	18	99%
	9:00 PM	61 Kg	98.2˚ F	140/80	82	18	99%
11/05/2024	9:00 AM	61 Kg	98.2˚ F	130/80	86	18	99%
	7:00 PM	61 Kg	98˚ F	160/100	84	16	99%
12/05/2024	5:00 AM	61 Kg	98˚ F	130/80	80	16	99%
	9:00 AM	61 Kg	98.2˚ F	130/80	82	18	99%
	8:00 PM	60 Kg	98˚ F	130/80	76	16	99%
13/05/2024	5:00 AM	60 Kg	98˚ F	130/80	76	16	99%
	9:00 AM	60 Kg	98.2˚ F	130/80	76	18	99%
	8:00 PM	61 Kg	98.4˚ F	130/80	78	18	99%
14/05/2024	5:00 AM	61 Kg	98.2˚ F	120/80	84	18	99%
	10:00 AM	60 Kg	98.2˚ F	140/90	74	18	99%
15/05/2024	8:00 PM	60 Kg	98.4 F	130/80	86	18	99%
	5:00 AM	60 Kg	98.2˚ F	120/80	84	18	99%
	10:00 AM	60.4 Kg	98.2˚ F	120/80	86	18	99%

Table 6. Vitals during the Date of Discharge

Parameter	Findings
Temperature	98 ˚F
Blood Pressure	160/80 mm of Hg
Pulse Rate	84/min
Weight	62 Kg
Oxygen Saturation	99%
Nadi	Vata Pitta
Mala	Avikruta
Nidra	Avikruta
Mutra	Ishatapeeta
Agni	Madhyama

Table 7. Medicine given at the time of Discharge 15/05/2024

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*), Daru Haldi (*Berberis aristata*), Pipla Mool (*Piper longum* root), Chitraka (*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*), Gaj Pipal (*Scindapsus officinalis*), Swarn Makshik Bhasma, Sujji Kshar, Senda Namak, Kala Namak, Choti Llayachi (*Elettaria cardamomum*), Dalchini (*Cinnamomum verum*), Tejpatra (*Cinnamomum tamala*), Danti (*Baliospermum montanum*), Nishothra (*Operculina turpethum*), Banslochan, Loh Bhasam, Shilajit (*Asphaltum punjabinum*), Guggal (*Commiphora wightii*).	2 tablets BD (Adhobhakta with koshna jala)	Alleviates urinary tract symptoms and promotes healthy urine flow.
Renal support syrup	Nimba (*Azadirachta indica*), Arjuna (*Terminalia arjuna*), Gokshura (*Tribulus terrestris*), Hareetaki (*Terminalia chebula*), Ashwagandha (*Withania somnifera*), Karanja (*Pongamia pinnata*), Chirayata (*Swertia chirayita*).	20 ml BD (Adhobhakta with samamatra koshna jala)	Provide solution for kidney, bladder, urinary tract disease
GFR Powder	Bhoomi Amla (*Phyllanthus niruri*), Badi Harad (*Terminalia chebula*), Bahera (*Terminalia bellirica*), Kasni (*Cichorium intybus*), Makay (*Zea mays*), Punarnava (*Boerhavia diffusa*), Gokshur (*Tribulus terrestris*)	Half a teaspoon BD (Adhobhakta with koshna jala)	Supports kidney function and reduces inflammation, helping with renal symptoms.

Divya Shakti Powder	Trikatu, Triphala, Nagarmotha (*Cyperusrotundus*), Vaya Vidang (*Embeliaribes*), Chhoti Elaichi (*Elettariacardamomum*), Tej Patta (*Cinnamomumtamala*), Laung (*Syzygiumaromaticum*), Nishoth (*Operculinaturpethum*), Sendha Namak, Dhaniya (*Coriandrumsativum*), Pipla Mool (*Piperlongum* root), Jeera (*Cuminumcyminum*), Nagkesar (*Mesuaferrea*), Amarvati (*Achyranthesaspera*), Anardana (*Punicagranatum*), Badi Elaichi (*Amomumsubulatum*), Hing (*Ferulaassafoetida*), Kachnar (*Bauhiniavariegata*), Ajmod (*Trachyspermumammi*), Sazzikhar, Pushkarmool (*Inularacemosa*), Mishri (*Saccharumofficinarum*).	Half a teaspoon HS (Nishikal with koshna jala)	Enhances overall vitality and energy levels, addressing fatigue and weakness.
Dr. Immune tablet	Kesar (*Crocus sativus*), Shudh Kuchla (*Strychnos nux-vomica*), Ashwagandha Ext. (*Withania somnifera*), Shatawari Ext. (*Asparagus racemosus*), Pipali (*Piper longum*), Tulsi (*Ocimum sanctum*), Laung (*Syzygium aromaticum*), Choti Elaichi (*Elettaria cardamomum*), Sonth (*Zingiber officinale*), Haldi (*Curcuma longa*), Loh Bhasam, Swaran Makshik Bhasam (*Chalcopyrite*), Mukta Shukti Bhasam (*Pinctada margaritifera*).	2 tablets BD (Adhobhakta with koshna jala)	Helps to flush out toxins from the body, Boost immunity and Improves the blood flow

The patient returned for a follow-up after 1 month on June17, 2024, and was symptomatically better and the vital test reports show that the serum urea and creatinine levels reduced significantly.The uric acid level also alleviated from previous reports. The vitals report on June 15, 2024 is mentioned in **Table 2**.The medications advised after the follow up is mentioned in**Table 8**.

Table 8. Medications advised after follow up visit17/06/2024

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*), Daru Haldi (*Berberis aristata*), Pipla Mool (*Piper longum* root), Chitraka (*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*), Gaj Pipal (*Scindapsus officinalis*), Swarn Makshik Bhasma, Sujji Kshar, Senda Namak, Kala Namak, Choti Llayachi (*Elettaria cardamomum*), Dalchini (*Cinnamomum verum*), Tejpatra (*Cinnamomum tamala*), Danti (*Baliospermum montanum*), Nishothra (*Operculina turpethum*), Banslochan, Loh Bhasam, Shilajit (*Asphaltum punjabinum*), Guggal (*Commiphora wightii*).	2 tablets BD (Adhobhakta with koshna jala)	Alleviates urinary tract symptoms and promotes healthy urine flow.
GFR Powder	Bhoomi Amla (*Phyllanthus niruri*), Badi Harad (*Terminalia chebula*), Bahera (*Terminalia bellirica*), Kasni (*Cichorium intybus*), Makay (*Zea mays*), Punarnava (*Boerhavia diffusa*), Gokshur (*Tribulus terrestris*)	Half a teaspoon BD (Adhobhakta with koshna jala)	Supports kidney function and reduces inflammation, helping with renal symptoms.

Aarogya Vati tablet	Kajan (*Carthamus tinctorius*), Loh Bhasma, Abhrak Bhasma, Tamra Bhasma, Amalaki (*Emblica officinalis*), Vibhitaki (*Terminalia bellirica*), Haritaki (*Terminalia chebula*), Chitrak (*Plumbago zeylanica*), Katuka (*Picrorhiza kurroa*), Nimba Patra (*Azadirachta indica*).	2 tablet BD (Adhobhakta with koshna jala)	Boosts immunity, Supports respiratory health, Promotes detoxification and Aids in the management of infections
Divya Shakti Powder	Trikatu, Triphala, Nagarmotha (*Cyperus rotundus*), Vaya Vidang (*Embeliaribes*), Chhoti Elaichi (*Elettariacardamomum*), Tej Patta (*Cinnamomumtamala*), Laung (*Syzygiumaromaticum*), Nishoth (*Operculinaturpethum*), Sendha Namak, Dhaniya (*Coriandrumsativum*), Pipla Mool (*Piperlongum* root), Jeera (*Cuminumcyminum*), Nagkesar (*Mesuaferrea*), Amarvati (*Achyranthesaspera*), Anardana (*Punicagranatum*), Badi Elaichi (*Amomumsubulatum*), Hing (*Ferulaassafoetida*), Kachnar (*Bauhiniavariegata*), Ajmod (*Trachyspermumammi*), Sazzikhar, Pushkarmool (*Inularacemosa*), Mishri (*Saccharumofficinarum*).	Half a teaspoon HS (Nishikal with koshna jala)	Enhances overall vitality and energy levels, addressing fatigue and weakness.
Kidney Shuddhi Ark	Punarnava (*Boerhavia diffusa*), Varuna (C*rataeva nurvala*), Gokshura (*Tribulus terrestris*), Bhumyamalaki (*Phyllanthus niruri*), Palash Pushp (*Butea monosperma*) and Shigru (*Moringa oleifera*)	15 ml BD (Adhobakt with samamatra koshna jala)	Kidney detoxification, Maintain urinary tract health and Support for kidney stones

An accurately designed DIP Diet was provided to the patient to complement the Ayurvedic treatments administered for CKD[16,35]:

Treatment Plan

I. Diet Plan:

The dietary guidelines provided by Jeena Sikho Lifecare Limited Hospitalinclude the following key commendations:

a. Foods to Avoid:

- Do not consume wheat, packed food, refined food, milk and milk products, coffee and tea.
- Avoid eating after 8 PM.

b. Hydration:

- During water intake, take sip by sip and drink slowly.
- Drink about 1 litre of alkaline water 3 to 4 times throughout the day.
- Include herbal tea, living water, and turmeric-infused water part of your daily routine.
- Boil 2-litre water to reduce up to 1 litre and consume.

c. Millet Intake:

- Incorporate five types of millet into your diet: Foxtail (Setaria italica), Barnyard (Echinochloa esculenta), Little (Panicum sumatrense), Kodo (Paspalum scrobiculatum)and Browntop (Urochloa ramose).
- Use only steel cookware for preparing the millets
- Cook the millets only using mustard oil.

d. Meal Timing and Structure:

1. Early Morning (5:45 AM): Herbal tea, curry leaves (1 leaf-1 min/5 leaves-5 min) along with raw ginger and turmeric.
2. Breakfast (9:00-10:00 AM): The patient will have steamed seasonal fruits, a fermented millet shake (4 to 5 types) and steamed sprouts.
3. Morning Snacks (11:00AM): The patient will be givenred juice (150 ml) and 4-5 soaked almonds.
4. Lunch (12:30 PM - 2:00 PM): The patient will receive Plate 1 and Plate 2. Plate 1 will include a steamed salad, while Plate 2 with cooked millet-

based dish along with raw ginger and turmeric.

5. Evening Snacks (4:00 PM-4:20 PM): Green juice (100-150 ml) accompanied by 4-5 almonds.

6. Dinner (6:15-7:30 PM): The patient will be served a raw salad, chutney, soup and green garden delight as Plate 1, along with millet khichdi, as Plate 2 along with raw ginger and turmeric.

e. Fasting:

- It is advised to observe a fast once a week.

f. Special Instructions:

- Express gratitude to the divine before consuming food or drinks.
- Sit in Vajrasana (a yoga posture) after each meal.

g. Diet Types:

- The diet comprises salt-less 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.

II. Lifestyle Recommendations

1. Include Dhyāna (meditation) for relaxation.
2. Engage in Yoga (Sukhasana and Sukshma pranayama) from 6:00 AM to 7:00 AM.
3. Practice barefoot brisk walk for 30 minutes.
4. Ensure 6-8 hours of quality sleep each night.
5. Adhere to a structured daily routine.

III. Panchakarma procedures were administered to patients

1. Awagah Swedan

Procedure: The patient was immersed up to the navel in a tub filled with warm water infused with selected medicinal herbs. To induce sweating, the water temperature was maintained at 42˚ Celsius. This treatment procedure typically lasted between 20 to 60 minutes.

Physiology: The warm water in Awagah Swedan dilates blood vessels, enhancing circulation, which facilitates the delivery of oxygen and nutrients to the kidneys while promoting the excretion of toxins through sweating. This process helps reduce the burden on renal function. The therapy aids in balancing Vata and Kapha doshas, which can alleviate symptoms like water retention and swelling, while also stimulating the kidneys to improve filtration and urine output, thus supporting better fluid and electrolyte balance. The warmth from the treatment relaxes muscles in the lumbar region, alleviating pain and tension associated with kidney issues. Additionally, it promotes relaxation and reduces stress, which is crucial for individuals with CKD, as stress can exacerbate the condition.

Mode of Action: When the patient immerses themselves in a tub of water at 42°C, their body temperature rises, leading to vasodilation, which enhances blood flow and circulation to vital organs. This response activates the sympathetic nervous system, triggering the release of hormones such as epinephrine, norepinephrine, cortisol, oxytocin, serotonin, and melatonin. These hormones play various roles, including regulating metabolism, managing stress, promoting relaxation, and supporting mood. The increase in body temperature and metabolic rate raises oxygen demand and stimulates lipolysis, the breakdown of fats for energy. This process supports immediate energy needs and aids in weight management. Awagah Swedan promotes the elimination of metabolic wastes through sweating, enhancing the skin's detoxification role. By expelling byproducts like urea, creatinine, ammonia, and uric acid, the treatment alleviates renal burden, supports kidney function, and enhances overall health and homeostasis.

2. Gokshuradi and Punarnavadi Siddha Sneha Basti (90ml)

Procedure: The patient was prepared in a comfortable environment and advised to follow a light diet prior to the procedure. The patient was then positioned in a left lateral position to facilitate the administration of the enema. Using a clean, lubricated enema device, the nozzle was gently inserted into the rectum, and the oil was slowly administered. The patient was instructed to retain it for 30 minutes to 1 hour for optimal absorption. Post-procedure, the patient was advised to hydrate adequately, rest, and consume a light diet to support recovery and detoxification.

Physiology: The diuretic properties of Gokshura and Punarnava enhance kidney filtration, increasing urine output and facilitating the elimination of toxins, excess fluids and metabolic waste from the body, which reduces Kapha dosha and helps relieve conditions such as edema and urinary disorders. Additionally, Punarnava's anti-inflammatory compounds inhibit pro-inflammatory cytokines, reducing inflammation and swelling, which provides

pain relief, particularly beneficial for musculoskeletal and urinary tract inflammation. The *basti* also balances Kapha and Vata doshas, helping to alleviate fluid retention and support digestive health. By promoting the elimination of metabolic wastes, it enhances nutrient absorption and overall metabolic function, supporting optimal health and well-being.

Mode of Action: The phytochemicals in Gokshura and Punarnava, such as flavonoids, alkaloids, and saponins, promote kidney filtration and increase urine output, facilitating the removal of toxins and excess fluids, which helps balance *Kapha dosha* and reduce symptoms like edema[23]. Punarnava's anti-inflammatory compounds, including boeravinones, inhibit pro-inflammatory cytokines, thereby reducing inflammation and pain, particularly in the joints and urinary tract[24]. Additionally, the antioxidant properties of these herbs decrease oxidative stress, protecting cells and supporting tissue health[25]. By targeting *Kapha* and *Vata doshas*, the basti also aids digestion and detoxification, encouraging the elimination of metabolic waste and improving nutrient absorption. This process enhances liver and kidney function, supporting the body's natural detoxification pathways and overall metabolic health [26].

3.Gokshuradi and Punarnavadi Kashaya Basti (350ml)

Procedure: The preparation of the herbal decoction (kashaya) involved boiling selected herbs in water until the volume was reduced to one-fourth of the original amount, followed by straining to obtain a clear liquid for administration. The patient was positioned comfortably in a left lateral position, and a clean, lubricated enema device was used to gently insert the nozzle into the rectum. Three hundred fifty ml of the kashaya was administered, and the patient was instructed to retain it for 30 minutes to 1 hour for optimal absorption. Post-procedure care included advising the patient to hydrate, rest, and maintain a light diet.

Physiology: The procedure stimulates peristalsis in the colon, which promotes the elimination of toxins (ama) and waste directly through the rectum, bypassing the upper digestive tract. This helps remove excess Kapha and Pitta doshas, improving metabolic function and reducing symptoms like digestive discomfort and lethargy associated with toxin buildup. By primarily balancing Vata dosha, Kashaya Basti alleviates issues like bloating, gas, and constipation, while the medicated decoction soothes the colon's mucosal lining, supporting nutrient absorption and a balanced digestive system. Additionally, the herbal decoction provides targeted nourishment to the colon, enhancing immune support, improving nutrient assimilation, and calming the nervous system for relaxation and overall well-being.

Mode of action: The herbal decoction used in Kashaya Basti contains bioactive compounds, such as alkaloids and flavonoids, which are absorbed through the rectal mucosa[27]. This process helps neutralize toxins and reduces inflammation in the colon by inhibiting pro-inflammatory cytokines. Kashaya Basti regulates electrolyte levels, supporting fluid balance and aiding in the management of Kapha and Pitta doshas, while specifically targeting Vata dosha to stabilize intestinal motility and relieve symptoms like constipation, gas, and bloating[28]. Furthermore, the bioactive compounds nourish the cells of the colon and surrounding tissues, enhancing the integrity of the mucosal lining and stimulating local immune responses in the gut-associated lymphoid tissue (GALT), thereby supporting overall digestive and immune health.

4. Chest and Back Lepam with Dashmool and Dashang

Procedure: A thick herbal paste was prepared by mixing Dashmool and Dashang powders with a warm liquid medium. The patient was positioned comfortably, and the paste was applied evenly across the chest and back to ensure optimal absorption of the herbs. The paste was then left on for 20–30 minutes. Then the paste was gently removed with a damp cloth, and the skin was cleansed.

Physiology: The bioactive compounds in Dashmool and Dashang provide anti-inflammatory and analgesic benefits, which, when absorbed through the skin, reduce inflammation and relieve muscle and joint pain, alleviating stiffness and discomfort. The paste's warming effect enhances blood flow to the chest, helping to loosen mucus and ease respiratory congestion. Additionally, Dashmool's decongestant properties help balance excess *Kapha* and *Vata*, promoting clearer airways and supporting lung health. The soothing warmth of the paste also relaxes chest and back muscles, fostering a sense of relaxation, which reduces stress and aids in easier, more relaxed breathing.

Mode of action: The bioactive compounds in Dashmool and Dashang, including alkaloids, saponins and tannins, reduce inflammation by inhibiting pro-inflammatory cytokines, which alleviates localized pain, stiffness, and discomfort in the chest and back when absorbed through the skin[29,30]. The warming effect of the paste enhances blood flow, supporting the breakdown of mucus and reducing chest congestion. Dashmool's decongestant properties help balance excess *Kapha*, clearing respiratory passages and improving lung function[31]. The warmth and active compounds promote relaxation of the chest and back muscles, calming the nervous system, reducing stress, and facilitating easier, deeper breathing, which supports respiratory comfort and overall relaxation.

5. Shiropichu and Shiroabhyangam with Brahmi oil

Procedure: The oil was warmed to a comfortable temperature, and a cotton cloth was soaked in the oil for Shiropichu,

with additional oil set aside for the Shiroabhyangam massage. The treatment started with **Shiropichu**, where the soaked cloth was placed on the scalp, ensuring it covered the entire area while the patient lay down comfortably. This cloth was left in place for 30 to 60 minutes, allowing the oil to penetrate the scalp. Following the Shiropichu, the process continued with **Shiroabhyangam**, where the warm Brahmi oil was applied directly to the scalp using gentle, rhythmic strokes. The massage started from the forehead and moved toward the back of the head, incorporating the neck and shoulders as well. This massage was performed for 30 to 45 minutes, promoting relaxation and facilitating the absorption of the oil.

Physiology: The application of warm Brahmi oil leads to localized heat, which causes vasodilation. This enhances blood circulation to the scalp, improving the delivery of nutrients and oxygen to the tissues while promoting the removal of metabolic wastes.The treatment stimulates the parasympathetic nervous system, which promotes relaxation and reduces stress. This activation triggers the release of neurotransmitters like serotonin and endorphins, which enhance the well-being.The elevated temperature from the warm oil application increases the metabolic rate, leading to enhanced lipolysis to provide energy. This process also stimulates lymphatic drainage, facilitating detoxification by helping the body eliminate waste products through the skin and lymphatic system.

Mode of action: Shiropichu with Shiroabhyangam involves several key mechanisms rooted in Ayurvedic principles. The application of warm Brahmi taila enhances transdermal absorption of bioactive constituents such as bacosides and flavonoids, which exhibit neuroprotective properties and mitigate oxidative stress (*rakta dushti*)[32]. Additionally, these treatments stimulate the parasympathetic nervous system, promoting the release of neurotransmitters like serotonin and endorphins that elevate mood and regulate cortisol levels, thereby optimizing the body's response to psychological stressors[33]. Furthermore, the local heat increases *agni* (metabolic fire) and promotes *srotas* (channels) through vasodilation, enhancing the *dhatus* (tissue) delivery while facilitating the excretion of metabolic waste[34]. This thermogenic effect also stimulates lipolysis for energy and encourages apana vata, supporting lymphatic drainage and detoxification processes. Collectively, these actions contribute to the therapeutic efficacy of Shiropichu with Shiroabhyangam, promoting both physical (*Sharira)* and mental (*Manasa*) well-being.

Medicinal Interventions

The Ayurvedic treatment employed in this case included Chander vati tablet, GFR Powder, Renal support syrup, Castor oil, Divya Shakti Powder, Dr. Immune tablet, Aarogya Vati tablet and Kidney Shuddhi Ark along with Panchakarma therapies.

Allopathic medicine administered during the treatment

Ecosprin tablet is administered once in a day orally during IPD period as prescribed previously. It is a widely used medication for its cardioprotective and analgesic properties.

RESULT

Effectiveness of Ayurvedic Treatments: The patient experienced progress in the symptoms and vitals after 6 days of IPD, from which it canbe concluded that the Ayurvedic interventions used in this study are effective against CKD. The decrease in pain after IPD shows significant improvement, which emphasizes that the Ayurvedic interventions used in the case study are effective against CKD.

Future ResearchPerspectives: The findings from this study showed promising potential; however, it is crucial to approach these results with caution since the investigation was conducted with just one patient. To validate the effectiveness and safety of these integrated Ayurvedic therapies for CKD, further research involving a larger patient population is essential. Additionally, conducting randomized controlled trials will provide a more robust framework for assessing these treatments. Establishing a standard protocol and clinical guidelines will require comprehensive studies that can ensure the reliability and applicability of these therapeutic approaches in clinical practice.

DISCUSSION

Incorporating Ayurvedic medicine into the management of CKD provides a promising alternative to conventional treatment options. This case report details the application of various Ayurvedic therapies & Ayurvedic medicine for a 69-year-old male patient who had been diagnosed with CKD for the past seven months and had a history of hypertension lasting 20 years. The patient exhibited a range of symptoms, including constipation, back pain, frothy urine, nocturia, and general weakness. To address these issues, the Ayurvedic treatment plan included a series of Panchakarma procedures

Awagaha Swedan: It is a therapeutic procedure in which the patient is immersed up to the navel in a tub of warm water infused with medicinal herbs, with the water temperature maintained at 42°C to promote sweating for a duration of 20 to 60 minutes. This therapy enhances circulation through vasodilation, improving the delivery of oxygen

and nutrients to the kidneys while aiding in toxin excretion via sweating, thereby alleviating the burden on renal function and helping to balance *Vata* and *Kapha doshas*. As the body temperature rises, the sympathetic nervous system is activated, leading to the release of various hormones that regulate metabolism and promote relaxation, ultimately facilitating the elimination of metabolic wastes like urea and creatinine, supporting kidney function, and improving overall health.

Gokshuradi and Punarnavadi Siddha Sneha Basti: This involves preparing the patient in a comfortable environment with a light diet, positioning them in a left lateral position, and gently administering 90 ml of a prepared herbal oil via a lubricated enema device, with instructions to retain the liquid for 30 minutes to 1 hour for optimal absorption. This therapy harnesses the diuretic properties of Gokshura and Punarnava to enhance kidney filtration, increase urine output, and eliminate toxins, which effectively balances *Kapha dosha* and alleviates symptoms like edema and urinary disorders, while also providing anti-inflammatory benefits that relieve pain. Additionally, the herbal components promote detoxification and improve nutrient absorption, thereby supporting liver and kidney function, enhancing overall metabolic health, and contributing to the patient's well-being.

Gokshuradi and Punarnavadi Kashaya Basti: This involves preparing an herbal decoction by boiling selected herbs until the volume is reduced to one-fourth, followed by straining to obtain a clear liquid i.e. 350ml, which is then administered via a lubricated enema device while the patient is positioned in a left lateral position, with instructions to retain the liquid for 30 minutes to 1 hour. This procedure promotes peristalsis in the colon, facilitating the elimination of toxins and waste while balancing *Kapha* and *Pitta doshas*, thus alleviating symptoms like digestive discomfort and lethargy, and primarily targeting *Vata dosha* to relieve bloating, gas, and constipation. The bioactive compounds in the decoction not only nourish the colon and enhance its mucosal lining but also stimulate local immune responses, ultimately supporting digestive health, nutrient absorption, and overall well-being.

Chest and Back Lepam with Dashmool and Dashang: In this treatment a thick herbal paste made from Dashmool and Dashang powders is mixed with warm liquid and applied to the chest and back for 20–30 minutes before being gently wiped off. This herbal paste helps reduce inflammation and pain by absorbing through the skin, improving blood flow, and easing respiratory congestion. The warmth of the paste relaxes the muscles and helps balance the body's energies, leading to better lung function and overall relaxation.

Shiropichu and Shiroabhyangam with Brahmi Oil: This therapy involves warming Brahmi oil, soaking a cotton cloth in it for the Shiropichu, and then applying the oil directly to the scalp during the Shiroabhyangam massage. The soaked cloth is placed on the scalp for 30 to 60 minutes to allow the oil to penetrate, followed by a 30 to 45-minute massage that promotes relaxation and absorption of the oil. This treatment enhances blood circulation, stimulates the release of feel-good neurotransmitters, and supports detoxification, resulting in improved mental and physical well-being.

The Ayurvedic treatment protocol for this case included a variety of remedies such as included Chander vati tablet, GFR Powder, Renal support syrup, Castor oil, Divya Shakti Powder, Dr. Immune tablet, Arogya Vati tablet and Kidney Shuddhi Ark along with Panchakarma therapies. These interventions were designed to improve kidney function and alleviate symptoms. The patient reported significant relief from key symptoms like pain and frothy urine, which were also reflected in the DTPA scan parameters, indicating improved renal perfusion and filtration.

Arogya Vati tablet: It is composed of Ayurvedic herbs including Kajan (*Carthamus tinctorius*), Loh Bhasma (Ferrum), Abhrak Bhasma (Mica), Tamra Bhasma (Copper), Amalaki (*Emblica officinalis*), Vibhitaki (*Terminalia bellirica*), Haritaki (*Terminalia chebula*), Chitrak (*Plumbago zeylanica*), Katuka (*Picrorhiza kurroa*), Nimba Patra (*Azadirachta indica*). This combination of herbs enhances immunity, supports respiratory health, promotes detoxification, and assists in managing infections.

Chander Vati tablet: The tablets contain ingredients such Kapoor Kachri (*Hedychium spicatum*), Vacha (*Acoruscalamus*), Motha (*Cyperusrotundus*), Kalmegh (*Andrographispaniculata*), Giloy (*Tinosporacordifolia*), Devdaru (*Cedrusdeodara*), Desi Haldi (*Curcumalonga*), Atees (*Aconitumheterophyllum*), Daru Haldi (*Berberisaristata*), Pipla Mool (*Piperlongum* root), Chitraka (*Plumbagozeylanica*), Dhaniya (*Coriandrumsativum*), Harad (*Terminaliachebula*), Bahera (*Terminaliabellirica*), Amla (*Phyllanthusemblica*), Chavya (*Piperchaba*), Vayavidang (*Embeliaribes*), Pippal (*Piperlongum*), Kalimirch (*Pipernigrum*), Sonth (*Zingiberofficinale* dried ginger), Gaj Pipal (*Scindapsusofficinalis*), Swarn Makshik Bhasma (Gold iron pyrite ash), Sujji Kshar (Potassium carbonate - traditional alkali preparation), Senda Namak (Rock salt), Kala Namak (Black salt), Choti Elayachi (*Elettariacardamomum* - small cardamom), Dalchini (*Cinnamomumverum*), Tejpatra (*Cinnamomumtamala*), Danti (*Baliospermummontanum*), Nishothra (*Operculinaturpethum*), Banslochan (Bamboo silica), Loh Bhasam, Shilajit (*Asphaltumpunjabinum*), Guggal (*Commiphorawightii*). These Ayurvedic herbs help balance Pitta Dosha, which is essential for alleviating urinary tract infections (UTIs). Additionally, they promote detoxifica-

tion and have diuretic properties that aid in the effective management of CKD.

Divya Shakti Powder: This formulation includes ingredients such as Trikatu, Triphala, Nagarmotha (*Cyperusrotundus*), Vaya Vidang (*Embelia ribes*), Chhoti Elaichi (*Elettariacardamomum*), Tej Patta (*Cinnamomumtamala*),Laung(*Syzygiumaromaticum*),Nishoth (*Operculinaturpethum*), Sendha Namak (Sodium chloride), Dhaniya (*Coriandrumsativum*), Pipla Mool (*Piperlongum* root), Jeera (*Cuminumcyminum*), Nagkesar (*Mesuaferrea*), Amarvati (*Achyranthesaspera*), Anardana (*Punicagranatum*), Badi Elaichi (*Amomumsubulatum*), Hing (*Ferulaassafoetida*), Kachnar (*Bauhiniavariegata*), Ajmod (*Trachyspermumammi*), Sazzikhar (Sodium carbonate), Pushkarmool *(Inularacemosa*), Mishri (*Saccharumofficinarum*). This formulation is designed to enhance energy levels, strengthen immunity, support digestion, reduce stress, and promote rejuvenation.

GFR Powder: This powder enhances kidney function by minimizing inflammation and removing accumulated toxins. Its anti-inflammatory properties help reduce renal inflammation, supporting overall kidney health and detoxification.

Renal support syrup:This typically contains ingredients such as Nimba (*Azadirachtaindica*), Arjuna (*Terminaliaarjuna*), Gokshura (*Tribulusterrestris*), Hareetaki (*Terminaliachebula*), Ashwagandha (*Withaniasomnifera*), Karanja (*Pongamiapinnata*), Chirayata (*Swertiachirayita*), which work together to enhance kidney function, reduce inflammation and promote detoxification while supporting overall renal health.

Castor oil: Castor oil may be used in the management of CKD due to its potential to stimulate intestinal motility, promote detoxification and support the elimination of metabolic wastes.

Dr. Immune tablet: This is formulated to support kidney health in CKD, typically contain a blend of herbal ingredients such as Ashwagandha (*Withania somnifera*), Shatawari (*Asparagusracemosus*), and other antioxidants and adaptogens that help enhance immunity, reduce inflammation and improve overall renal function.

Kidney Shuddhi Ark: This is an herbal formulation designed for CKD that includes ingredients such as Kakmachi (*Solanum nigrum*), Shweta Punarnava (*boehravia diffusa*), Kasani (*Cichorium intybus*), Varun (*Crateva religiosa*), and other supportive herbs, which work synergistically to promote renal detoxification, enhance kidney function and reduce inflammation.

From this study it is inferred that integrating Ayurvedic treatment opens a novel alternate to advanced conventional treatment methods for CKD which is nearly unattainable to common people. The Ayurvedic therapies addresses the underlying imbalances along with curing the symptoms. This treatment method also improves the overall wellbeing of the patient.

CONCLUSION

This case studyfor the treatment of CKD through Ayurvedic interventions can be concluded as follows:

Symptoms: Before treatment, the symptoms experienced by the patient includesconstipation, backache, frothy urine, nocturia and general weakness. After 6 days of IPD, the patient got relief from almost all the symptoms, only mild weakness was present and follow-up Ayurvedic care, the patient seems symptomatically better with mild general weakness. The patient reported relief from pain, relief from constipation, backache and nocturiawith no new complaints, which shows a noticeable advance in kidney function and overall wellness.

Vitals: The patient's vital signs fluctuated throughout the treatment period. Blood pressure remained fluctuated throughout the treatment period. The patient's weight remained 62 kg, the urination also become clear from frothy urination, which reflects the positive lifestyle and diet changes and development of the kidney function.

Investigations: Laboratory tests conducted during the treatment period depicted the renal function improvement. The Serum urea levels decreased from 145.01 mg/dL to 117.0 mg/dL during regular followups, indicating enhanced kidney function. Serum creatinine level also reduced from 8.64 mg/dL to 4.39 mg/dL. These study supports the dependability of Ayurvedic treatment methods for CKD.

This study concludes that, Ayurvedic medicines & Panchakarma therapies along with previously prescribed necessary allopathic medicine for CKD provided positive results, such as improvement in symptoms, vitals and laboratory investigation results. Hence, this proves the ability of traditional therapies for increase the health and function of kidney along with the overall well-being of the patient. However, further research with more controlled trails are essential to authenticate the conclusions and standardize treatment protocol establishment.

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