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Case Study on *Ayurvedic* and *Panchkarma* Intervention for Chronic Kidney Disease in an Elderly Patient

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ABSTRACT

Chronic Kidney Disease (CKD) is a progressive disorder affecting kidney structure and function, often complicated by Type 2 Diabetes Mellitus (T2DM) and hypertension. Early-stage CKD is frequently asymptomatic, and management can be challenging, particularly in resource-limited settings due to high costs and limited accessibility of conventional therapies. This case report presents a 67-year-old male patient with CKD, T2DM, and hypertension, treated at Jeena Sikho Lifecare Limited Hospital, Derabassi, India, using a personalized Ayurvedic regimen combined with Panchakarma therapies. Following 12 days of inpatient treatment, the patient demonstrated marked clinical improvements: drowsiness, pedal oedema, eye vision and urine got better. Vital parameters showed gradual stabilization, with body weight decreasing from 83 kg to 76 kg and blood pressure stabilizing from highs of 180/90 mmHg to 120/80 mmHg. Laboratory investigations indicated significant improvements, with hemoglobin increasing from 7.3 gm/dL to 10.0 gm/dL, urea decreasing from 280.12 mg/dL to 100 mg/dL, creatinine declining from 6.10 mg/dL to 4.5 mg/dL, and total RBC count increasing from 2.61 Mill/Cumm to 3.54 Mill/Cumm. Uric acid stabilized at 7.1 mg/dL. Renal function assessed by GFR improved, with global GFR from 14.2 to 19.8 ml/min. This case highlights the potential of Ayurveda as an effective, accessible, and affordable approach for managing CKD Stage IV and associated comorbidities, demonstrating improvements in symptoms, vitals, laboratory parameters, and kidney function over a short inpatient treatment period.

INTRODUCTION

Chronic kidney disease (CKD) is a significant global health concern that affects approximately 10% of the population and presents an increasing burden, particularly in low-income countries. It ranks as the seventh leading risk factor for global mortality, emphasizing the need for public health initiatives that focus on early detection and effective management strategies [1,2]. The global prevalence of CKD is approximately 13%, with older populations experiencing higher prevalence rates [3]. Socioeconomic disparities exist, with high-income countries reporting slightly lower prevalence rates than low-income ones [3,4]. CKD also imposes a substantial financial burden, particularly because of the high costs of kidney

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replacement therapy (KRT), which consumes a significant share of health budgets, especially in low-resource settings [4]. Access to KRT remains highly variable and children face significant obstacles in obtaining dialysis and transplantation [1,4].

CKD affects 17.2% of the Indian population, with end-stage renal disease (ESRD) incidence estimated at 229 per million. Key risk factors include hypertension, diabetes and lifestyle. Therefore, early diagnosis and intervention are crucial. The SEEK (Screening and Early Evaluation of Kidney Disease) study found a CKD prevalence rate of 17.2 %, with 6% of cases at stage 3 or higher [5]. Diabetic nephropathy is the leading cause, accounting for 31% of cases [6]. Hypertension affects 47.1% of patients with CKD, while diabetes is strongly correlated with CKD burden [7,8]. Obesity is a significant predictor of CKD [6].

In India, CKD is an escalating public health issue, occurring alongside a rise in non-communicable diseases [9]. Diabetes mellitus is the primary driver of CKD cases, contributing 56.5%, followed by chronic glomerulonephritis at 20.5% and hypertension at 12.5% [10,11]. CKD is more prevalent among younger men, especially in rural communities. Early diagnosis is essential for individuals with diabetes, high blood pressure, or a family history of kidney disease, as CKD typically progresses without symptoms in its initial stages [12]. An estimated 0.79% of the population has stage III CKD or beyond, with diabetic nephropathy as a leading cause [13]. Factors such as lifestyle choices, dietary habits, hypertension and uncontrolled diabetes are increasing CKD rates, while the high costs and limited accessibility of dialysis and kidney transplants put these treatments out of reach for many individuals [14].

Ayurveda offers a holistic approach to CKD through personalized treatment, focusing on diet, *Yoga*, *Panchkarma* and lifestyle modifications. It emphasizes controlling blood sugar and blood pressure, along with using Reno protective medicines to prevent CKD progression [15]. CKD correlates with *Vataj Pandu* in *Ayurveda*, with a focus on symptom similarities. Treatment involves assessing *Nidaan* (etiology), *Samprapti* (pathogenesis) and individual patient factors such as *Bala* (strength), *Prakriti* (innate constitution), *Agni* (digestive fire) and *Oja* (vital essence) to improve the quality of life and management [16]. *Ayurveda* offers treatment modalities for CKD by addressing the underlying *Dosha, Dushya* and *Strotas* involved in the pathogenesis of the disease, potentially improving patients' quality of life, and, in some cases, substituting conventional medical treatments [17]. *Ayurveda* views CKD related to type II diabetes as a result of *Dosha* imbalance, emphasizing personalized dietary adjustments, *Ayurvedic* medicines and lifestyle modifications to manage diabetic nephropathy and improve kidney health through a holistic approach [18]. These approaches aim to control oxidative stress and inflammation and improve lifestyle, thereby supporting kidney function and overall health in affected patients [19].

OBJECTIVE

This case study analyses *Ayurvedic* interventions for CKD stage IV along with Type 2 Diabetes Mellitus and Hypertension.

MATERIALS AND METHODS

Case Report

A 67-year-old male with a known case of CKD stage IV for 6 years, hypertension for 20 years and Type 2 Diabetes Mellitus (T2DM) for 20 years visited Jeena Sikho Lifecare Limited Hospital, Derabassi, Punjab, India on May 13, 2024. A detailed and systematic evaluation was performed, including a complete medical history, family history, physical checkup and diagnostic assessments. His symptoms were pedal oedema (1˚), frothy urine, facial puffiness and weak eye vision. His initial condition was drowsy due to medicine intake. He was taking Novorapid, 6 units, three times a day and Lantus 12U HS for past 10 years. The patient has a history of Chikungunya in 2018 and COVID in 2020. His father has diabetes mellitus and brother has a hypertension history. The vital signs along with *Ashta vidh pariksha* (Eight-fold Examination) report during the first day of visit is detailed in **Table 1**.

Table 1 Vitals along with *Ashta vidh pariksha* during the initial examination on first day of the visit

Parameter	Findings
Temperature	97˚F
Blood Pressure	150/80 mm of Hg
Pulse Rate	72/min
Weight	83 Kg
Oxygen Saturation	99%
Nadi (Pulse)	*Vataj Kaphaj*
Mala (Stool)	*Saam* (Mucous Mixed)
Mutra (Urine)	*Phenil Mutra* (Frothy)
Jivha (Tongue)	*Saam* (Coated)
Shabda (Voice)	*Spashta* (Clear Voice)
Sparsha (Touch)	*Anushna Sheet* (Normal)
Drik (Eyes)	*Avikrit* (Normal)
Akriti (Physique)	*Madhyam*
Nidra (Sleep)	*Khandit* (Disturbed Sleep)

The patient was admitted for 12 days, during that period he received consolidated *Ayurvedic* treatments. This treatment procedure encompassed *Panchkarma* therapies such as

Madhutailik basti, Matra basti with *Sahacharadi tailam, Netra tarpan* with *triphala ghrit*, *Awagah swedan, Udvartan* with *Kolkulathadi, Abhyangam* with *Bala Ashwagandha* and *Mahanarayana* with *Sarwang Swedan*.

Laboratory investigation conducted on the May 13, 2024 are detailed in **Table 2**. The daily vitals during the IPD is showed in **Table 3**. The GFR during the treatment period is mentioned in **Table 4.** After 10 days of treatment, the patient experienced significant improvement, including relief from pain, backache and itching.

Table 2 Vitals observed during the date of admission

Parameter	Findings
Date	**13-05-2024**
Haemoglobin	7.3 gm/dL
Intact PTH	532.60 pg/dL
eGFR	9 ml/min/1.73m²
Rapid Tests	Non-reactive for HIV, HBsAg, and HCV
HbA1C	7.80%
Gluocse	+
Protein	++
Pus cells	1-2
Epithelial cells	2-3
Lipid Profile	
Total Cholesterol	198.51 mg/dL
HDL	38.11 mg/dL
LDL	125.21 mg/dL
VLDL	35.19 mg/dL
Cholesterol/HDL Ratio	5.21
Triglycerides	175.96 mg/dL

Table 3. Daily vitals during the IPD

Date	Time	Weight in Kg	Temperature in F	Blood Pressure (mmHg)	Pulse per min	Respiration/min	SpO2
13-05-2024	2:00 PM	83 Kg	97° F	150/80	64	18	99%
14-05-2024	5:00 AM	83 Kg	97° F	180/90	64	18	99%
15-05-2024	5:00 AM	81 Kg	98° F	140/90	64	18	99%
16-05-2024	5:00 AM	80 Kg	97° F	140/80	72	18	97%
17-05-2024	5:00 AM	80.5 Kg	98° F	140/80	88	18	99%
18-05-2024	5:00 AM	78 Kg	98.2° F	150/100	74	20	99%
19-05-2024	5:00 AM	77 Kg	98° F	130/70	74	20	99%
20-05-2024	9:00 AM	78 Kg	97.6° F	160/90	72	20	98%
21-05-2024	5:00 AM	78 Kg	98° F	130/80	70	16	99%
22-05-2024	5:00 AM	79 Kg	98° F	130/80	70	16	99%
23-05-2024	5:00 AM	79 Kg	98° F	130/80	80	16	99%
24-05-2024	5:00 AM	76 Kg	98° F	130/80	90	16	99%
25-05-2024	5:30 AM	76 Kg	96.8° F	120/80	72	20	99%

The GFR during the treatment period is calculated through DTPA SCAN mentioned in Fig 1

The diabetes chart during the IPD is mentioned in **Table 4**. Laboratory investigations conducted during the treatment is mentioned in **Table 5**. The patient was discharged on May 25, 2024.

Table 4. Diabetes chart during IPD

Date	Breakfast				Lunch				Dinner			
	Before	Medicine	After	Medicine	Before	Medicine	After	Medicine	Before	Medicine	After	Medicine
13-May-24	-	-	-	-	-	-	229 mg/dL	-	152 mg/dL	-	R-200 mg/dL	-
14-May-24	185 mg/dL	-	-	-	319 mg/dL	4 Unit Insulin	-	-	-	-	R-196 mg/dL	-
15-May-24	198 mg/dL	-	-	-	250 mg/dL		-	-	210 mg/dL	-	285 mg/dL	3 Unit Lantus
16-May-24	196 mg/dL	-	-	-	473 mg/dL	6 Unit Insulin	-	-	-	-	184 mg/dL	1 DM capsule
17-May-24	192 mg/dL	-	224 mg/dL	4 Unit Insulin	282 mg/dL	4 Unit Insulin	-	-	260 mg/dL	3 Unit Insulin	247 mg/dL	5 Unit Lantus
18-May-24	215 mg/dL	3 Unit Novorapid	-	-	277 mg/dL	3 Unit Insulin	-	-	189 mg/dL	2 Unit Insulin	259 mg/dL	4 Unit Lantus
19-May-24	217 mg/dL	3 Unit Insulin	-	-	329 mg/dL	6 Unit Insulin	-	-	255 mg/dL	4 Unit Insulin	266 mg/dL	5 Unit lantus
21-May-24	252 mg/dL	4 Unit Insulin	-	-	283 mg/dL	4 Unit Insulin	-	-	295 mg/dL	4 Unit Insulin	259 mg/dL	5 Unit Lantus
22-May-24	230 mg/dL	-	-	-	341 mg/dL	3 Unit Insulin	-	-	262 mg/dL	3 Unit Insulin	304 mg/dL	8 Unit Lantus
23-May-24	279 mg/dL	-	-	-	269 mg/dL		292 mg/dL	-	-	-	252 mg/dL	8 Unit Lantus
24-May-24	225 mg/dL	-	-	-	342 mg/dL	5 Unit Insulin	270 mg/dL	5 Unit Insulin	-	-	160 mg/dL	2 Unit Lantus
25-May-24	260 mg/dL	-	-	-	275 mg/dL	5 Unit Novorapid	-	-	-	-	-	-

Table 5. Laboratory investigations observed during the treatment period (Fig 2)

Parameter	Findings				
Date	13-05-2024	19-05-2024	25-05-2024	06-06-2024	24-06-2024
Haemoglobin	**7.3 gm/dL**	**8.9 gm/dL**	**9.8 gm/dL**	**10.2 gm/dL**	**10.0 gm/dL**
Urea	**280.12 mg/dL**	**239.2 mg/dL**	**183.34 mg/dL**	**108 mg/dL**	**100 mg/dL**
Creatinine	**6.10 mg/dL**	**5.50 mg/dL**	**4.7 mg/dL**	**5.10 mg/dL**	**4.5 mg/dL**
Uric acid	3.95 mg/dL	6.51 mg/dL	6.10 mg/dL	**7.8 mg/dL**	7.1 mg/dL
Sodium	141.4 mEq/L	140.9 mEq/L	143.0 mEq/L	141 mEq/L	137 mEq/L
Potassium	5.38 mEq/L	5.40 mEq/L	5.19 mEq/L	5.3 mEq/L	5.0 mEq/L
Chloride	105.8 mEq/L	101.3 mEq/L	103 mEq/L	107 mEq/L	108 mEq/L
Urine protein	++	++	_	++	_
Urine glucose	+	+	_	+	_
Pus cells	1-2	1-2	_	_	_
Epithelial cells	**2-3**	**2-3**	_	_	_
Total RBC count	**2.61 Mill/Cumm**	3.51 Mill/Cumm	_	3.62 Mill/Cumm	3.54 Mill/Cumm

Treatment Plan

A personalized *Ayurvedic* and Disciplined and Intelligent Person's (DIP) Diet was provided to the patient to complement the *Ayurvedic* treatments administered for CKD [20]:

Diet Plan:

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

a. Foods to be avoided:

Do not consume wheat, refined food, milk and milk products, coffee and tea and packed food.

Avoid eating after 8 PM.

During solid consume as small bite and chew 32 times.

b. Hydration:

During water intake, take sip by sip and drink slowly to ensure the amount of water intake each time.

Drink about 1 liter of alkaline water 3 to 4 times throughout the day.

Include herbal tea, living water, and turmeric-infused water part of daily routine.

Boil 2 liters water to reduce up to 1 liter and consume.

c. Millet Intake:

Incorporate five types of millet into 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:

Early Morning (5:45 AM): Herbal tea, curry leaves (1 leaf-1 min/5 leaves-5 min) along with raw ginger and turmeric.

Breakfast (9:00-10:00 AM): Steamed fruits (Seasonal), steamed sprouts (according to the season) and a fermented millet shake (4-5 types).

Morning Snacks (11:00 AM): Carrot juice (150 ml) and soaked almonds.

Lunch (12:30 PM - 2:00 PM): Two plates- Plate 1 and Plate 2. Plate 1 will include a steamed salad, while Plate 2 with cooked millet-based dish.

Evening Snacks (4:00 – 4:20 PM): Green juice (100-150 ml) along with 4-5 almonds.

Dinner (6:15-7:30 PM): Steamed salad, chutney, and soup, as Plate 1, along with millet khichdi as Plate 2.

e. Fasting:

It was advised to observe one-day fasting.

f. Special Instructions:

Express gratitude to the divine before consuming food or drinks.

Sit in *Vajrasan* (a yoga posture) after each meal.

10 minutes slow walk after every meal.

g. Diet Types:

The diet comprises 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.

Lifestyle Recommendations

Include meditation (*Sukhasan* and *Sukshm pranayam*) for relaxation.

Practice barefoot brisk walk for 30 minutes.

Ensure 6-8 hours of quality sleep each night.

Adhere to a structured daily routine.

Panchkarma procedures administered to patients

1. ***Madhutailik Basti*** [21]

500 mL of medicated enema, containing honey (*Madhu*) and oil (*Taila*), was then administered through the rectal route in a specific quantity, temperature and pressure to ensure effective absorption.

The patient was monitored for adverse reactions, advised to rest, avoid strenuous activities and follow diet to maximize

treatment benefits.
This treatment was done in alternative days.

2. ***Matra Basti*** with ***Sahacharadi Tailam*** [22]
Sahacharadi Tailam was warmed up to the body temperature (98°F-104°F).
The patient was positioned on his side, the rectal area was lubricated, and a sterile enema tube was inserted.
Administered 90 ml of warmed oil and retained for 30-60 minutes.
The patient was then advised to rest for 30 minutes to 1 hour, follow a light diet for 24 hours.
This treatment was done alternate with *Madhutailik Basti*.

3. ***Awagah Swedan*** [23]
The patient was immersed till navel in a tub filled with warm water.
Sweating was induced by sustaining the water temperature at 42˚ Celsius.
The patient was advised to practice this procedure 20 to 60 minutes.

4. *Udvartan* with *kolkulathadi* with hot water bath [24,25]
Kolkulathadi powder was applied to the body.
Gentle massage was done for 30 to 45 minutes with the *Kolkulathadi* paste onto the skin in upward strokes, focusing on areas like the abdomen, thighs and arms in moderate pressure.
This treatment was done for 3 days.

5. *Abhyangam* with *Bala aswagandha* and *Mahanarayana* followed by *Sarwang Swedan* [26,27]
Bala, *Ashwagandha* and *Mahanarayana* oils were mixed with a carrier oil in a 1:1 ratio.
The oil mixture was warmed up to body temperature.
Warm oil was applied to the entire body, focusing on joints, muscles and pressure points.
Long stroke massages were done for 45 to 60 minutes in circular motions and gentle pressure to stimulate lymphatic drainage and relaxation.
The patient was advised to sit in the steam chamber for 10-15 minutes at a maintained comfortable temperature (40-45°C/104-113°F).
This therapy was carried out from the fourth day of IPD.

6. *Netra tarpana* with *Triphala Ghrit* [28,29,30]
Triphala Ghrit in mixed with warm water or milk.
The patient comfortably seated with his eyes closed and eyes were gently cleaned with lukewarm water.
A frame was created around the eyes using a small, ring-like structure.
Warm *Triphala Ghrit* was poured into the *Tarpana Yantra*, ensuring the eyes are fully immersed and it was maintained for almost 5-7 minutes.
After that the *Ghrit* was drained from the eyes and rinsed with lukewarm water.
30 minutes to 1 hour of rest was advised after the therapy.

Medicinal Interventions

Allopathic medicines
The allopathic medicines taken during the treatment were Clonidine 100 Tablet, Metoprolol Succinate 50 Tablet, Cilnidipine 10 Tablet, Iron Supplement, Calcium Supplement, Gabapentin (400mg) + Nortriptyline (10mg) Tablet, Linagliptin 5mg Tablet and Torsemide 20 Tablet (**Table 6**).

***Ayurvedic* interventions**
The *Ayurvedic* treatment employed in this case included Castor oil, Chander Vati Tablet, Prameh Rog Har Vati Powder, Renal support syrup, Gadood Sudharak Vati, Madhumeh Nasak syrup, Divya Shakti Powder, GFR Powder, Prameh Rog Har Powder, Yakrit Shoth Har Vati, DM Capsule and JS BP cure. The medicine administration chart during IPD is mentioned in **Table 7.** The medicines with *Anupana* is present in **Table 8** and the details are mentioned in **Table 9.**

Table 6 Allopathic Medications taken during the IPD

Medicine	Therapeutic Effects	Dose	13-May	14-May	15-May	16-May	17-May	18-May	19-May	20-May	21-May	22-May
Clonidine 100 Tablet	Hypertension	TDS	✓	✓	BD	✓	OD	✓	SOS	SOS	SOS	SOS
Metoprolol Succinate 50 Tablet	Hypertension	HS	✓	✓	✓	✓	SOS	SOS	SOS	SOS	SOS	SOS
Cilnidipine 10 Tablet	Hypertension	BD	✓	✓	×	×	×	×	×	×	×	×
Iron Supplement	Multivitamin + Iron	OD	✓	AD	✓	×	×	×	×	×	×	×
Calcium Supplement	Manage low calcium levels	BD	✓	✓	✓	✓	OD	✓	✓	×	×	×
Gabapentin (400mg) + Nortriptyline (10mg) Tablet	Relief from neuropathic pain	HS	✓	✓	AD	✓	✓	✓	✓	×	×	×
Linagliptin 5mg Tablet	Treat type 2 diabetes mellitus	OD	SOS	×	×	×	×	×	×	×	×	×
Torsemide 20 Tablet	Reduce the swelling (edema)	BD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 7 *Ayurvedic* Medications taken during the IPD

Medicine name	14-May	15-May	16-May	17-May	18-May	19-May	20-May	21-May	22-May	23-May	24-May	25-May
Castor oil	✓	✓	✓	×	×	×	×	×	×	×	×	×
Chander Vati	✓	✓	✓	✓	✓	×	×	×	×	×	×	×
Prameh Rog Har Vati Powder	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×
Renal support syrup	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Yakrit Shoth Har Vati	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Madhumeh Nasak syrup	×	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓

Table 8. Medications advised during the treatment with *Anupana*

Date	Medicines	Dosage with *Anupana*
May 13, 2024	Castor oil	20 ml HS (*Nishikala* with *koshna jala*- Before bed with lukewarm water)
	Chander Vati	2-2 BD (*Adhobhakta* with *koshna jala*- After meal with lukewarm water)
	Prameh Rog Har Powder	1 TSF BD (*Pragbhakta* with *koshna jala*- Before meal with lukewar water)
	Renal support syrup	20 ml BD (*Adhobhakta* with *sama matra koshna jala*- After meal with equal amount of lukewarm water)
	Yakrit Shoth Har Vati	2 TAB BD (*Adhobhakta* with *koshna jala*)
	Madhumeh Nasak syrup	20 ml BD (*Adhobhakta* with *sama matra koshna jala*)
May 25, 2024	Divya Shakti Powder	Half a teaspoon HS (*Nishikala* with *Koshna jala*)
	GFR Powder	Half a teaspoon BD (*Adhobhakta* with *Koshna jala*)
	Prameh Rog Har Powder	1 TSF TDS before meal (*Pragbhakta* with *Koshna jala*)
	Yakrit Shoth Har Vati	2 tablets BD (*Adhobhakta* with *Koshna jala*)
	Madhumeh Nashak Syrup	20 ml TDS before meal (*Pragbhakta* with *sama matra koshna jala*- Before meal with equal amount of lukewarm water)
	Renal support syrup	20 ml BD (*Adhobhakta* with sama *matra koshna jala*)
June 08, 2024	Gadood Sudharak Vati	2 tablets BD (*Adhobhakta* with *Koshna jala*)
	DM Capsule	2 CAP TDS (*Adhobhakta* with *Koshna jala*)
	JS BP cure	2 CAP BD (*Adhobhakta* with *Koshna jala*)
	GFR Powder	Half a teaspoon BD (*Adhobhakta* with *Koshna jala*)
	Chander Vati	2 tablets BD (*Adhobhakta* with *Koshna jala*)

Table 9. Details of medications advised during the treatment

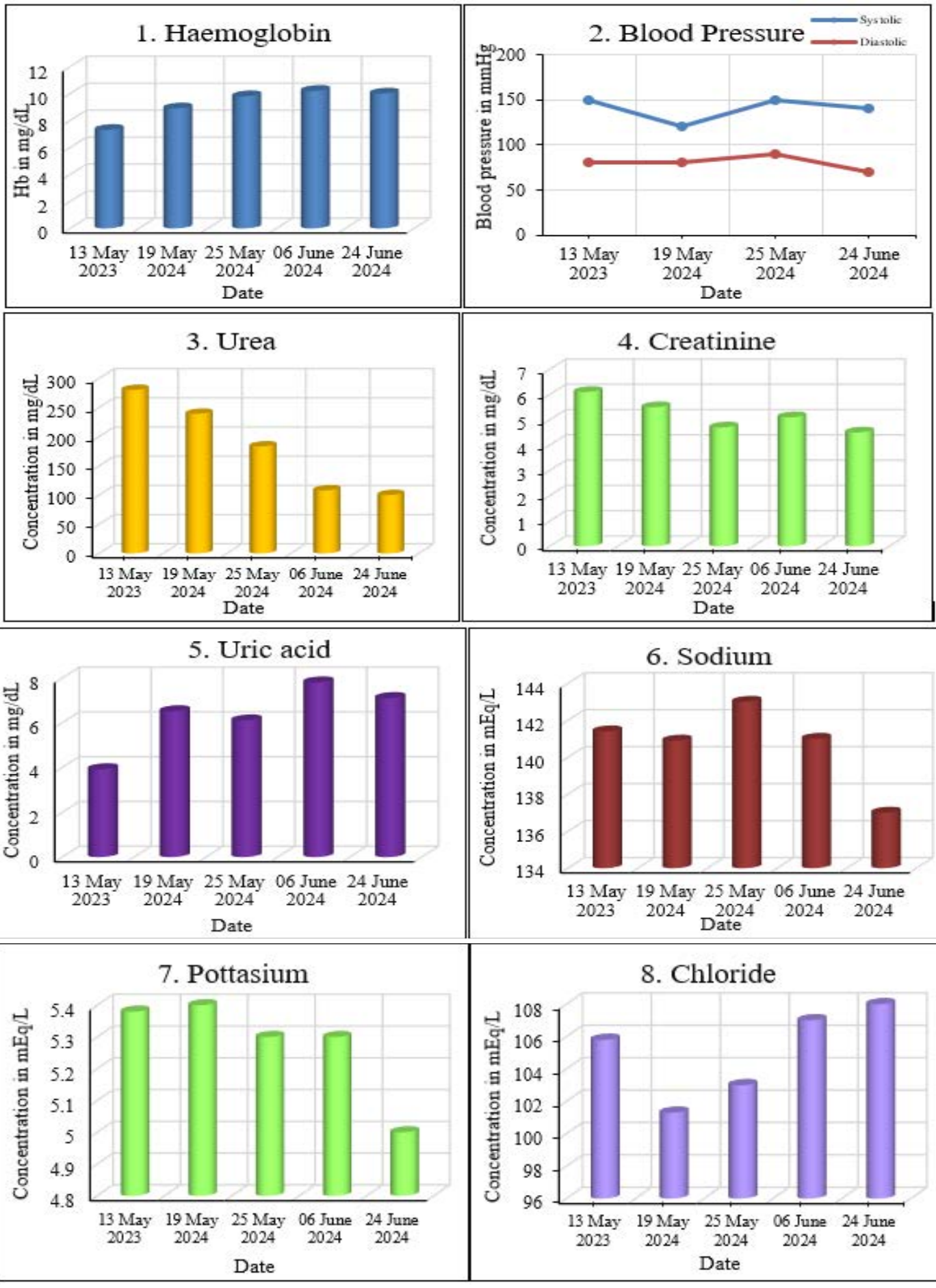
Medicine Name	Ingredients	Therapeutic Effects
Chander Vati	***Kapoor Kachri*** *(Hedychium spicatum),* ***Vacha*** *(Acorus calamus),* ***Motha*** *(Cyperus rotundus),* ***Kalmegh*** *(Andrographis paniculata),* ***Giloy*** *(Tinospora cordifolia),* ***Devdaru*** *(Cedrus deodara),* ***Desi Haldi*** *(Curcuma longa),* ***Atees*** *(Aconitum heterophyllum),* ***Daru Haldi*** *(Berberis aristata),* ***Pipla Mool*** *(Piper longum root),* ***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),* ***Saunth*** *(Zingiber officinale dried ginger),* ***Gaj Pipal*** *(Scindapsus officinalis),* ***Swarn Makshik Bhasm*** *(Gold iron pyrite ash - Ayurvedic preparation),* ***Sajjikshar*** *(Potassium carbonate - traditional alkali preparation),* ***Sendha 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),* ***Vanslochan*** *(Bamboo silica),* ***Loh Bhasm*** *(Iron ash - Ayurvedic preparation),* ***Shilajeet*** *(Asphaltum punjabinum),* ***Guggul*** *(Commiphora wightii).*	*Raktashodhana* (Blood purifier), *Pitta Shaman (Pitta* pacifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Vata-Pitta Shaman (Dosha* pacifier)
Prameh Rog Har	***Kutaki*** *(Picrorhiza kurroa),* ***Chiraita*** *(Swertia chirata),* ***Neem*** *(Azadirachta indica),* ***Karela*** *(Momordica charantia),* ***Rasonth*** *(Berberis aristata),* ***Imli Beej*** *(Tamarindus indica),* ***Kala Namak***, ***Giloy*** *(Tinospora cordifolia),* ***Sonth*** *(Zingiber officinale),* ***Babool Chhaal*** *(Vachellia nilotica),* ***Sarpgandha*** *(Rauvolfia serpentina),* ***Trivang Bhasm***, ***Yashad Bhasm***, ***Revend Chinni*** *(Rheum emodi),* ***Sodhit Guggulu*** *(Commiphora mukul),* ***Methi*** *(Trigonella foenum-graecum),* ***Jamun*** *(Syzygium cumini),* ***Babool Fruit*** *(Vachellia nilotica),* ***Karanj*** *(Millettia pinnata),* ***Shilajeet***, ***Haldi*** *(Curcuma longa),* ***Harad*** *(Terminalia chebula),* ***Inderjaun*** *(Holarrhena antidysenterica),* ***Vanshlochan*** *(Bambusa arundinacea),* ***Bahera*** *(Terminalia bellirica),* ***Amla*** *(Phyllanthus emblica),* ***White Musli*** *(Chlorophytum borivilianum),* ***Gurmar*** *(Gymnema sylvestre).*	*Pramehaghna* (Anti-diabetic), *Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Rasayana* (Rejuvenator), *Medohara* (Fat reducer), *Shoth har* (Anti-inflammatory), *Mutral* (Diuretic)
Renal Support Syrup	***Nimba*** *(Azadirachta indica),* ***Arjun*** *(Terminalia arjuna),* ***Gokshur*** *(Tribulus terrestris),* ***Hareetaki*** *(Terminalia chebula),* ***Ashwagandha*** *(Withania somnifera),* ***Karanja*** *(Pongamia pinnata),* ***Chiraita*** *(Swertia chirayita).*	*Mutravirajaniya (*Urine purifier), *Shoth har* (Anti-inflammatory), *Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Rasayana* (Rejuvenator)
Madhumeh Nashak Syrup	***Karela*** *(Momordica charantia),* ***Jamun*** *(Syzygium cumini),* ***Neem*** *(Azadirachta indica),* ***Chirata*** *(Swertia chirata),* ***Gurmar*** *(Gymnema sylvestre),* ***Kutaj*** *(Holarrhena antidysenterica)*	*Vata pitta kapha shamaka (Tridosha* pacifier), *Madhumeha hara* (Anti-diabetic), *Agnideepan* (Digestive fire stimulant), *Rasayana* (Rejuvenator), *Medohara* (Fat reducer), *Kledahara* (Moisture remover)
Divya Shakti Powder	***Trikatu*** *(Zingiber officinale, Piper nigrum and Piper longum),* ***Triphala***, ***Nagarmotha*** *(Cyperus rotundus),* ***Vayavidang*** *(Embelia ribes),* ***Chhoti Elaichi*** *(Elettaria cardamomum),* ***Tej Patta*** *(Cinnamomum tamala),* ***Laung*** *(Syzygium aromaticum),* ***Nisoth*** *(Operculina turpethum),* ***Sendha Namak***, ***Dhaniya*** *(Coriandrum sativum),* ***Pipla Mool*** *(Piper longum root),* ***Jeera*** *(Cuminum cyminum),* ***Nagkesar*** *(Mesua ferrea),* ***Amarvati*** *(Achyranthes aspera),* ***Anardana*** *(Punica granatum),* ***Badi Elaichi*** *(Amomum subulatum),* ***Hing*** *(Ferula assafoetida),* ***Kachnar*** *(Bauhinia variegata),* ***Ajmod*** *(Trachyspermum ammi),* ***Sajjikshar***, ***Pushkarmool*** *(Inula racemosa),* ***Mishri*** *(Saccharum officinarum)*	*Ojakshaya* (Loss of vitality/immunity), *Agnimandya* (Low digestive fire), *Chakshukshaya* (Weak vision), *Deepan* (Appetizer), *Rasayana* (Rejuvenator)

GFR Powder	***Punarnava*** *(Boerhavia diffusa),* ***Gokshur*** *(Tribulus terrestris),* ***Kaasni*** *(Cichorium intybus),* ***Bhoomi Amla*** *(Phyllanthus niruri),* ***Badi Hard*** *(Terminalia chebula),* ***Makoy*** *(Solanum nigrum) and* ***Apamarg*** *(Achyranthes aspera)*	*Mutral* (Diuretic), *Shoth har* (Anti-inflammatory), *Virechana* (Purgation), *Raktaprasadana* (Blood purifier), *Vatanulomana (Vata* regulator), *Mutravirechana* (Urinary purgation), *Rasayana* (Rejuvenator), *Amapachan* (Toxin digestant)*, Kledahara* (Moisture remover), *Vrikkadoshahara* (Kidney toxin eliminator)
Yakrit Shoth Har Vati	***Punarnava*** *(Boerhavia diffusa),* ***Kalimirch*** *(Piper nigrum),* ***Pippali*** *(Piper longum),* ***Vayavidanga*** *(Embelia ribes),* ***Devdaru*** *(Cedrus deodara),* ***Kutha Haldi*** *(Picrorhiza kurroa),* ***Chitrak*** *(Plumbago zeylanica),* ***Harad*** *(Terminalia chebula)***,** ***Bahera*** *(Terminalia chebula, Terminalia bellirica),* ***Amla*** *(Emblica officinalis),* ***Danti*** *(Baliospermum montanum),* ***Chavya*** *(Piper chaba),* ***Indra Jon*** *(Taraxacum officinale),* ***Pippla Mool*** *(Piper longum),* ***Motha Kalajira*** *(Nigella sativa),* ***Kayphal*** *(Myrica esculenta),* ***Kutaki*** *(Picrorhiza kurroa),* ***Nisoth*** *(Operculina turpethum),* ***Saunth*** *(Zingiber officinale),* ***Kakd Singhi*** *(Cucumis sativus),* ***Ajwain*** *(Trachyspermum*	*Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Shoth har* (Anti-inflammatory), *Vata-kapha shamaka (Dosha-*balancer), *Rasayana* (Rejuvenator), *Ojovardhaka* (Immunity enhancer)
Gadood Sudharak Vati	***Kahu*** *(Lactuca sativa),* ***Varuna*** *(Crateva religiosa),* ***Gokshur*** *(Tribulus terrestris),* ***Khayarain*** *(Cucumis sativus) and* ***Shodhit Guggal***	*Vata shamaka (Vata* pacifier), *Shoth har* (Anti-inflammatory), *Rasayana* (Rejuvenator), *Balya* (Strengthener), *Shulahara* (Pain reliever)
DM Capsule	***Amba Haldi*** *(Curcuma amada),* ***Giloy*** *(Tinospora cordifolia),* ***Safed Musli*** *(Chlorophytum borivilianum),* ***Methi*** *(Trigonella foenum-graecum),* ***Neem*** *(Azadirachta indica),* ***Karela*** *(Momordica charantia),* ***Jamun*** *(Syzygium cumini),* ***Bilva Patra*** *(Aegle marmelos),* ***Gudmar*** *(Gymnema sylvestre),* ***Shuddh Shilajeet***.	*Pramehaghna* (Anti-diabetic), *Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Rasayana* (Rejuvenator), *Medohara* (Fat reducer), *Shoth har* (Anti-inflammatory), *Mutral* (Diuretic)
JS BP cure	***Sarpgandha*** *(Rauvolfia serpentina),* ***Arjun*** *(Terminalia arjuna),* ***Shigru*** *(Moringa oleifera),* ***Haritaki*** *(Terminalia chebula),* ***Vibhitaki*** *(Terminalia bellirica),* ***Amla*** *(Emblica officinalis),* ***Godanti Bhasm*** *(Gypsum).*	*Raktashodhana* (Blood purifier), *Vatanulomana (Vata* regulator), *Shoth har* (Anti-inflammatory), *Anulomana (*Bowel regulator), *Pitta Shaman (Pitta* pacifier), *Raktavardhaka* (Blood builder), *Vishagna* (Detoxifier), *Deepan* (Appetizer)

RESULT

After 12 days of IPD, the patient experienced noteworthy development in symptoms, which denotes the interventions used in the study are effective against CKD with T2DM and hypertension. The graphical representation of the vitals is mentioned in **Fig 3**. Also, the relief from the pedal oedema, drowsiness and frothy urine shows that the *Ayurvedic* interventions used in the case study are effective for CKD. The conditions before and after treatment is mentioned in **Table 10.**

Fig.2 Graphical representation of the assessment of the patient's vital signs.



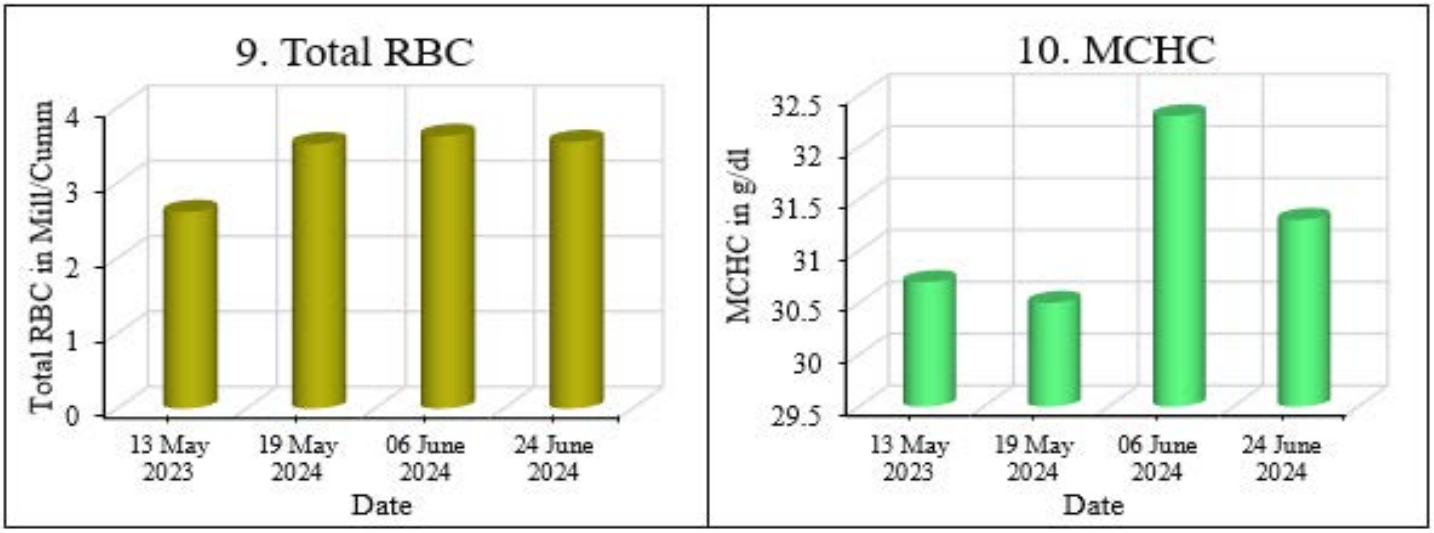
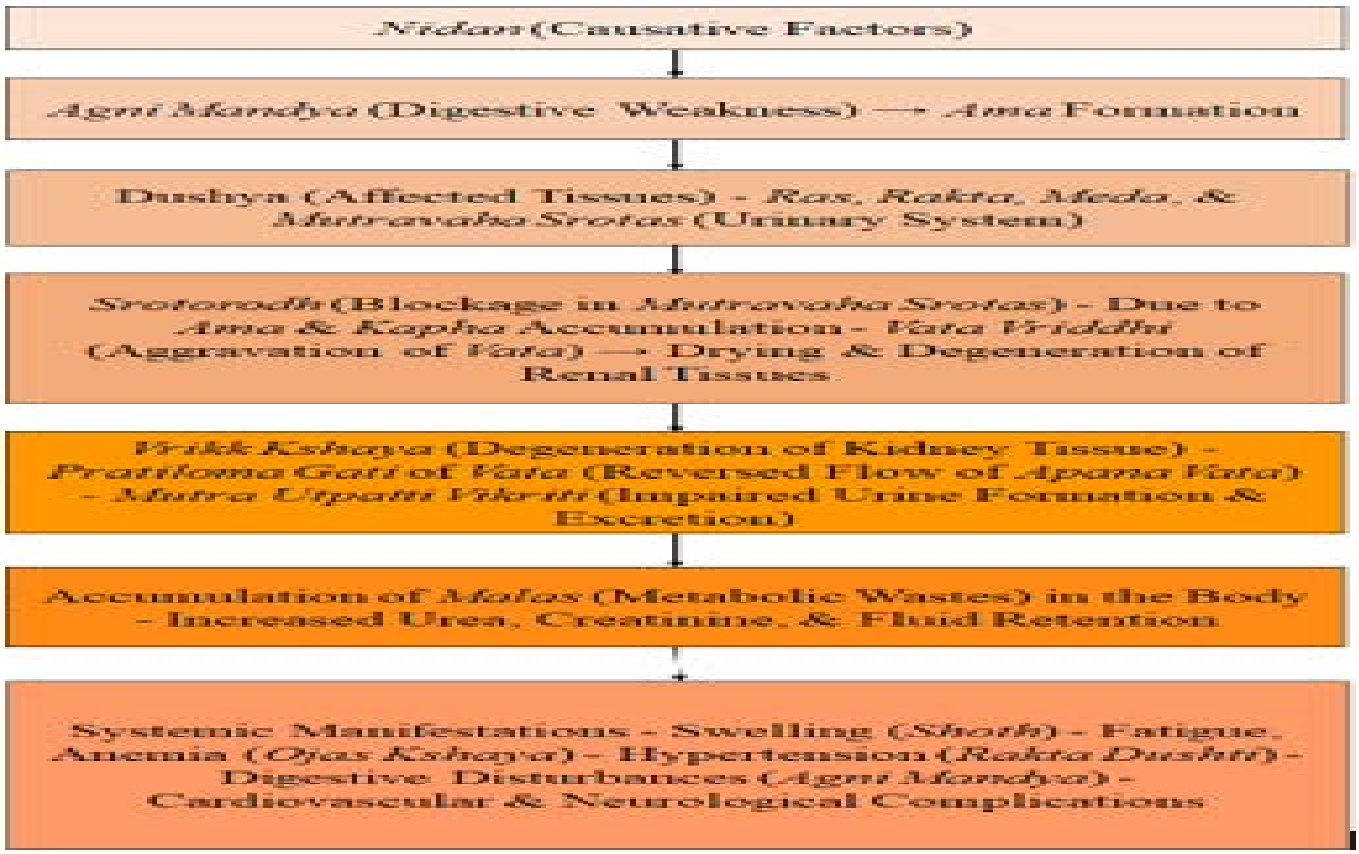


Table 10. The conditions before and after treatment

Condition	Before treatment	After treatment
Drowsiness [31]	Grade 2 (Moderate chance of dozing)	Grade 0 (No chance of dozing)
Pedal oedema [32]	1˚	Relief
Eye vision	Weak	Better
Urine	Frothy	Normal

DISCUSSION

Integrating *Ayurvedic* interventions for the treatment of CKD assures a promising alternative for the conventionally practicing treatment methods. This case report is about the procedure of incorporating different *Ayurvedic* therapies in a 67-year-old male, diagnosed with CKD, T2DM and hypertension. The patient was taking insulin for past 10 years. *Neem karela* therapy was done during the IPD. The *Samprapti*[,33,34,35,36] for the case study is depicted in **Fig 4**.



The *Samprapti* and *Nidan Parivarjan*

In this 67-year-old male patient with CKD stage IV, the pathogenesis can be understood through the lens of *Vataja Prameha* leading to *Mutravaha Srotodushti*. The chronicity of T2DM (*Madhumeha*) contributes to *Kapha-Vata* imbalance, resulting in sluggish metabolism (Manda Agni) and impaired tissue nutrition (*Dhatu Kshaya*). Persistent *Rakta* and *Meda Dushti* from hyperglycemia and hypertension aggravates oxidative stress, leading to progressive *Vataja* degeneration of *Mutravaha Srotas*, causing reduced renal filtration (GFR decline), accumulation of metabolic wastes (Uremia), and fluid-electrolyte imbalance. The compounding influence of *Rakta* and *Vata Prakopa* due to long-standing hypertension further stresses renal microvasculature, promoting sclerosis and nephron loss. Thus, the disease manifests as *Moorcha* (fatigue, lethargy), *Mutra Atikshaya/Alpata* (oliguria or anuria), *Shotha* (edema), *Daurbalya* (general weakness), and *Prameha Lakshanas* [33-36].

Management focuses on minimizing etiological factors that aggravate *Vata* and *Kapha* in *Mutravaha Srotas*. The patient should avoid excess intake of sugar-rich, salty, and processed foods, which worsen *Madhumeha* and hypertension, and excessive animal protein, which burdens renal function [37,38]. Sedentary lifestyle and irregular sleep should be corrected to prevent *Vata* aggravation [39]. Alcohol, smoking, and exposure to nephrotoxic drugs (NSAIDs, certain antibiotics) should be strictly avoided [40]. Emotional stress, which can precipitate *Vata* and *Prameha* complications, should be managed with daily routines (*Dinacharya*), meditation, and mild physical activity suited for the patient's age and renal function [41,42]. Controlled dietary habits, proper hydration, and avoidance of excess salt and heavy oils form the cornerstone of *Nidan Parivarjan* to prevent further progression of CKD in this patient.

The effects of *Ahar Vihar*

The personalized *Ayurvedic* and DIP (Disciplined and Intelligent Person) diet provided to the CKD stage IV patient had several beneficial effects on renal function, metabolic balance, and overall well-being. The dietary regimen avoided wheat, refined foods, milk products, coffee, tea, and packed foods, reducing renal load and minimizing the accumulation of metabolic waste [43]. Incorporation of five types of millets—Foxtail, Barnyard, Little, Kodo, and Browntop—ensured low glycemic index, high fiber, and kidney-friendly protein sources, while fermented millet shakes and steamed sprouts improved gut health and nutrient absorption, reducing systemic inflammation [44]. Controlled intake of herbal tea, green and red juices, and alkaline water supported antioxidant defenses and electrolyte balance, while sip-by-sip hydration and boiled water consumption prevented fluid overload [45,46]. Eating slowly with 32 chews per bite, along with raw ginger and turmeric, enhanced digestion and assimilation, reducing the formation of *Ama* (toxins). Structured meal timing and avoidance of late-night eating contributed to improved glycemic control in the context of T2DM, while low-salt, high-fiber meals helped manage hypertension and systemic inflammation. Spiritual and mindful practices such as expressing gratitude before meals and sitting in *Vajrasan* promoted mental focus, reduced stress, and indirectly supported renal health [47].

Complementing the dietary interventions, lifestyle modifications emphasized physical activity, relaxation, and sleep hygiene. Slow walking for ten minutes after each meal, along with 30 minutes of barefoot brisk walking, enhanced circulation, reduced edema, and improved insulin sensitivity [48]. Meditation practices, including *Sukhasan* and *Sukshm pranayam*, lowered anxiety, improved autonomic function, and contributed to better sleep quality [49]. Observing one-day fasting facilitated mild detoxification and provided the kidneys with metabolic rest. Ensuring six to eight hours of quality sleep and adherence to a structured daily routine supported hormonal balance, metabolic clearance, and tissue repair [50]. Collectively, these integrated *Ahar* and *Vihar* interventions helped optimize renal function, manage glycemic and blood pressure levels, reduce oxidative stress, and improve overall health, effectively complementing the *Ayurvedic* therapies administered for CKD.

The effect of *Panchakarma* therapies

The *Panchakarma* therapies administered to the CKD stage IV patient had multiple systemic and organ-specific effects that complemented the overall *Ayurvedic* management. *Madhutailik Basti*, delivered as a medicated enema with honey and oil, facilitated absorption of nutrients, supported colon health, and helped in reducing *Ama* (toxins) accumulation while improving digestive and metabolic functions [21]. *Matra Basti* with *Sahacharadi Tailam* promoted lubrication and rejuvenation of the colon, enhanced tissue nutrition, and improved *Vata* balance, contributing to better kidney and gastrointestinal function. Both *Basti* therapies, administered on alternate days, helped regulate bowel movements, reduce systemic inflammation, and provided mild detoxification [22]. *Awagah Swedan*, by immersing the patient in warm water, induced sweating, promoted circulation, and enhanced elimination of toxins through the skin while relieving stiffness and improving tissue perfusion [23]. *Udvartan* with *Kolkulathadi*, through gentle massage with medicated powder, stimulated lymphatic drainage, enhanced microcirculation, reduced edema, and improved metabolic activity in the soft tissues [24,25]. *Abhyangam* with *Bala*, *Ashwagandha*, and *Mahanarayana* oils, followed by *Sarvang Swedan*, provided deep tissue relaxation, improved joint and muscle flexibility, enhanced lymphatic flow, and promoted rejuvenation of tissues, thereby reducing stress and fatigue

associated with CKD [26,27]. *Netra Tarpana* with *Triphala Ghrit* supported ocular health, nourished tissues around the eyes, reduced oxidative stress, and contributed to overall neuro-visual rejuvenation [28-30]. Collectively, these *Panchakarma* interventions improved circulation, facilitated detoxification, enhanced tissue nutrition, and supported holistic well-being alongside dietary and lifestyle modifications.

The effects of *Ayurvedic* medicines

The therapeutic effects of *Ayurvedic* medicines administered for CKD stage IV can be explained through the *Ras Panchaka* of their key common ingredients such as *Punarnava, Gokshur, Giloy, Karela, Haritaki, Amlaki, Shilajit, Pippali, Sonth,* and *Kutaki.* These ingredients collectively contribute to multiple therapeutic effects in CKD management [51-59]. *Punarnava* and *Gokshur* act as diuretics (*Mutral*), help in urinary purgation (*Mutravirechana*), reduce inflammation (*Shoth Har*), and support kidney detoxification (*Vrikkadoshahara*). *Giloy*, *Haritaki*, and *Amlaki* function as blood purifiers (*Raktashodhana*), anti-inflammatory agents, and rejuvenators (*Rasayana*), also aiding in digestive stimulation (*Deepan*) and toxin elimination (*Amapachan*). *Karela, Pippali*, and *Sonth* help in balancing *Doshas*, especially *Vata-Pitta-Kapha*, controlling blood sugar (*Pramehaghna*), enhancing digestive fire (*Agnideepan*), and reducing metabolic toxins (*Medohara, Kledahara*). *Shilajeet* and *Kutaki* further contribute to immunity enhancement (*Ojovardhaka*), liver protection, and detoxification, while providing *Rasayana* effects to improve vitality and overall systemic balance. Overall, these common ingredients act synergistically to address CKD-related complications, improve renal function, reduce inflammation, support metabolism, and enhance general health.

Future Research perspectives: This study was conducted on CKD stage IV patient with hypertension and T2DM. This study results were promising but a keen examination is needed because this study only involves one patient. Further studies with larger number of randomized controlled trials are required to confirm the reliability, efficacy and safety of the integrated *Ayurveda* therapies used in this study for CKD to establish a standard protocol and guidelines for the clinical settings.

CONCLUSION

This case study for the treatment of CKD stage IV with hypertension and T2DM through *Ayurvedic* interventions can be concluded as follows:

Symptoms: The patient showed marked improvement in several clinical parameters following treatment. Drowsiness, initially assessed as Grade 2 (moderate chance of dozing), reduced to Grade 0, indicating no chance of dozing. Pedal oedema, which was present at grade 1, was completely relieved. Eye vision, which was weak prior to treatment, improved noticeably. Additionally, the patient's urine, which was initially frothy, returned to a normal appearance.

Vitals: Over the monitoring period, the patient showed gradual improvements in several vital parameters. Body weight decreased steadily from 83 kg to 76 kg, indicating effective weight management. Blood pressure initially fluctuated, reaching highs of 180/90 mmHg and 160/90 mmHg, before stabilizing at 120/80 mmHg. Pulse rate varied between 64 and 90 beats per minute, with occasional elevations, and ultimately returned to 72 bpm. Respiratory rate remained largely stable between 16 and 20 breaths per minute, while oxygen saturation (SpO_2) stayed consistently high, ranging from 97% to 99%, reflecting good oxygenation. Body temperature remained within the normal range (96.8–98.2 °F), indicating no signs of infection or systemic inflammation. Overall, these trends suggest improvements in hemodynamic stability, weight management, and general physiological status.

Investigations: Over the course of treatment, the patient's laboratory parameters showed notable improvements. Hemoglobin levels increased gradually from 7.3 gm/dL to 10.0 gm/dL, reflecting improved anemia management. Urea levels decreased significantly from 280.12 mg/dL to 100 mg/dL, and creatinine declined from 6.10 mg/dL to 4.5 mg/dL, indicating improved renal function. Uric acid fluctuated slightly, rising initially to 7.8 mg/dL before settling at 7.1 mg/dL. Urine analysis showed intermittent proteinuria and glucosuria, while pus and epithelial cells decreased over time, suggesting reduced urinary tract irritation or infection. Total RBC count increased from 2.61 Mill/Cumm to 3.54 Mill/Cumm, supporting the improvement in overall hematological status.

In conclusion, Holistic *Ayurvedic* treatments with prescribed necessary allopathic medicines for CKD provided encouraging such as the improvement of symptoms, vitals and laboratory test results. Thus, the traditional therapies are found to enhance kidney function and heath and also the overall well-being of the patient. Future research with large controlled trails is essential to authenticate the conclusions of this case study and standardize treatment protocol establishment.

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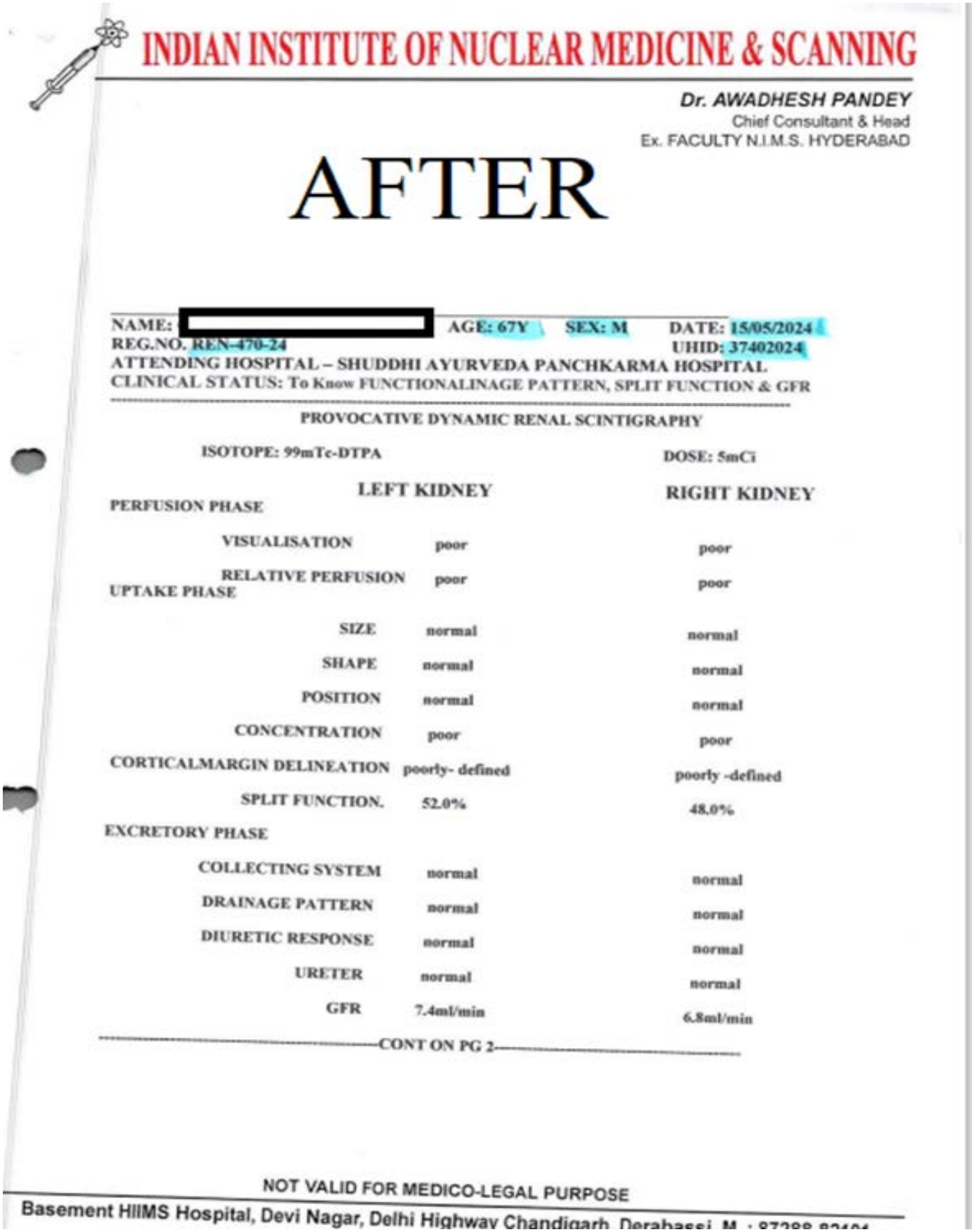
Fig 1. DTPA scan reports



INDIAN INSTITUTE OF NUCLEAR MEDICINE & SCANNING

Dr. AWADHESH PANDEY
Chief Consultant & Head
Ex. FACULTY N.I.M.S. HYDERABAD

AFTER

NAME: [redacted] AGE: 67Y SEX: M DATE: 15/05/2024
REG.NO. REN-470-24 UHID: 37402024
ATTENDING HOSPITAL – SHUDDHI AYURVEDA PANCHKARMA HOSPITAL
CLINICAL STATUS: To Know FUNCTIONALINAGE PATTERN, SPLIT FUNCTION & GFR

PROVOCATIVE DYNAMIC RENAL SCINTIGRAPHY

ISOTOPE: 99mTc-DTPA DOSE: 5mCi

	LEFT KIDNEY	RIGHT KIDNEY
PERFUSION PHASE		
VISUALISATION	poor	poor
RELATIVE PERFUSION	poor	poor
UPTAKE PHASE		
SIZE	normal	normal
SHAPE	normal	normal
POSITION	normal	normal
CONCENTRATION	poor	poor
CORTICALMARGIN DELINEATION	poorly- defined	poorly -defined
SPLIT FUNCTION.	52.0%	48.0%
EXCRETORY PHASE		
COLLECTING SYSTEM	normal	normal
DRAINAGE PATTERN	normal	normal
DIURETIC RESPONSE	normal	normal
URETER	normal	normal
GFR	7.4ml/min	6.8ml/min

CONT ON PG 2

NOT VALID FOR MEDICO-LEGAL PURPOSE

Basement HIIMS Hospital, Devi Nagar, Delhi Highway Chandigarh, Derabassi, M. : 87288 82404

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AFTER

Page 2

IMPRESSION:- 99m DTPA RENOGRAM REVEALS:

LEFT KIDNEY i) NORMAL IN SIZE
ii) SEVERELY COMPROMISED CORTICAL FUNCTION.
iii) THERE IS NORMAL DRAINAGE SEEN.

RIGHT KIDNEY i) NORMAL IN SIZE
ii) SEVERELY COMPROMISED CORTICAL FUNCTION
iii) THERE IS NORMAL DRAINAGE SEEN.

- GLOBAL GFR=14.2ml/min/ 1.99sq m BSA
(Normal range for BSA 73.0ml/min ± 17ml/min)

-SPLIT FUNCTION:. LEFT KIDNEY=52.0%
RIGHT KIDNEY=58.0%

-. REPEAT DTPA SCAN AFTER 3 MONTHS (15/08/2024) TO SEE PROGRESSION OR REGRESSION.

Dr. ABHISHEK GUPTA
(DNB)

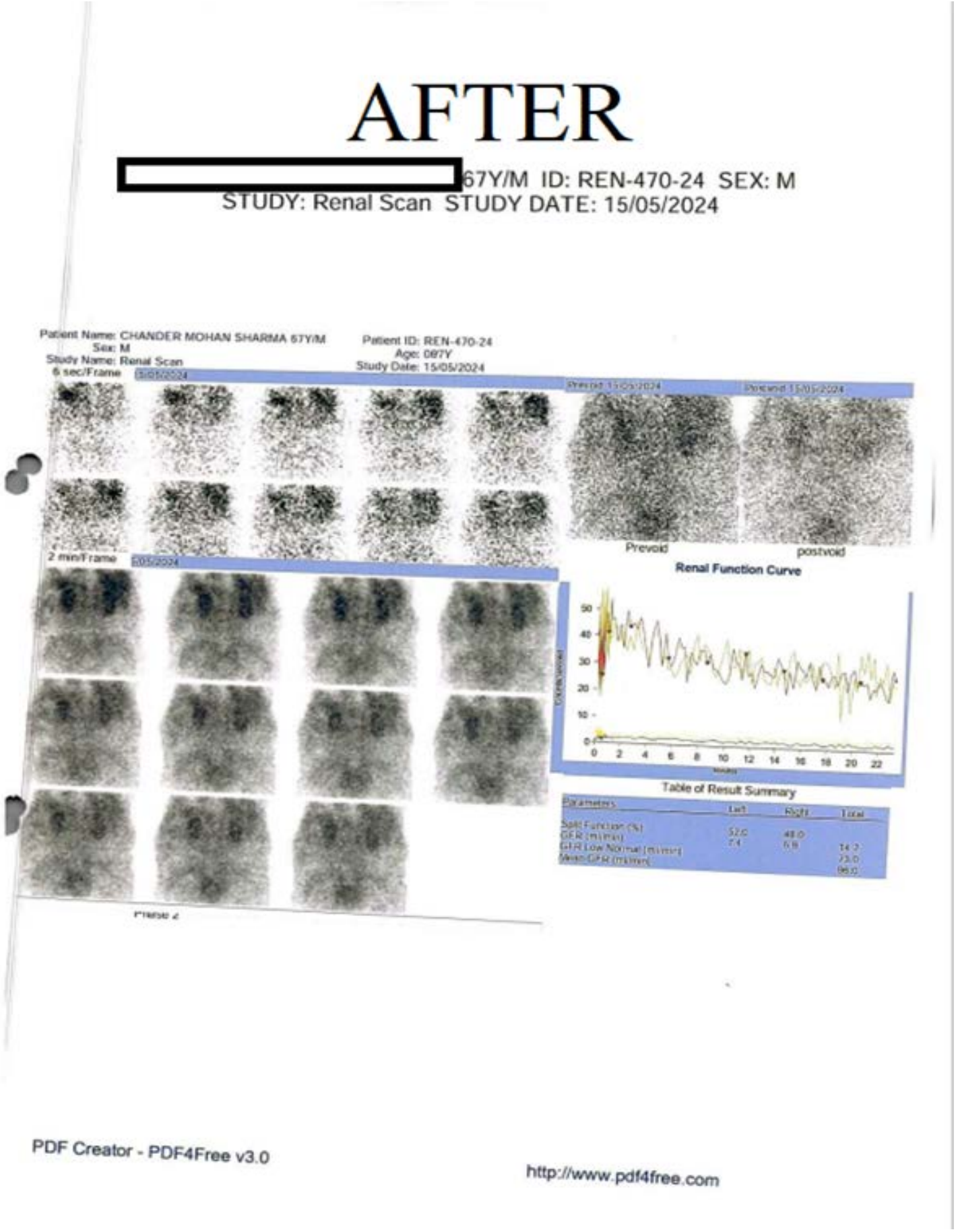
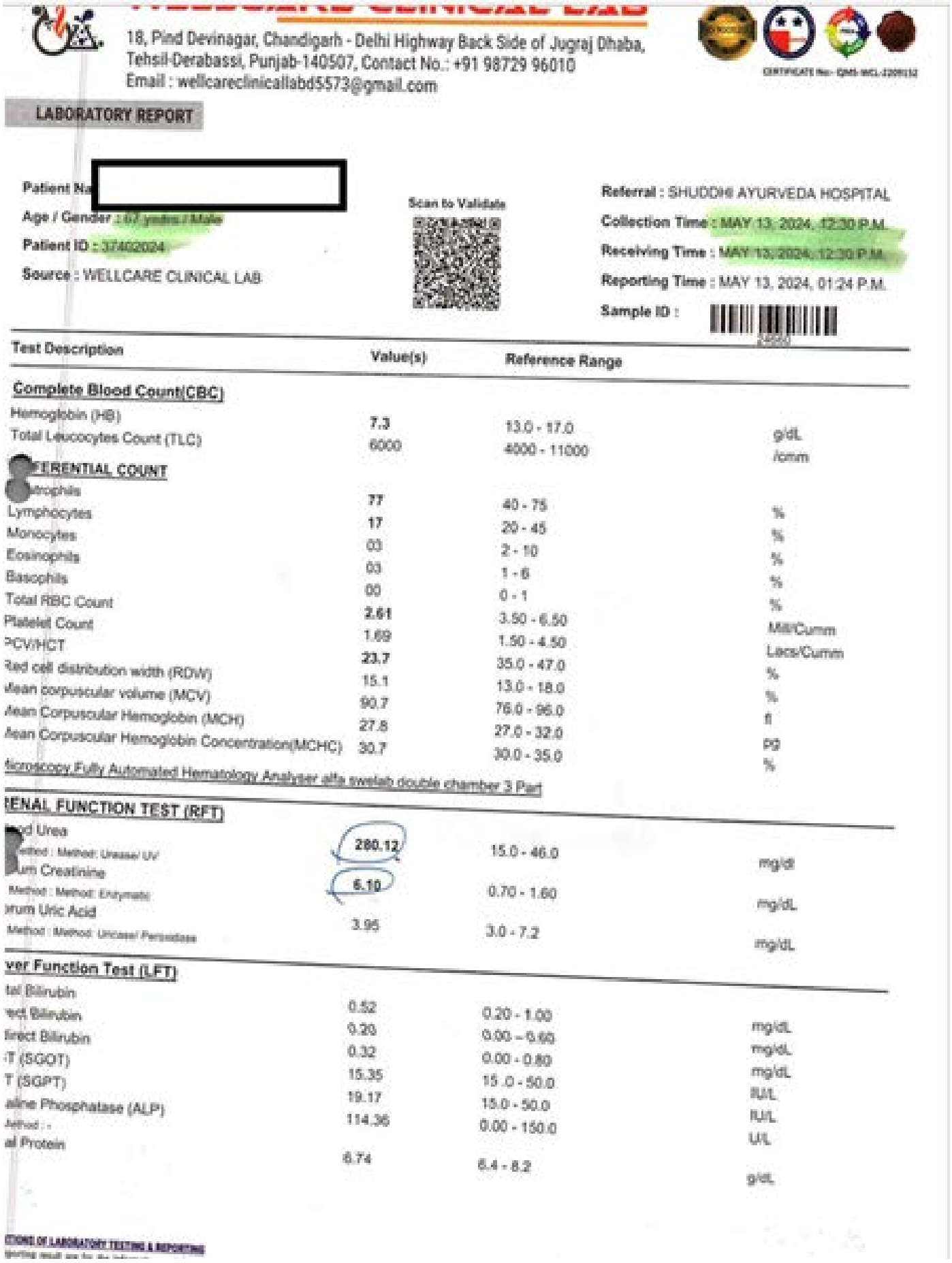


Fig 1 The laboratory reports



18, Pind Devinagar, Chandigarh - Delhi Highway Back Side of Jugraj Dhaba,
Tehsil-Derabassi, Punjab-140507, Contact No.: +91 98729 96010
Email : wellcareclinicallabd5573@gmail.com

CERTIFICATE No:- QMS-WCL-2205132

LABORATORY REPORT

Patient Na[redacted]
Age / Gender : 67 yrs/m / Male
Patient ID : 37402024
Source : WELLCARE CLINICAL LAB

Scan to Validate

Referral : SHUDDHI AYURVEDA HOSPITAL
Collection Time : MAY 13, 2024, 12:30 P.M.
Receiving Time : MAY 13, 2024, 12:30 P.M.
Reporting Time : MAY 13, 2024, 01:24 P.M.
Sample ID :

Test Description	Value(s)	Reference Range	
Complete Blood Count(CBC)			
Hemoglobin (HB)	7.3	13.0 - 17.0	g/dL
Total Leucocytes Count (TLC)	6000	4000 - 11000	/cmm
FFERENTIAL COUNT			
[illegible]ophils	77	40 - 75	%
Lymphocytes	17	20 - 45	%
Monocytes	03	2 - 10	%
Eosinophils	03	1 - 6	%
Basophils	00	0 - 1	%
Total RBC Count	2.61	3.50 - 6.50	Mill/Cumm
Platelet Count	1.69	1.50 - 4.50	Lacs/Cumm
PCV/HCT	23.7	35.0 - 47.0	%
Red cell distribution width (RDW)	15.1	13.0 - 18.0	%
Mean corpuscular volume (MCV)	90.7	76.0 - 96.0	fl
Mean Corpuscular Hemoglobin (MCH)	27.8	27.0 - 32.0	Pg
Mean Corpuscular Hemoglobin Concentration(MCHC)	30.7	30.0 - 35.0	%

Microscopy Fully Automated Hematology Analyser alfa swelab double chamber 3 Part

TENAL FUNCTION TEST (RFT)

[illegible]od Urea	280.12	15.0 - 46.0	mg/dl
Method : Method: Urease/ UV			
[illegible]um Creatinine	5.10	0.70 - 1.60	mg/dL
Method : Method: Enzymatic			
[illegible]rum Uric Acid	3.95	3.0 - 7.2	mg/dL
Method : Method: Uricase/ Peroxidase			

ver Function Test (LFT)

[illegible]tal Bilirubin	0.52	0.20 - 1.00	mg/dL
[illegible]ect Bilirubin	0.20	0.00 – 0.60	mg/dL
Direct Bilirubin	0.32	0.00 - 0.80	mg/dL
[illegible]T (SGOT)	15.35	15 .0 - 50.0	IU/L
T (SGPT)	19.17	15.0 - 50.0	IU/L
[illegible]aline Phosphatase (ALP)	114.36	0.00 - 150.0	U/L
Method : -			
[illegible]al Protein	6.74	6.4 - 8.2	g/dL

[illegible]TIONS OF LABORATORY TESTING & REPORTING

HOUSE of DIAGNOSTICS

Patient Name: [redacted]
Age / Sex : 68 Y / M
Referred By : Dr. AIIMS
Centre : BTC PATPARGANJ

Lab No : PTG24061410
Registration On : 24-Jun-24 07:35
Patient ID : UHID:0001647035

Clinical Significance of LFTs: A clinical suspicion of liver disease usually leads to the measurement of the liver function tests (LFT) which include measurement of several enzymes, serum bilirubin and albumin. These parameters may point to an underlying pathological process and direct further investigation. The aim of investigation in patients with suspected liver disease are: To detect hepatic abnormality. Measurement of severity of liver damage. Identify the specific cause. Investigate possible complications.

Technology: Dry Chemistry (VITROS MicroSlide: MicroSensor and Interlock Technology)
Analyser: Fully Automated Biochemistry and Immunoassay Analyzer VITROS 5600

Advise: Please correlate results clinically

Kidney Function Test — Serum Sample

Accession No: 0016336557 **Collected On:** 24-Jun-24 07:35 **Received On:** 24-Jun-24 13:42 **Approved On:** 24-Jun-24 18:33

Observation	Result	Unit	Biological Ref. Interval	Method
Blood Urea	**100**	mg/dL	19 - 43	Urease, Colorimetric
Blood Urea Nitrogen	**46.73**	mg/dL	9-20	Calculated
Creatinine	**4.5**	mg/dL	0.6-1.25	Enzymatic
Estimated GFR	12.50	mL/min/1.73m2		Calculated By CKD-EPI(2021)
Uric Acid	7.1	mg/dL	3.5 - 8.5	Uricase , Colorimetric
Calcium	8.5	mg/dL	8.4 - 10.2	Arsenazo III
Phosphorus	**4.7**	mg/dL	2.5 - 4.5	Phosphomolybdate reduction
BUN/Creatinine Ratio	10.38	Ratio		Calculated
Urea/Creatinine Ratio	22.22	Ratio		Calculated
Electrolytes				
Sodium	137	mmol/L	137-145	ISE Direct
Potassium	5.0	mmol/L	3.5 - 5.1	ISE Direct
Chloride	**108**	mmol/L	98 - 107	ISE Direct

kindly correlate clinically and treatment history of the patient.

Classification of eGFR by UK Kidney Association (2017):

eGFR (ml/min/1.73 m2)	GFR Category	Significance
>90	G1	Normal Renal Function
60-90	G2	Mild impairment of Renal Function
45-59	G3a	Impaired Kidney Function
30-44	G3b	Impaired Kidney Function
15-29	G4	Significant Impairment of Renal Function
<15	G5	End-Stage Renal Failure (ESRF)

Technology: Dry Chemistry (VITROS MicroSlide: MicroSensor and Interlock Technology)
Remarks: Please correlate results clinically

ESR — EDTA Whole Blood Sample

Accession No: 0001334E0T **Collected On:** 24-Jun-24 07:36 **Received On:** 24-Jun-24 12:54 **Approved On:** 24-Jun-24 18:18

Observation	Result	Unit	Biological Ref. Interval	Method
ESR	**35**	mm/hr	<20	Modified Westergren

Scan to Validate

14,15,16 Hargovind Enclave, Delhi - 110092

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