

Enhanced External Counterpulsation Therapy and Lifestyle Modifications in a 63-Year-Old Female with Hypertension and CKD Stage 2: A Case Report

Dr. Lydia Devegan¹, Dr. Dasheni Puvanaendran², Mr. Bhushan Nikam³, Mr. Vikas Singh⁴

¹MBBS, ²MBBS, ³BPharm, ⁴BPharm

¹Department of Functional Medicine,

¹SOL integrative wellness centre, kuala lumpur, Malaysia

Abstract:

Background: Hypertension and chronic kidney disease (CKD) often coexist, presenting significant challenges in management due to their bidirectional relationship. Enhanced external counterpulsation (EECP) therapy is a non-invasive treatment option that has shown potential in improving cardiovascular health. This case report details the therapeutic approach and outcomes of a 63-year-old female patient with hypertension, CKD stage 2, and associated comorbidities.

Case Presentation:

A 63-year-old female with a history of high blood pressure, hypercholesterolemia, and diabetes presented with nocturia and uncontrolled hypertension despite being on Covasc 10mg. The patient also had CKD stage 2. Initial blood pressure readings were 138-140/85-95 mmHg. A comprehensive treatment plan was initiated, including 30 sessions of EECP over 15 weeks, bi-weekly infrared sauna sessions, and lifestyle modifications focusing on diet, physical activity, and stress management. Additionally, the patient was prescribed natural supplements including Kidney care, HTN PX 180, Probiotic, Arterosil, PECTA SOL, and homeopathic dilutions for kidney cleanse (Berberis vulgaris, Eel Serum). Significant improvement was noted after 15 sessions of EECP, with blood pressure stabilizing at 110-122/70-80 mmHg, EGFR improving to 97 mL/min/1.73m², and normalization of creatinine and urea levels. No major contraindications were observed.

Conclusion:

The integration of EECP therapy with lifestyle modifications and natural supplements resulted in substantial improvements in blood pressure control and renal function in a patient with CKD stage 2 and hypertension. This case underscores the potential benefits of combining non-pharmacological interventions with conventional treatments in managing complex chronic conditions. Further studies are warranted to explore the long-term efficacy and safety of such integrative approaches.

Keywords: Enhanced External Counterpulsation, Hypertension, Chronic Kidney Disease, Lifestyle Modification, Natural Supplements.

Introduction

Chronic kidney disease (CKD) affects 10–15% of the population worldwide and its prevalence is increasing.^{[8][9]} CKD is defined as the presence of reduced kidney function (an estimated glomerular filtration rate [eGFR] < 60 mL/min/1.73m²^[10] or kidney damage (often indicated by the presence of proteinuria) for ≥ 3 months duration.^[11] Hypertension, defined by the European Society of Cardiology and the European Society of Hypertension (ESC/ESH) as a blood pressure (BP) of ≥ 140/80 mmHg affects ~ 30% of the general adult population and up to 90% of those with CKD.^{[12][13]}

Hypertension is both a cause and effect of CKD and contributes to its progression.^{[14][15]} This case report presents a 63-year-old female with a history of high blood pressure, hypercholesterolemia, and stage 2 CKD. Despite being on Covasc 10 mg for hypertension management, her blood pressure remained elevated. Additionally, she experienced nocturia, adding to her discomfort. The patient sought treatment at SOL

Integrative Wellness Centre, where a holistic treatment plan was implemented. This plan included Enhanced External Counterpulsation (EECP) therapy, infrared sauna sessions, natural supplements, and comprehensive lifestyle modifications. The following case details the interventions and outcomes that led to significant improvements in her health, demonstrating the effectiveness of an integrative approach to managing complex, chronic conditions.

Case Presentation

A 63-year-old female with a medical history of high blood pressure, hypercholesterolemia, diabetes, and stage 2 chronic kidney disease (CKD) presented with complaints of nocturia and persistent hypertension. She was receiving treatment at SOL Integrative Wellness Centre, located in Kuala Lumpur, under the care of Dr. Lydia DeVega Devanayagam.

The patient's hypertension was previously managed with Covasc 10 mg, but her blood pressure remained elevated, ranging from 138-140/85-95 mmHg. Her eGFR was 67 ml/min/1.73m², indicating moderate kidney impairment, with laboratory tests revealing elevated levels of urea (5.9 mmol/L), creatinine (76 µmol/L), and uric acid (322 µmol/L). To address these issues, she was advised to undergo Enhanced External Counterpulsation (EECP) therapy and adopt a healthier lifestyle.

Enhanced external counterpulsation (EECP) is an outpatient nonpharmacologic and noninvasive therapy, involving the use of electrocardiogram-synchronized inflatable cuffs wrapped around the lower extremities to produce cyclic inflation and deflation. ^[1] This technique increases venous return and augments diastolic blood pressure, ^{[2][3]} producing an acute hemodynamic effect that is presumed to be similar to that produced by the invasive intra-aortic balloon pump. ^{[4][5]} This action increases blood flow to the heart, reduces its workload, and promotes the formation of new blood vessels. ^[6] The patient completed 30 sessions of EECP over 15 weeks, receiving treatment twice a week.

In addition to EECP, the patient underwent a few sessions of infrared sauna therapy. Infrared saunas use infrared light to generate heat, which promotes relaxation, improves circulation, and supports cardiovascular health. ^[7]

The treatment plan included significant lifestyle modifications. The patient was encouraged to maintain a balanced diet, engage in regular physical activity, reduce sugar intake, avoid spicy and fried foods, stay hydrated, get adequate sleep, manage stress, and incorporate activities like yoga into her daily routine. She was also prescribed natural supplements, including Kidney Care, HTN PX 180, Probiotic, Arterosil, PECTA SOL, and homeopathy dilutions for kidney cleanse (Berberis vulgaris and Eel Serum).

Following 15 sessions of EECP therapy over five weeks, the patient showed significant improvement. Her blood pressure decreased to 110-122/70-80 mmHg, and her eGFR improved to 97 ml/min/1.73m². Laboratory results showed normalized levels of urea (4.4 mmol/L), creatinine (62 µmol/L), and uric acid (267 µmol/L). The table below summarizes these clinical laboratory test results:

Clinical Laboratory Test Results:

Test Parameter	Pre-Therapy	Post-Therapy	Significance
Blood Pressure	138-140/85-95 mmHg	110-122/70-80 mmHg	Reflects effective control of hypertension and reduced cardiovascular risk
eGFR	67 ml/min/1.73m ²	97 ml/min/1.73m ²	Indicates substantial enhancement in renal function and overall kidney health
Urea	5.9 mmol/L	4.4 mmol/L	Demonstrates improved renal efficiency and reduced nitrogenous waste

Creatinine	76 umol/L	62 umol/L	Signifies enhanced kidney filtration and overall renal function
Uric Acid	322 umol/L	267 umol/L	Suggests improved metabolic control and reduced risk of complications associated with hyperuricemia

The patient's positive response to the treatment demonstrates the efficacy of EECP and infrared sauna therapy, combined with lifestyle modifications and natural supplementation, in managing hypertension and improving renal function in a patient with stage 2 CKD. Regular follow-up visits are scheduled every three weeks to monitor her progress and adjust the treatment plan as necessary. The ongoing plan includes efforts to improve her lipid profile and HbA1c readings to further enhance her overall health.

Discussion

The case demonstrates the effectiveness of Enhanced External Counterpulsation (EECP) and infrared sauna therapy, combined with lifestyle modifications, in managing hypertension and improving renal function in a patient with stage 2 CKD. The patient's significant improvements in blood pressure and kidney function underscore the potential benefits of a holistic treatment approach. However, limitations include the need for regular, long-term follow-up to maintain these health gains and the possible variability in individual responses to such therapies. Additionally, further studies are needed to establish the generalizability of these results to a broader population.

Conclusion

The case highlights the successful management of hypertension and stage 2 CKD through Enhanced External Counterpulsation (EECP) therapy, infrared sauna sessions, and comprehensive lifestyle changes. The patient experienced significant improvements in blood pressure and kidney function, demonstrating the effectiveness of a holistic, integrative treatment approach. Regular follow-ups and a dedicated adherence to the treatment plan were crucial in achieving and maintaining these positive health outcomes.

List of abbreviation

EECP: Enhanced External Counterpulsation

CKD: Chronic Kidney Disease

eGFR: Estimated Glomerular Filtration Rate

HbA1c: Glycated Haemoglobin

Declaration:

All activities performed on the subject in this case report were conducted in accordance with Good Clinical Practice (GCP) guidelines and under the supervision of a qualified physician. The therapeutic interventions, including Enhanced External Counterpulsation (EECP) therapy, infrared sauna sessions, and the administration of natural supplements, were carried under the direct guidance of Dr. Lydia DeVega Devanayagam at SOL Integrative Wellness Centre. The patient's treatment plan and subsequent follow-ups adhered strictly to ethical standards and clinical protocols to ensure patient safety and the validity of the observed outcomes.

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