



# Comprehensive Management of Heart Block with Enhanced External Counterpulsation (EECP) and Chelation Therapy: A case report

<sup>1</sup>Dr.Dasheni Puvanaendran, <sup>2</sup>Bhushan Nikam, <sup>3</sup>Vikas Singh

<sup>1</sup>MBBS, <sup>2</sup>BPharm, <sup>3</sup>BPharm

<sup>1</sup>Department of Functional Medicine,

<sup>1</sup>SOL integrative wellness centre, kuala lumpur, Malaysia

## Abstract

### Background:

Heart blockage, also known as coronary artery disease, is a common health condition that affects many people in Malaysia. This condition occurs when the blood vessels that supply blood to the heart become narrow or blocked, which can lead to chest pain, heart attacks, and other serious health problems. According to the Department of Statistics Malaysia, Ischemic heart disease continued to be the leading cause of mortality, accounting for 17.0% of the 109,155 deaths that were medically verified in 2020.

### Case Presentation:

This case report describes the successful management of a 60 year old male with a heart condition complicated by heart blockage, hypertension, and high cholesterol levels. The patient's medical history included hypertension and high cholesterol, contributing to his cardiovascular risk.

The treatment approach involved arginine medications to support heart health, followed by Enhanced External Counterpulsation (EECP) and Chelation Therapy. EECP, a non-invasive procedure using inflatable cuffs on the legs to increase blood flow to the heart, and Chelation Therapy were administered over several weeks.

Following treatment completion, the patient demonstrated significant improvement over four months. He reported enhanced quality of life with improved exercise tolerance and resolution of angina symptoms. Laboratory tests indicated favorable changes in lipid profiles and inflammatory markers, reflecting improved cardiovascular health.

### Conclusion:

This case underscores the potential benefits of a comprehensive treatment approach combining medication with non-invasive therapies like EECP and Chelation Therapy in managing complex heart conditions. Further research is warranted to validate these findings and optimize therapeutic strategies for similar patient populations.

**Keywords:** Heart block, hypertension, high cholesterol, Enhanced External Counterpulsation (EECP), Chelation Therapy, cardiovascular disease management, non-invasive therapies.

## **Introduction**

Coronary artery disease, a prevalent health issue in Malaysia, results from narrowed or blocked blood vessels supplying the heart, leading to chest pain, heart attacks, and other serious complications. In 2020, ischemic heart disease accounted for 17.0% of medically verified deaths, highlighting its significant impact on mortality rates. Managing cardiovascular diseases, especially in patients with hypertension and high cholesterol, is crucial to prevent complications.

This case report highlights a 60-year-old male who presented at SOL Integrative Wellness Centre with heart block attributed to hypertension and high cholesterol, underscoring the significance of addressing modifiable risk factors. The treatment regimen involved Enhanced External Counterpulsation (EECP) and Chelation Therapy. 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. <sup>[1]</sup> This technique increases venous return and augments diastolic blood pressure, <sup>[2,3]</sup> producing an acute hemodynamic effect that is presumed to be similar to that produced by the invasive intra-aortic balloon pump. <sup>[4,5]</sup> This action increases blood flow to the heart, reduces its workload, and promotes the formation of new blood vessels. <sup>[6]</sup> Chelation therapy, more formally referred to as EDTA chelation therapy, is a procedure employing intravenous administration of EDTA (ethylene diamine tetra-acetic acid), often along with nutrients, to help manage atherosclerotic vessel diseases and partially revitalize the circulation.

This report aims to showcase the effectiveness of EECP and Chelation Therapy in improving clinical outcomes, as evidenced by changes in symptoms and laboratory parameters post-treatment. Through this examination, valuable insights into managing complex cardiovascular conditions in older populations can be gained.

## **Case Presentation**

A 60-year-old male presented with a history of heart block attributed to hypertension and high cholesterol levels. Upon admission, the patient exhibited stable vital signs and a medical history indicative of significant cardiovascular risk factors. His medical history included a diagnosis of hypertension and high cholesterol, highlighting the importance of managing modifiable risk factors to prevent further complications.

The patient was receiving arginine medications to support heart health, aiming to boost nitric oxide production and facilitate vasodilation for improved blood flow, particularly beneficial in cardiovascular conditions. Additionally, the patient underwent a treatment regimen that included Enhanced External Counterpulsation (EECP) and Chelation Therapy.

Enhanced External Counterpulsation (EECP) involved 35 sessions, each lasting one hour. This therapy utilizes inflatable cuffs on the lower extremities that inflate and deflate synchronously with the cardiac cycle. This synchronized action increases blood flow to the coronary arteries during diastole, thereby enhancing myocardial perfusion.

Chelation Therapy comprised six sessions administered once weekly for six weeks. This therapy utilized a combination of EDTA, magnesium chloride, sodium bicarbonate, vitamin C, and vitamin B complex to remove toxic metals and plaque from blood vessels. The aim was to reduce atherosclerotic burden and improve vascular health. These treatment modalities were selected to address the underlying cardiovascular issues and manage the associated risk factors effectively. The patient's progress and response to therapy were closely monitored throughout the treatment course.

Following the completion of EECp and Chelation Therapy, the patient showed significant improvement over four months:

- Resolution of symptoms such as shortness of breath and angina.
- Enhanced exercise tolerance, demonstrated by an increased walking distance from 300 meters to 500 meters without angina attacks.

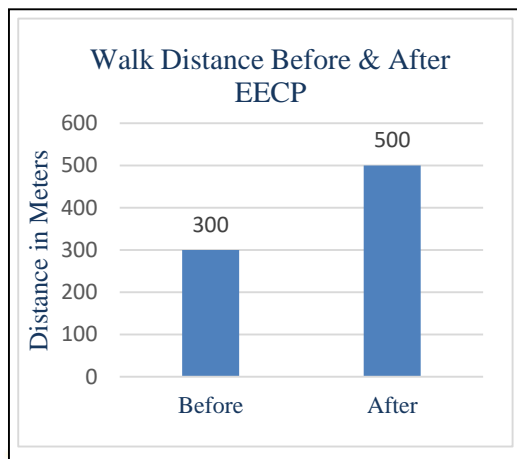


Figure 1: Pre and post EECp walk test.

After completing EECp and chelation therapy, the patient's condition significantly improved, demonstrated by improved blood work such as lipid profile, inflammatory markers, and CT coronary angiogram revealing significant collateral formation.

### **Laboratory Test Readings:**

#### **Total Cholesterol**

Parameter	Pre-Treatment	Post-Treatment
LDL Cholesterol	4.24 mmol/L	3.6 mmol/L
HDL Cholesterol	1.05 mmol/L	1.6 mmol/L
Triglycerides	1.6 mmol/L	1.2 mmol/L
C-Reactive Protein	1.5 mg/L	0.8 mg/L

Table 1: Pre and Post Therapy Lipid Profile

The laboratory results post-treatment indicated favorable changes in lipid profiles and inflammatory markers, reflective of improved cardiovascular health and response to the therapeutic interventions.

### **Patient Perspective:**

The patient experienced significant improvements in daily life following treatment. Resolution of symptoms such as shortness of breath and angina allowed for increased physical activity and improved exercise tolerance. The ability to walk longer distances without experiencing angina attacks greatly enhanced overall quality of life. The positive changes observed in laboratory test results provided reassurance and motivation to continue the path to better cardiovascular health. This patient-centered perspective highlights the tangible benefits and outcomes of the comprehensive treatment approach received.

**Discussion:**

The patient demonstrated notable improvements post-treatment, including resolution of symptoms such as shortness of breath and angina, as well as increased exercise tolerance. EECP, by enhancing coronary blood flow during diastole, and Chelation Therapy, by reducing atherosclerotic burden, contributed synergistically to the patient's clinical outcomes. The favorable changes observed in lipid profiles and inflammatory markers post-treatment indicate improved cardiovascular health.

However, it's important to acknowledge the limitations of this case report. Firstly, the findings are based on a single patient, limiting generalizability to broader populations. Larger controlled studies are needed to validate the efficacy and safety of these interventions across diverse patient groups.

**Conclusion:**

This case report highlights the successful management of a 60-year-old male with heart block, hypertension, and high cholesterol using Enhanced External Counterpulsation (EECP) and Chelation Therapy. The patient experienced significant improvement in symptoms, exercise tolerance, and cardiovascular health following treatment, as evidenced by favorable changes in lipid profiles and inflammatory markers.

The integration of EECP and Chelation Therapy offers promising therapeutic options for complex cardiovascular conditions, particularly in older patients with multiple risk factors. These non-invasive interventions show potential in enhancing patient outcomes and quality of life. Further research and validation studies are warranted to optimize treatment strategies and broaden the applicability of these approaches in cardiovascular care. This case underscores the importance of personalized, comprehensive treatment regimens tailored to address specific patient needs and improve clinical outcomes in cardiovascular disease management.

**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), Chelation Therapy and the administration of natural supplements, were carried under the direct guidance of Dr. Dasheni Puvanaendran 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.

**References**

1. Subramanian R, Nayar S, Meyyappan C, et al. Effect of enhanced external counter pulsation treatment on aortic blood pressure, arterial stiffness and ejection fraction in patients with coronary artery disease. *J Clin Diagn Res.* 2016; 10(10): 30-34.
2. Manchanda A, Soran O. Enhanced external counterpulsation and future directions: step beyond medical management for patients with angina and heart failure. *J AM Coll Cardiol.* 2007; 50(16): 1523-1531.
3. Akhtar M, Wu GF, Du ZM, Zheng ZS, Michaels AD. Effect of external counterpulsation on plasma nitric oxide and endothelin-1 levels. *Am J Cardiol.* 2006; 98(1): 28-30.
4. Yavari M, Montazeri HR. Effects of enhanced external counterpulsation on anginal symptoms and improvements in objective measures of myocardial ischaemia. *Cardiovasc J South Afr.* 2007; 18(3): 154-156.
5. Sinvhal RM, Gowda RM, Khan IA. Enhanced external counterpulsation for refractory angina pectoris. *Heart.* 2003; 89: 830-833.
6. Fihn SD, Blankenship JC, Alexander KP, et al. 2014 ACC/AHA/AATS/PCNA/SCAI/STS focused update of the guideline for the diagnosis and management of patients with stable ischemic heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines, and the American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *Circulation.* 2014; 130: 1749-1767.