BENEFITS OF ENHANCED EXTERNAL COUNTERPULSATION THERAPY IN PATIENTS WITH REFRACTORY ANGINA AND HEART FAILURE, ONE YEAR FOLLOW-UP

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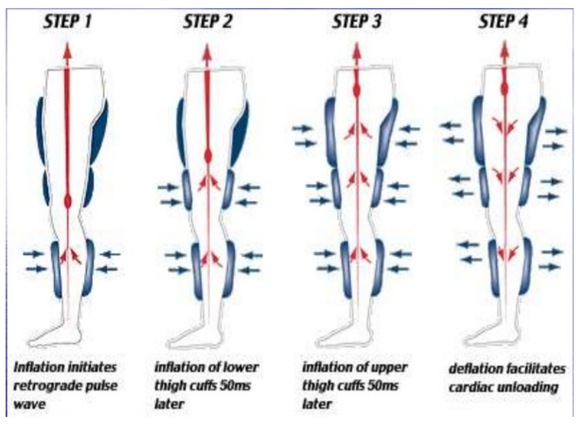
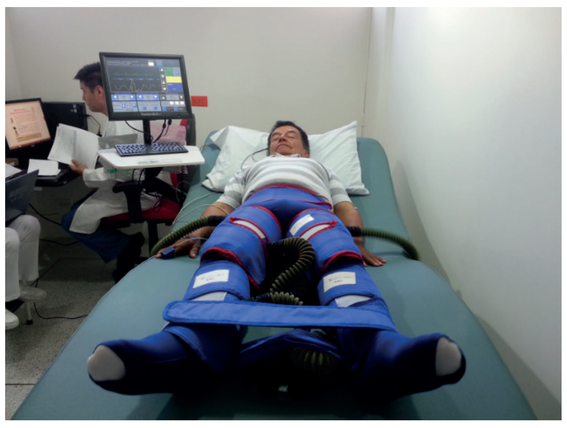
INTRODUCTION

Many patients with chronic ischemic heart disease have refractory angina and or heart failure, with a limitation in the functional class and quality of life. The therapy with Enhanced External Counterpulsation (EECP) has shown benefits. The objective is to determine the benefits of this therapy.





METHODS

Observational, retrospective study with analytical component, analyzing before and after the intervention. All patients underwent an initial evaluation, at six months and a year, of the functional class of angina Canadian Cardiovascular Society (CCS), dyspnea New York Heart Association (NYHA) and quality of life through the instrument Euro Qol- 5D (EQ -5D). Statistical software Stata® (Version 15, Stata Corporation, and College Station, Texas) was used to analyze the information; statistical tests were significant at a level $\alpha \leq 0.05$.

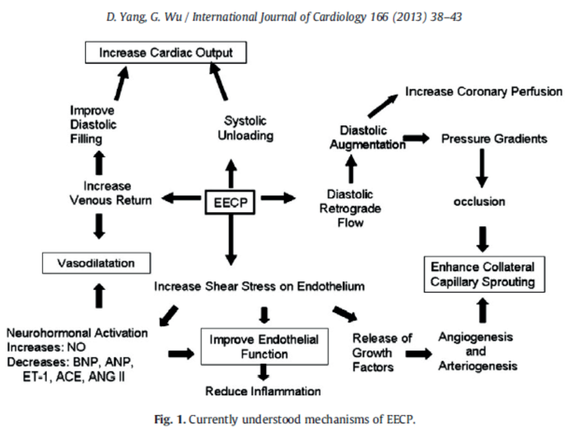


Fig. 1. Currently understood mechanisms of EECP.

RESULTS

- Of 217 patients treated with EECP, the average age was 67.3 years; 68,6% of the patients were men. The median ejection fraction of the left ventricle was 45%. An 82.48% had heart failure (HF) associated with angina. 51.22% of the subjects had surgical and percutaneous revascularization 48.78%. History of arterial hypertension (89.86%), diabetes mellitus (36.74%). 52.99% had presented rehospitalizations for angina or HF. They had optimal pharmacological therapy for angina and for HF (Table 1).

- At the beginning of the therapy, 86.51% were in functional class II - III (NYHA) and 71.03% in functional class II - III (CCS); At six months and a year this percentage was decreased to 55.74% and 53.84% respectively for the NYHA classification and 24.46% and 26.88% for the CCS classification, this being statistically significant (Figure 1).

- With regard to the analysis of quality of life, a statistically significant improvement was found in the 5 domains.

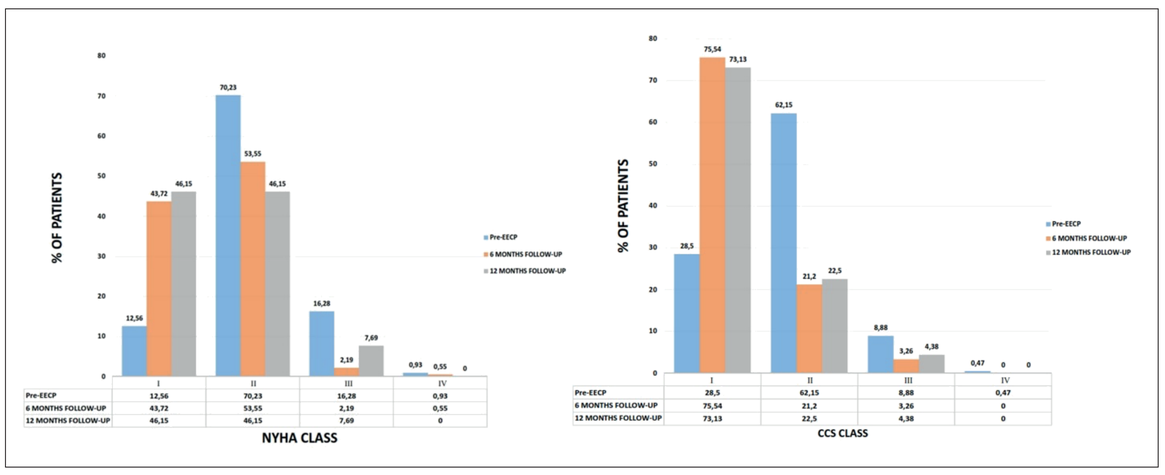


Figure 1. Comparison as regard changes in Ney York Heart Association (NYHA) Functional Classification and The Canadian Cardiovascular Society Functional (CCS) Classification between at the start of Enhanced external counter pulsation (EECP) and after 6 and 12 months follow up.

Table 1. Characteristics of patients with refractory angina and heart failure with Enhanced External Counterpulsation

Variables	n = 217
Age (Average SD)	67,32 (10,89)
Sex n (%) Mens	 149 (68,66)
Heart Failure, n (%)	176 (82,48)
Left ventricular ejection fraction (%) IQR	45 (30 – 55)
Type of treatment for coronary disease Surgical, n (%) Percutaneous, n(%)	 105 (51,22) 100 (48,78)
Medical History Arterial hypertension, n (%) Diabetes Mellitus type 2, n (%)	 195 (89,86) 79 (36,74)
TREATMENT Beta blockers, n(%) ACE inhibitor/ARB/Sacubitril – Valsartan, n (%) Aldosterone antagonist, n (%) Aspirin, n (%) Statin, n (%) Inhibitor P2Y12, n(%) Oral nitrates, n(%) Calcium channel blocker , n(%) Trimetazidine, n(%) Ivabradine, n (%) Diuretics, n (%) Implantable cardioverter – defibrillator, n(%) Cardiac resynchronization therapy, n(%)	 215 (99,08) 198 (91,2) 117 (53,91) 198 (91,24) 215 (99,08) 154 (70,97) 117 (57,92) 58 (26,72) 126 (58,06) 37 (17,05) 92 (42,39) 23 (10,59) 10 (4,60)
NYHA functional class, n (%) I II III IV	 27 (12,56) 151 (70,23) 35 (16,28) 2 (0,93)
CCS functional class, n (%) I II III IV	 61 (28,50) 133 (62,15) 19 (8,88) 1 (0,47)

ACE: angiotensin-converting enzyme; ARB: angiotensin receptor blocker; IQR: interquartile range; NYHA: New York Heart Association; CCS: Canadian Cardiovascular Society

CONCLUSION

The Enhanced External Counterpulsation therapy has an impact on the functional class of angina and dyspnea in patients with refractory angina and heart failure; in addition there is improvement in the quality of life.

REFERENCES

Aarush Manchanda, MD. Enhanced External Counterpulsation and Future Directions. J Am Coll Cardiol 2007;50:1523–31.