

**Complex application of medicinal and ozone therapy of patients
with essential arterial hypertension and hypertensive heart disease**

Victoria Korotaeva¹, Denis Sebov²

1. Cardiologist, Odessa State Medical University - Varnenskaya str. 25, ap.16, Odessa, Ukraine, 65000
Tel. (00 – 38) 0482 610446

2. PhD, cardiologist, Odessa State Medical University - Paster' str. 9, Odessa, Ukraine, 65026
Tel. (00 – 38) 0482 221945 - GSM +380674811064 - e-mail: seboff@mail.ru

Key words: essential arterial hypertension, hypertensive heart disease, ozone therapy.

Introduction

Hypertensive heart disease (HHD) is a pathological remodeling process of myocardium as a consequence of the elevated arterial blood pressure, the development of left ventricular hypertrophy (LVH) in a concentric manner. Increasingly, the progressing of LVH has been shown to result in diastolic dysfunction and then, if untreated, to systolic dysfunction, with the development of fibrosis and an eccentric type of pathological myocardial remodeling.

Objectives

Studying of cardio-reparative properties of the complex treatment (ozone-therapy + ACE-inhibitor + diuretic) of patients with essential hypertension and hypertensive heart disease.

Methods

After primary screening of 156 patients with essential hypertension, 96 patients (51 men) with hypertensive heart disease were included in the study who were classified into four groups according to the method of treatment and type of LVH: Ia/Ib) 24/22 patients with concentric/eccentric type of LVH and medicinal therapy (enalapril + indapamid); IIa/IIb) 26/24 patients with concentric/eccentric type of LVH and complex treatment: enalapril + indapamid + ozone therapy (12 procedures of ozonated sol. NaCl 0,9%, 200 ml with automatic concentration of ozone in the solution 1000 µg/l, 3 ml/min i.v.). A complete echocardiographic study, including all conventional systolic and diastolic echo/Doppler parameters was performed before and after treatment in all patients.

Results

After treatment the left ventricular end-diastolic volume (LVEDV) was significantly lower in all groups (table 1). The ejection fraction (EF) was significantly greater in the patients of groupe "IIb" ($55,7 \pm 1,4 \%$, $p < 0,05$), and in contrast, it was lower in the patients of "Ia" and "IIa" groups, though no significantly so ($p > 0,1$). There were not significantly changes of left atrium diameter (DLA) in all groups. The E/A ratio was significantly greater in the result of treatment, especially in the patient of 2nd group ($1,25 \pm 0,20$ in the group "IIa" ($p < 0,05$), $1,38 \pm 0,18$ in the group "IIb" ($p < 0,01$)).

table 1. General echocardiographic findings.

| | | Group "Medicinal treatment" (enalapril + indapamid) | | | | Group "Complex treatment" (enalapril + indapamid + ozone therapy) | | | |
|------------------|------------------|--|-------|--------------------------------|-------|--|-------|---------------------------------|-------|
| | | Ia (n=24), concentric LVH | p | Ib (n=22), eccentric LVH | p | Ila (n=26), concentric LVH | p | Iib (n=24), eccentric LVH | p |
| LVEDV, ml | before treatment | 94,2 ± 1,6 | <0,05 | 160,7 ± 2,5 | <0,05 | 95,0 ± 1,5 | <0,05 | 161,0 ± 2,3 | <0,05 |
| | after treatment | 90,6 ± 1,7 | | 152,8 ± 2,7 | | 90,2 ± 1,6 | | 152,7 ± 2,9 | |
| EF, % | before treatment | 63,2 ± 0,5 | >0,1 | 50,1 ± 1,3 | >0,05 | 63,3 ± 0,5 | >0,1 | 50,1 ± 1,4 | <0,05 |
| | after treatment | 62,8 ± 0,7 | | 53,6 ± 1,4 | | 62,6 ± 0,7 | | 55,7 ± 1,4 | |
| DLA, mm | before treatment | 40,6 ± 1,7 | >0,05 | 42,4 ± 1,8 | >0,1 | 40,1 ± 1,9 | >0,05 | 42,7 ± 1,8 | >0,05 |
| | after treatment | 39,1 ± 1,9 | | 41,3 ± 2,1 | | 38,9 ± 1,9 | | 41,1 ± 2,0 | |
| E/A | before treatment | 0,83 ± 0,12 | <0,01 | 0,92 ± 0,14 | <0,05 | 0,82 ± 0,15 | <0,01 | 0,94 ± 0,13 | <0,05 |
| | after treatment | 1,36 ± 0,18 | | 1,23 ± 0,17 | | 1,38 ± 0,20 | | 1,25 ± 0,18 | |

Conclusions

The complex medicinal and ozone therapy positively influences on the systolic and diastolic functions of left ventricle, stimulates the regress of LVH of patients with HHD. The efficiency of the suggested method is higher in comparison with placebo-treatment, especially, in the group of concentric LVH.