



Role of basic neurogumoral regulation state in enalapril malelat treatment effects of hypertension patients

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Background 1

ACE inhibitors are the drugs of first choice in essential hypertension

Evidence for ACE – inhibitors using

Effective blood pressure control

Preventions cardiac remodeling

Improves outcomes

neurogumaryl regulation modulation



Reduce mortality and mobility



Background 2

- Clinical benefits of enalapril maleate due to its ability to influence on neurogumoral regulation
- Heart rate variability as non-invasive method to assess of the neurogumoral regulation state



The aim of the work was to study effects of enalapril maleat and connection with basic reactions of regulation in acute farm test



Design of study

- 57 patients with mild to moderate essential hypertension
- Mean age $57,5 \pm 7,2$
- Mean systolic blood pressure (M+/-sd) - $167,1 \pm 14,9$ mm Hg
- Mean diastolic blood pressure (M+/-sd) - $99,7 \pm 3,3$ mm Hg



Stages of study

Assessing of neurogumoral regulation



Acute farm test: 20 mg of enalapril



180 minutes – assessing
neurogumoral regulation



1 month of treatment with
enalapril maleat (30 – 40 mg/day)



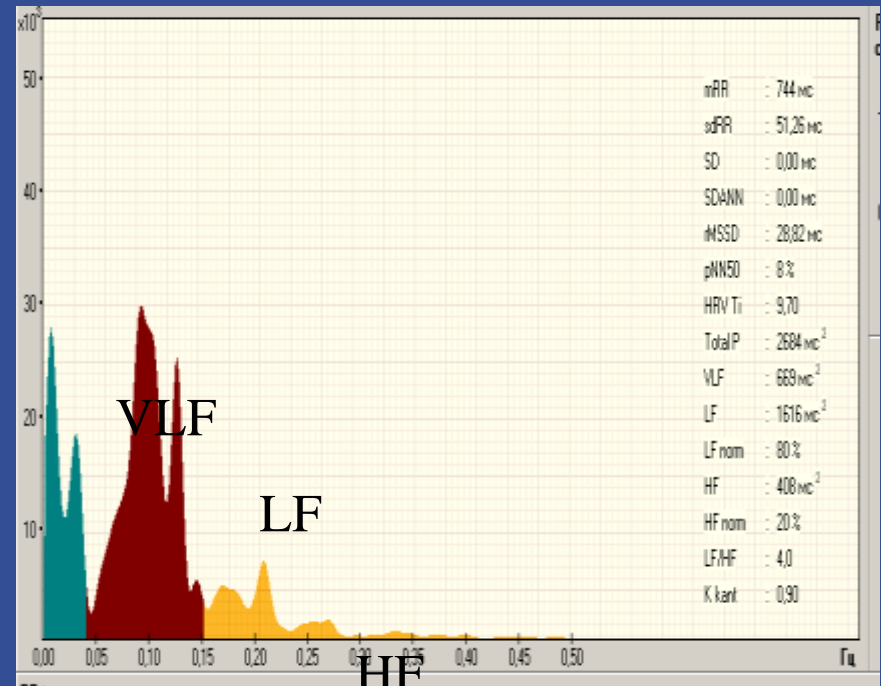
Assessing of neurogumoral
regulation and clinical effects



Heart rate variability method: spectral power domens analysis

Spectral characteristics

- TP (msek^2) – total power, reflects total level of regulation
- VLF (msek^2) – very low frequency power, reflects level of gurnal activity
- LF (msek^2) - low frequency power, reflects level of sympathetic activity
- HF (msek^2) – high frequency power, reflects level of parasympathetic activity



For heart rate variability analysis was used computer cardiograph – “Cardiolab-2000”

Stratification of patients

Acute farm test

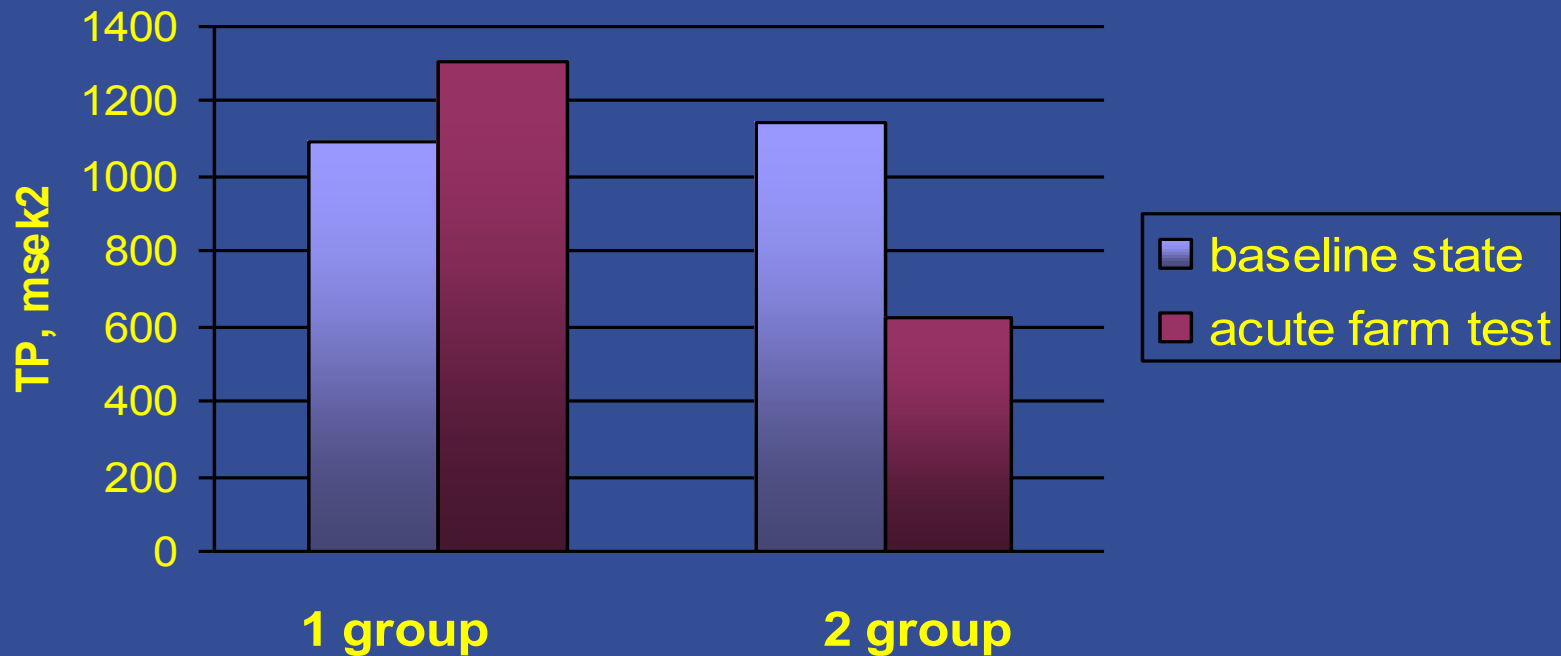
1 group:

TP decrease

2 group:

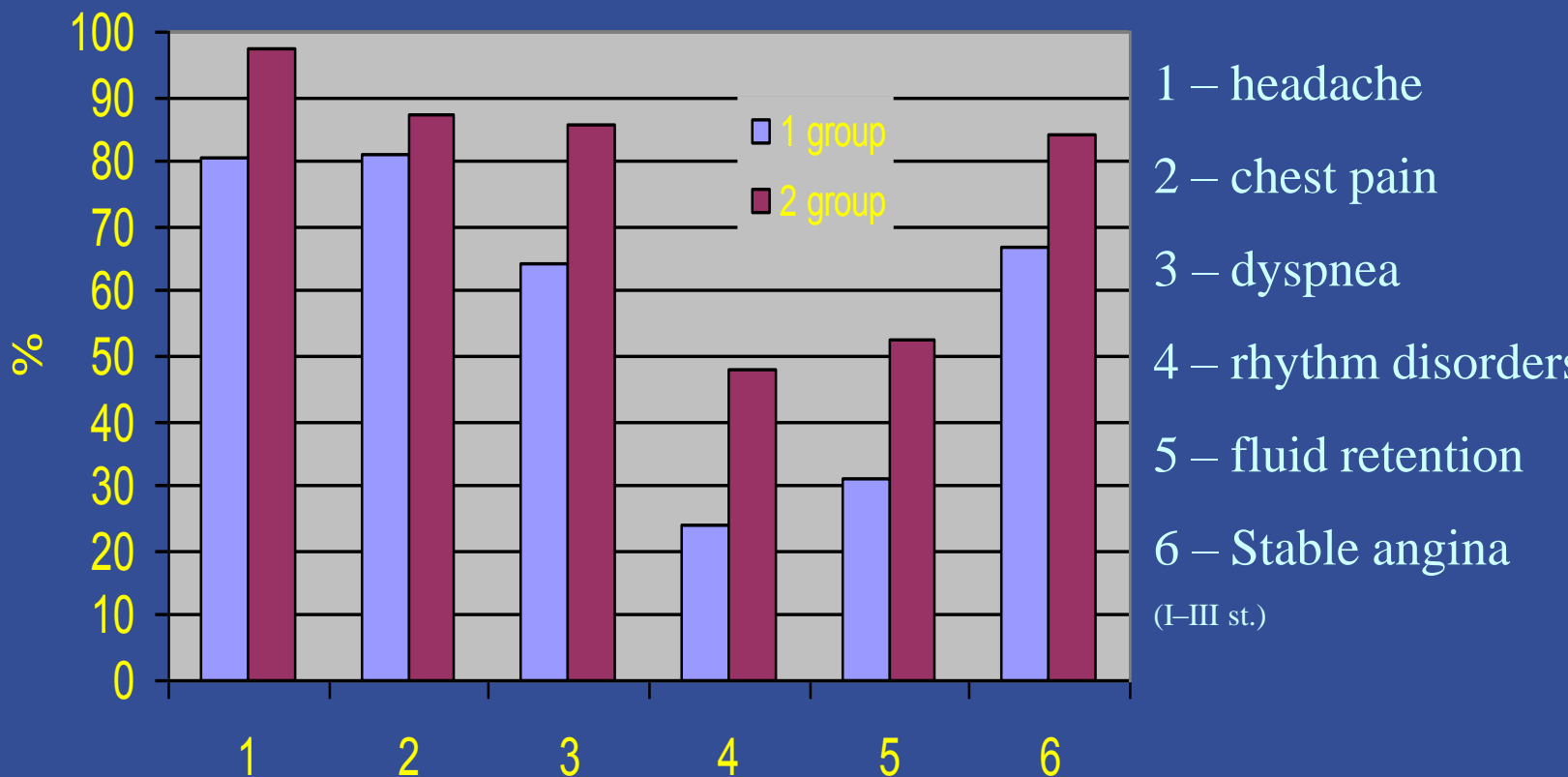
TP increase

TP reaction in acute farm test





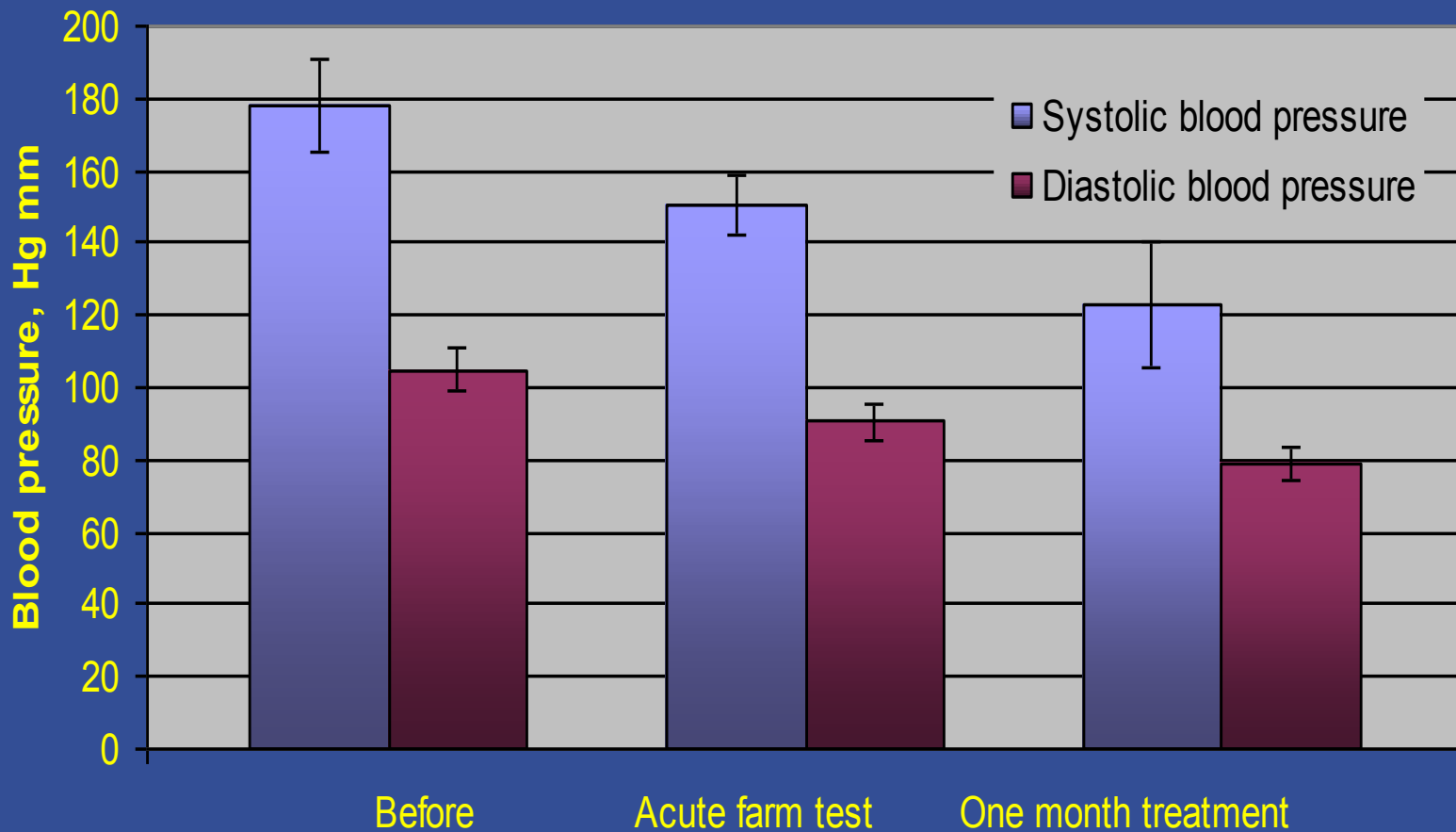
Clinical characteristics of the groups



Clinical condition in 1 group is better, than in 2 group

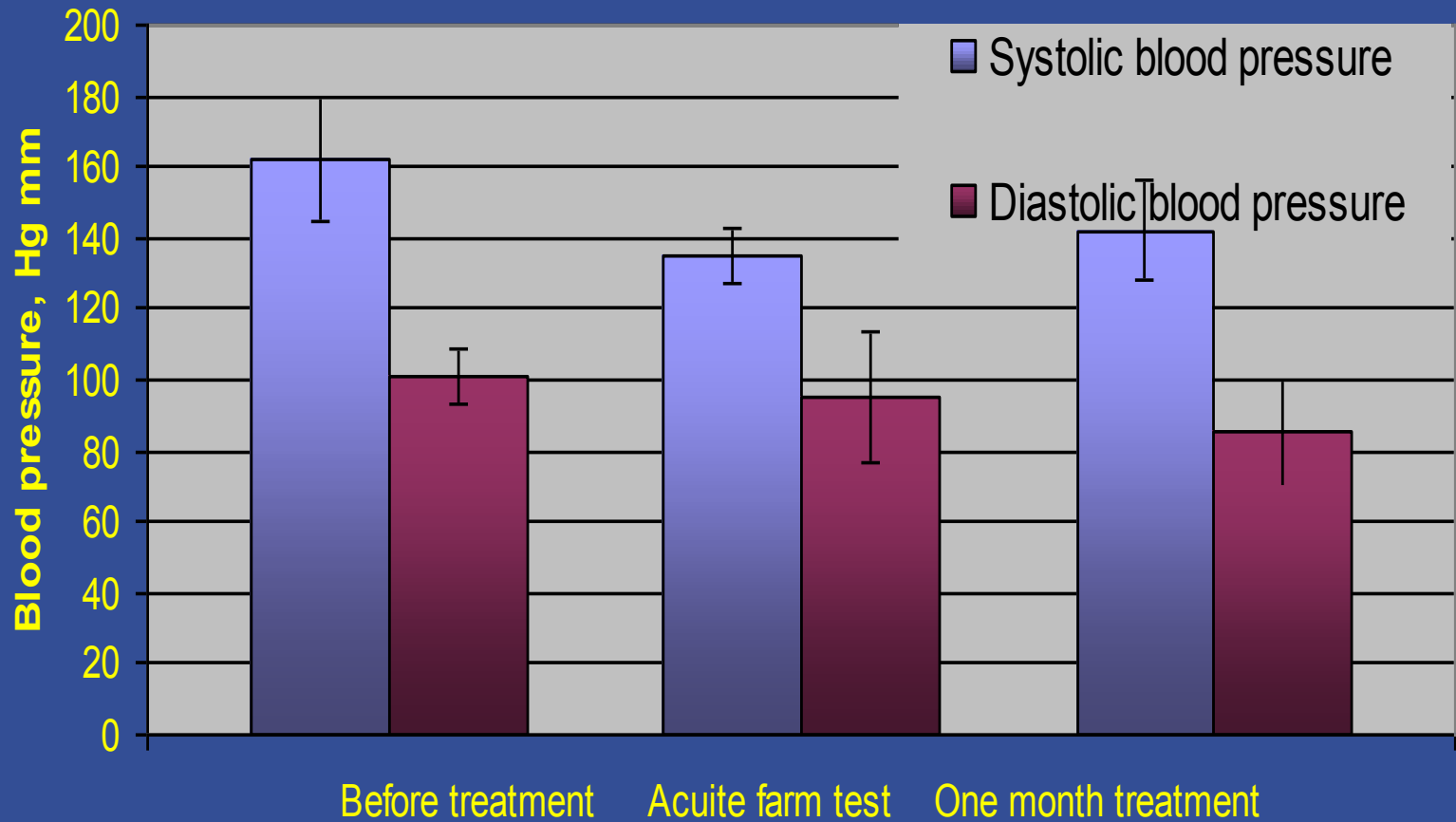


1 group - results of treatment, Blood pressure



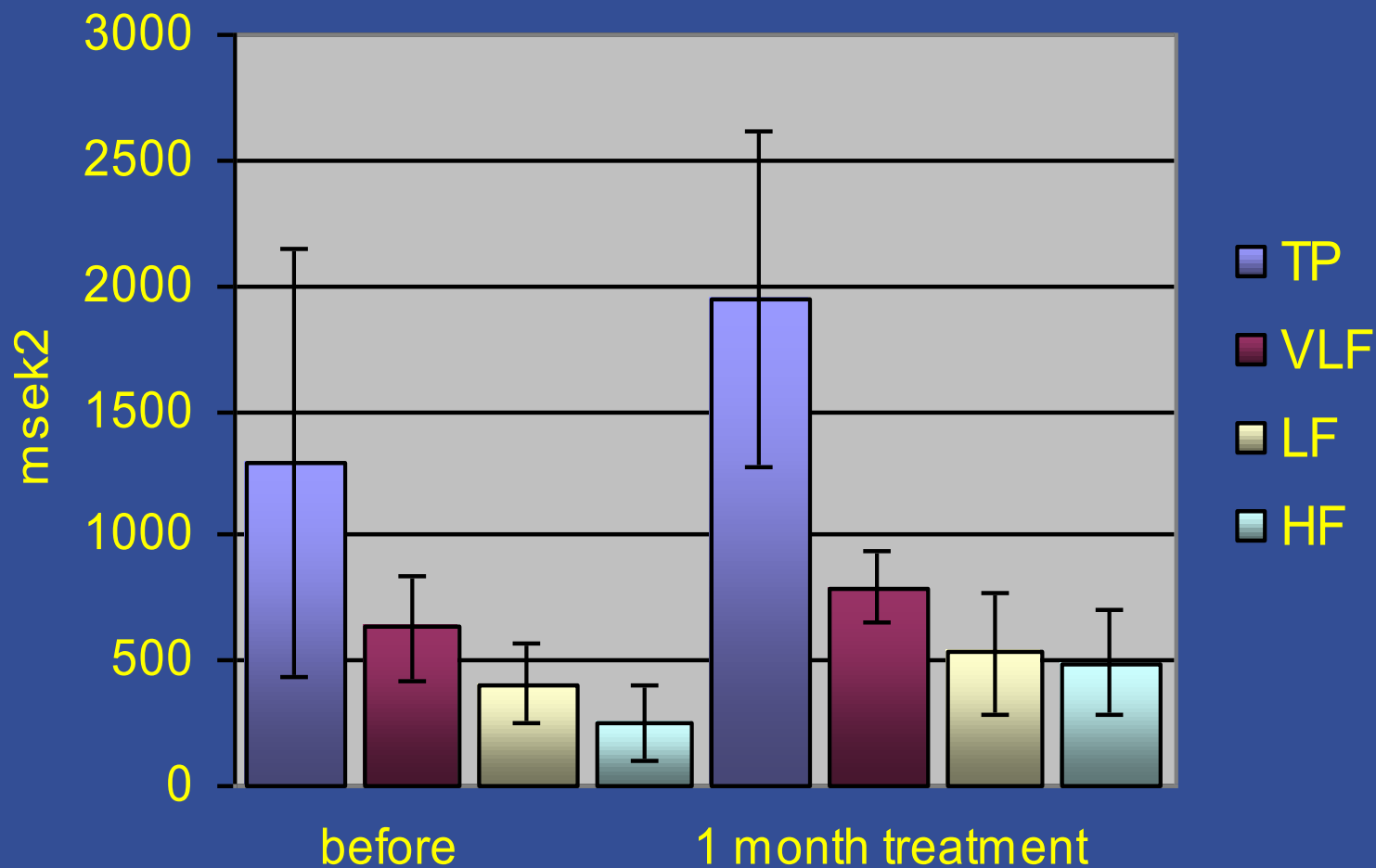


2 group - results of treatment, Blood pressure



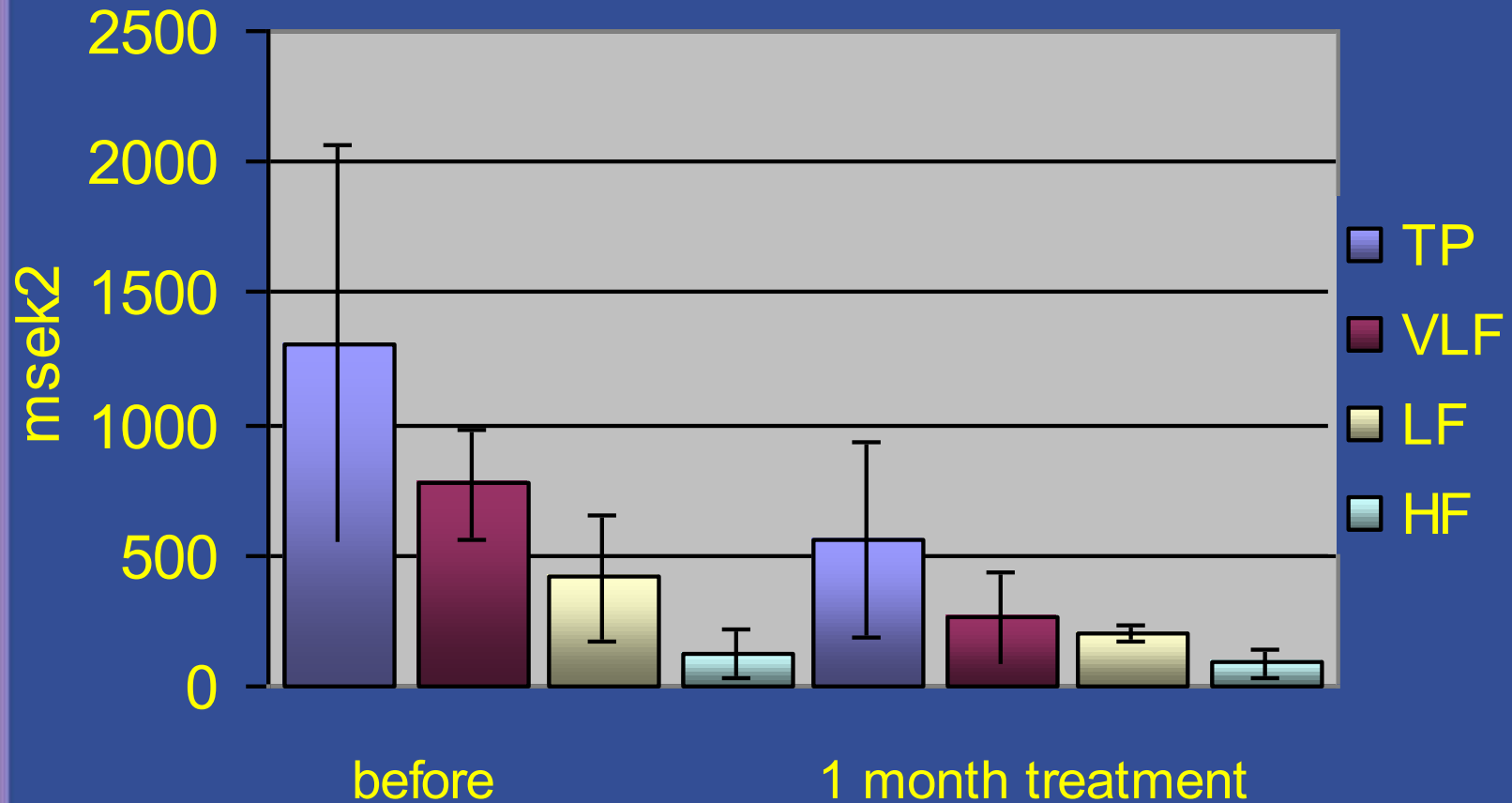


1 group - results of treatment, Heart rate variability





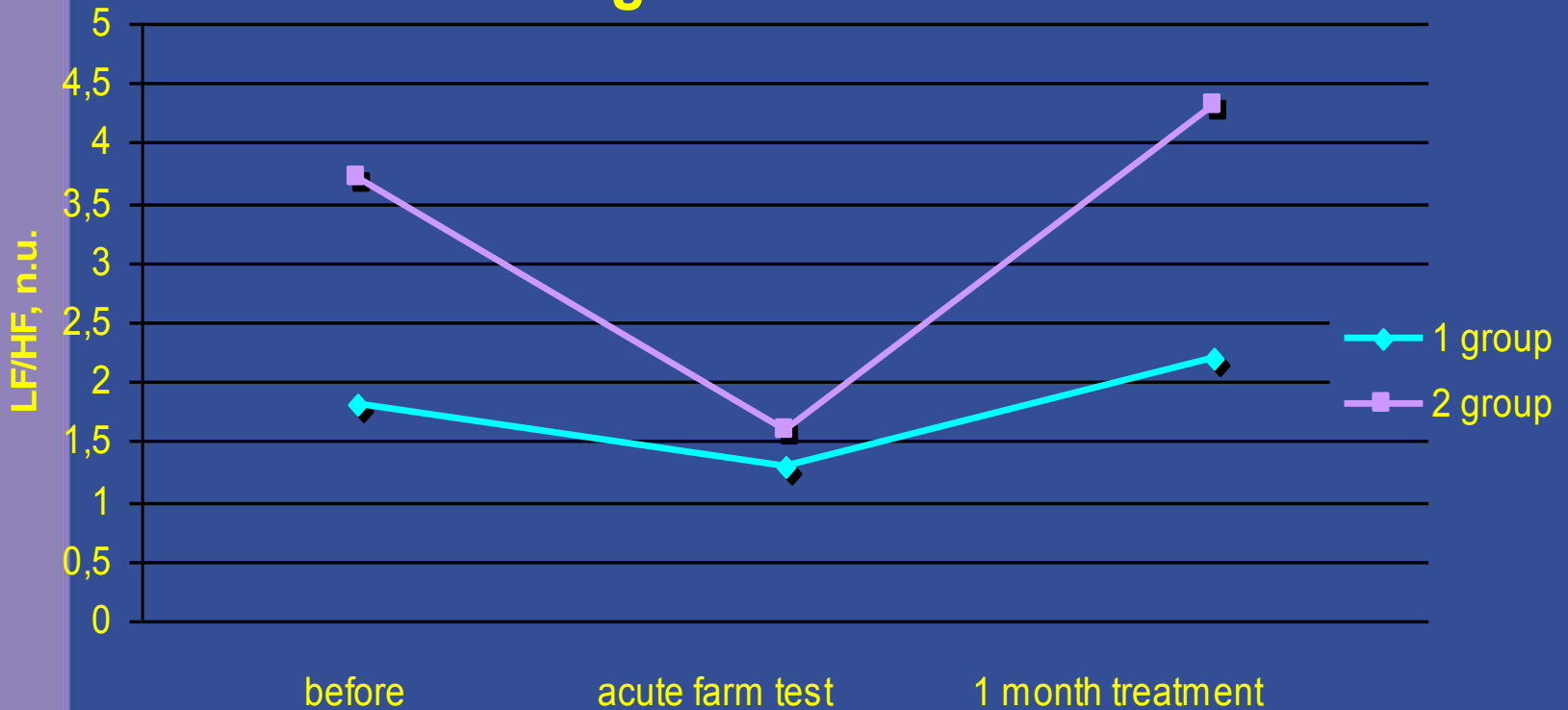
2 group - results of treatment, Heart rate variability





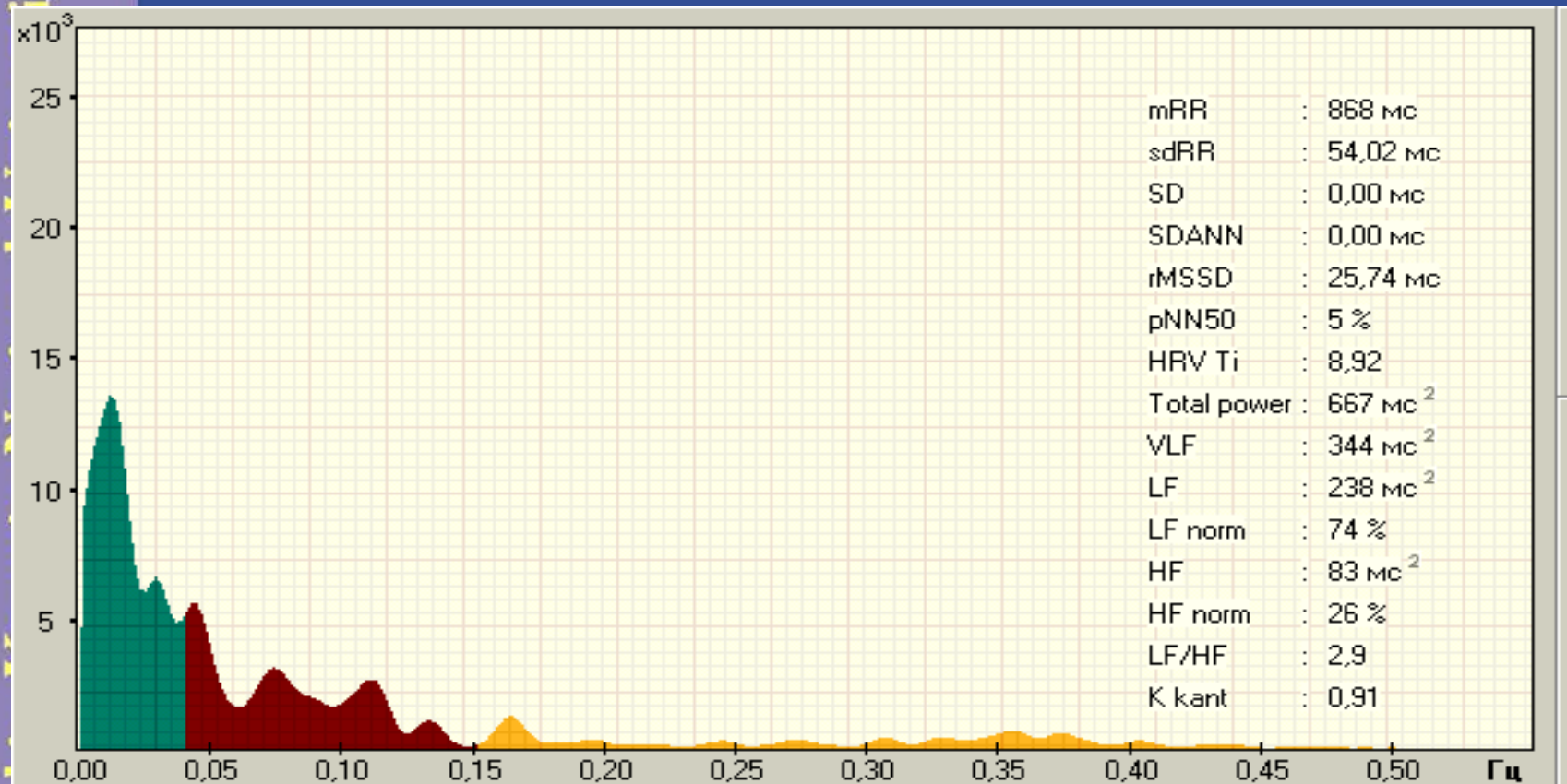
Sympathetic/parasympathetic balance

Changes of LF/HF





Patient N., 52 y.o., positive reaction on farm test

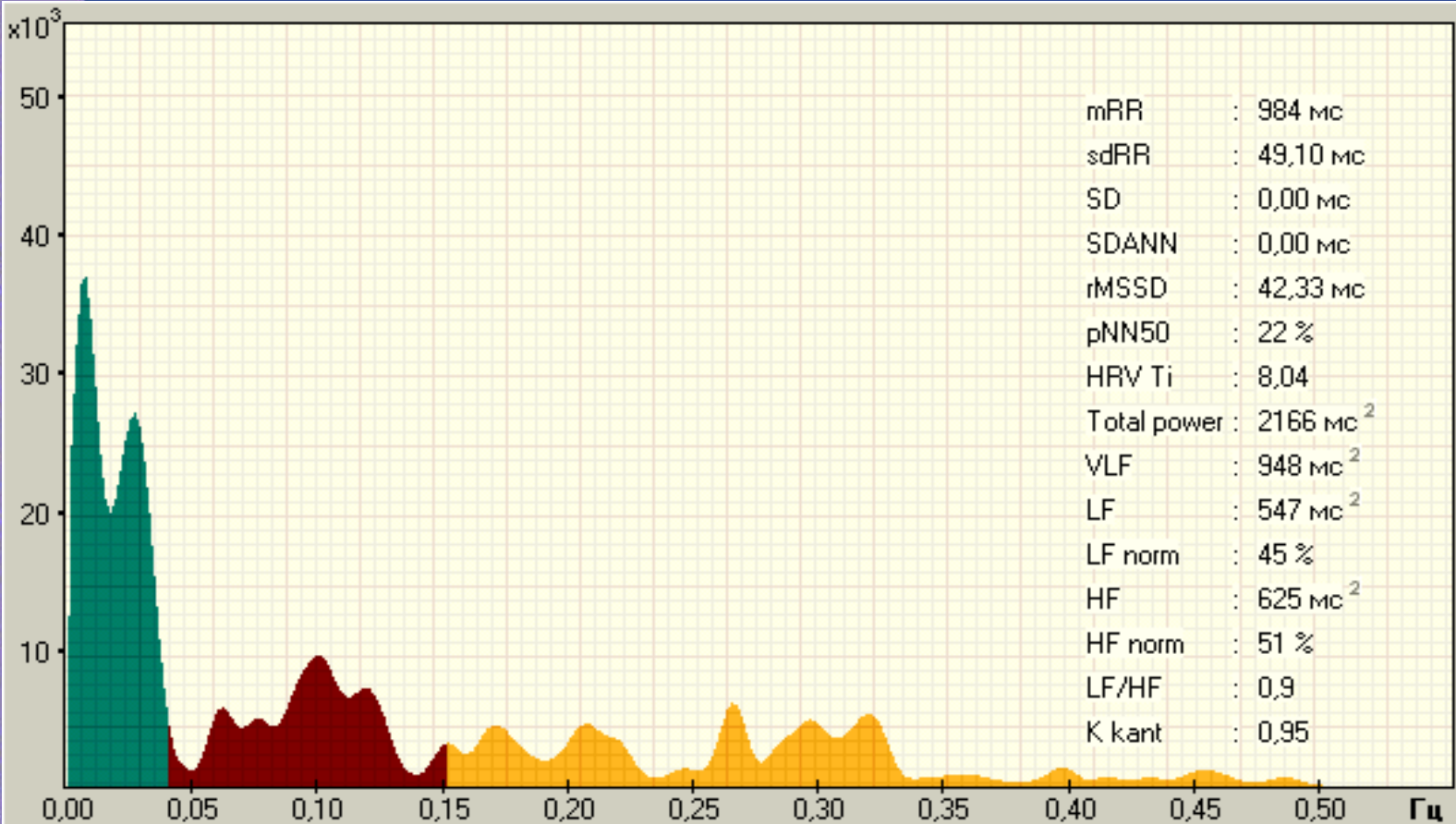


Heart rate variability before treatment and acute farm test



Patient N., 52 y.o., positive reaction on farm test

Kharkiv Karazin National University

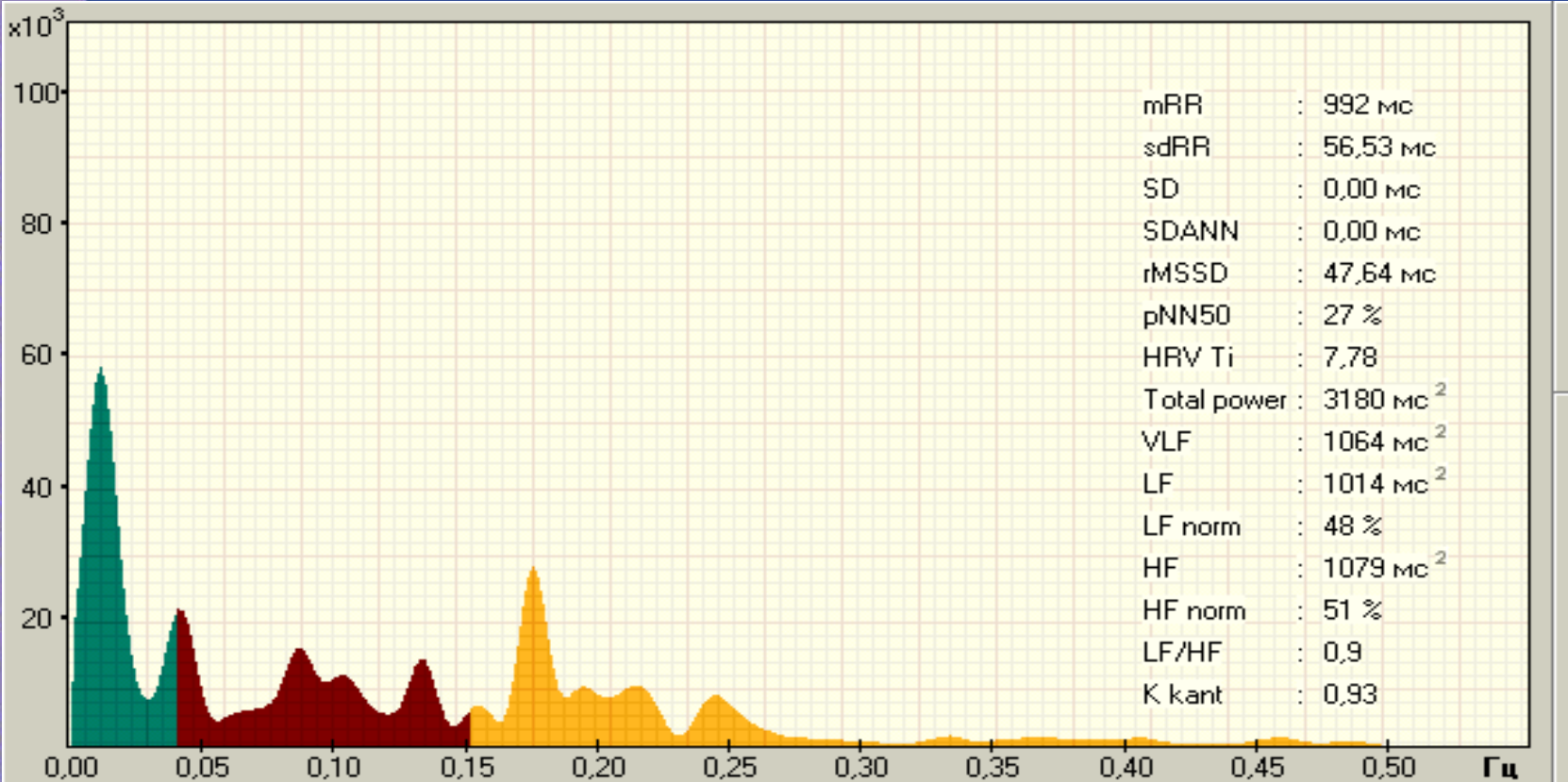


Heart rate variability after acute farm test with enalapril maleat



Patient N., 52 y.o., positive reaction on farm test

Kharkiv Karazin National University

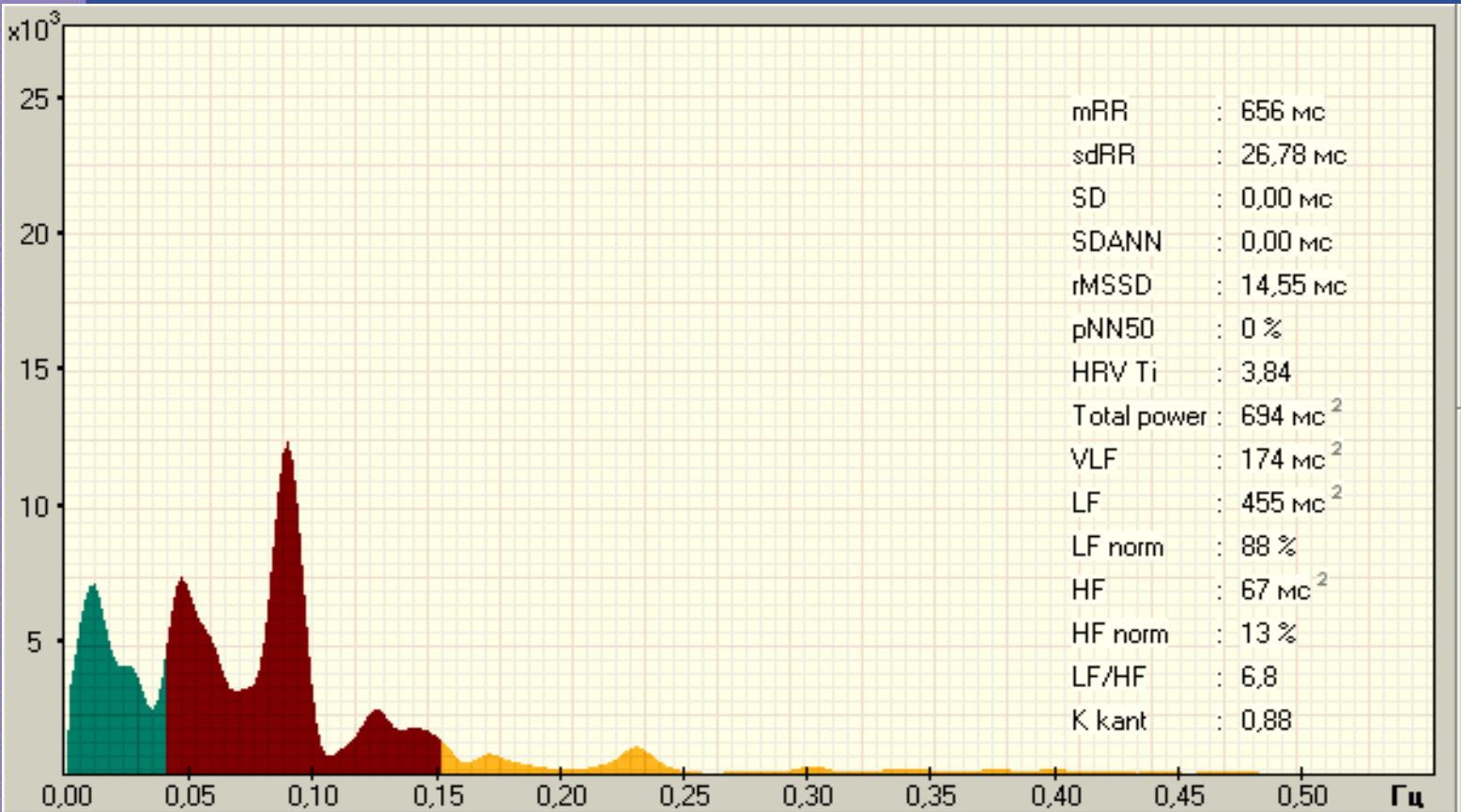


Heart rate variability after 1 month treatment with enalapril maleat



Patient K., 54 y.o., negative reaction on farm test

Kharkiv Karazin National University

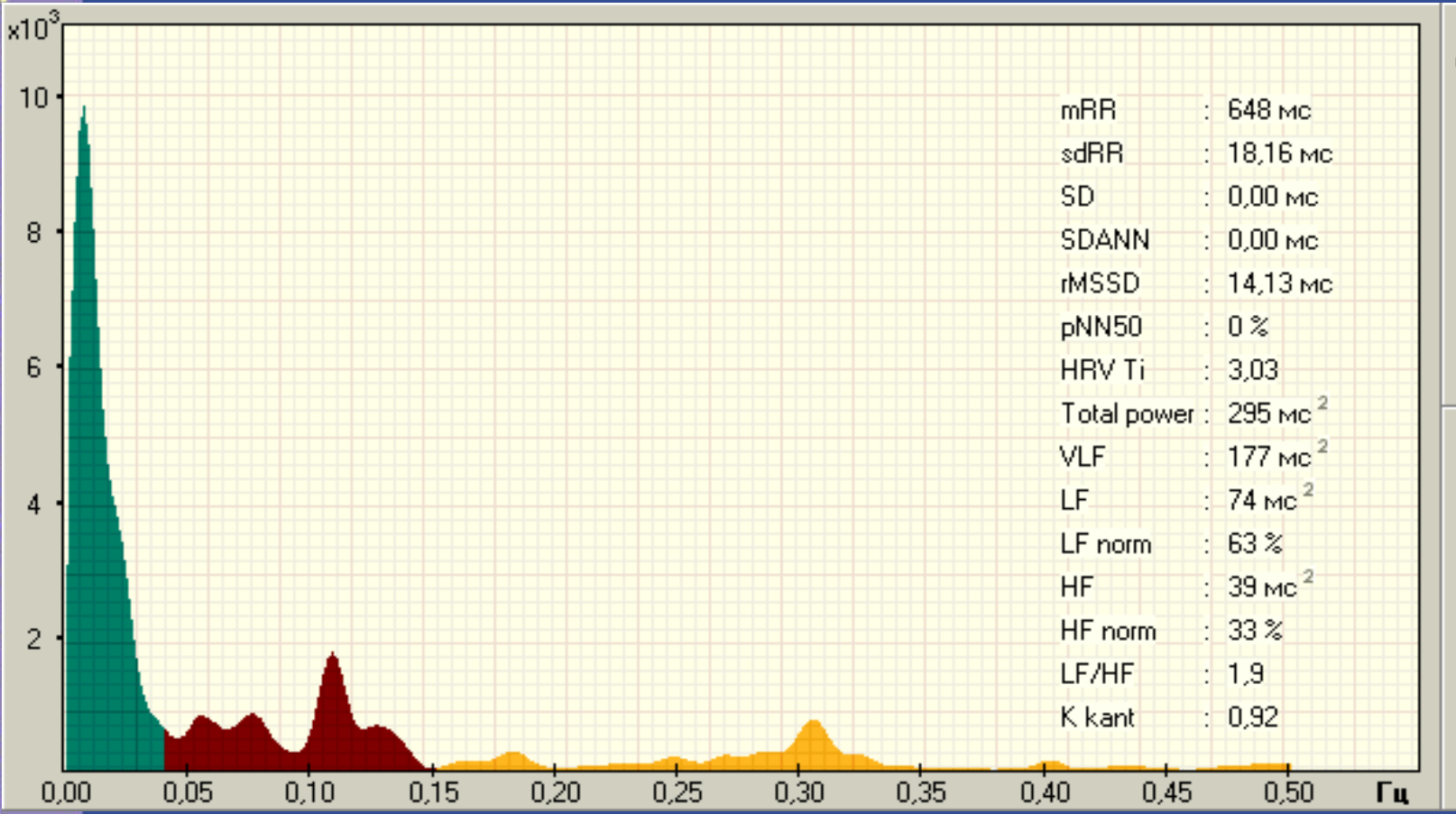


Heart rate variability before treatment and acute farm test



Patient K., 54 y.o., negative reaction on farm test

Kharkiv Karazin National University

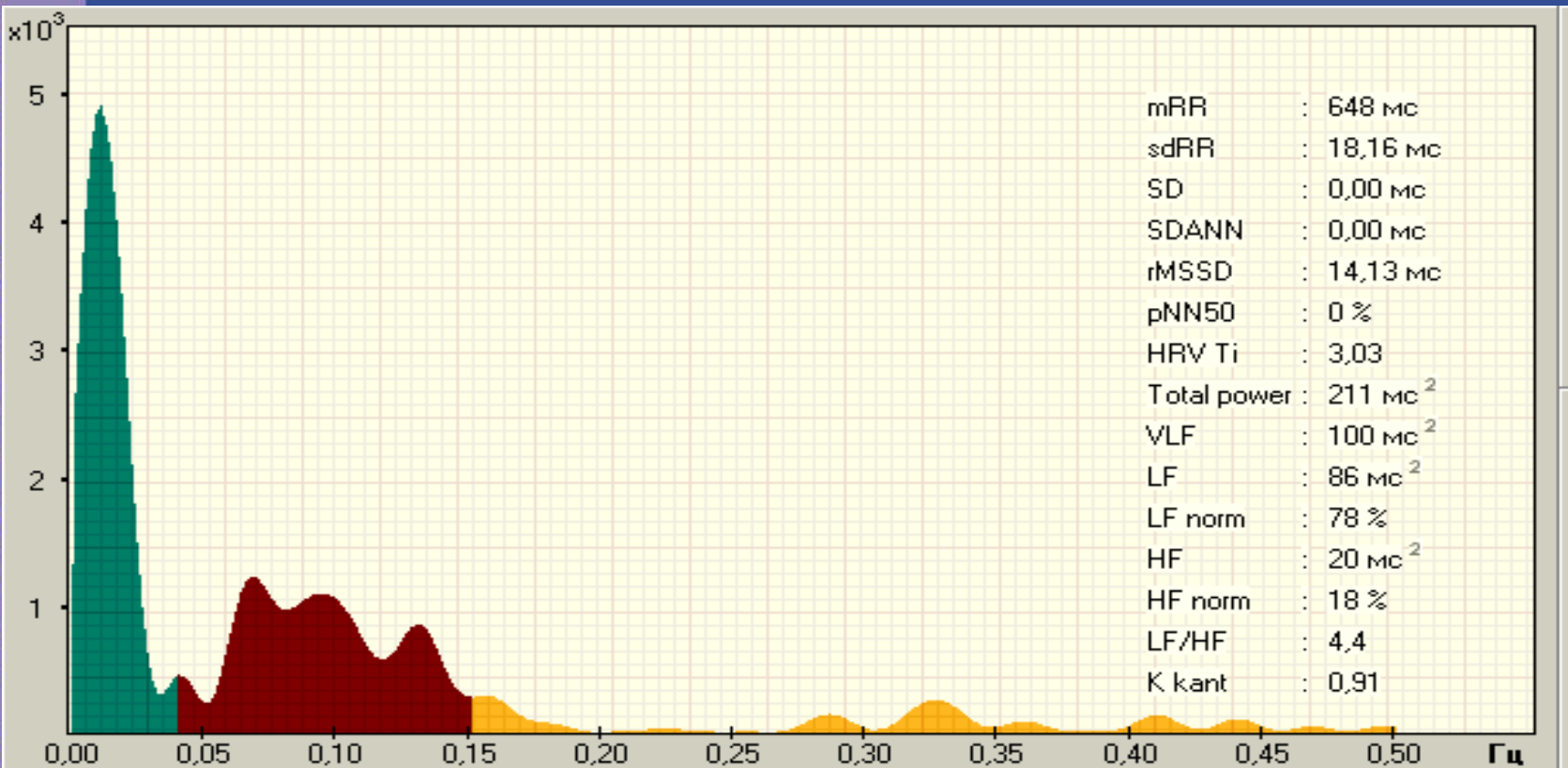


Heart rate variability after acute farm test with enalapril maleat



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Kharkiv Karazin National University



Heart rate variability after 1 month treatment with enalapril maleat

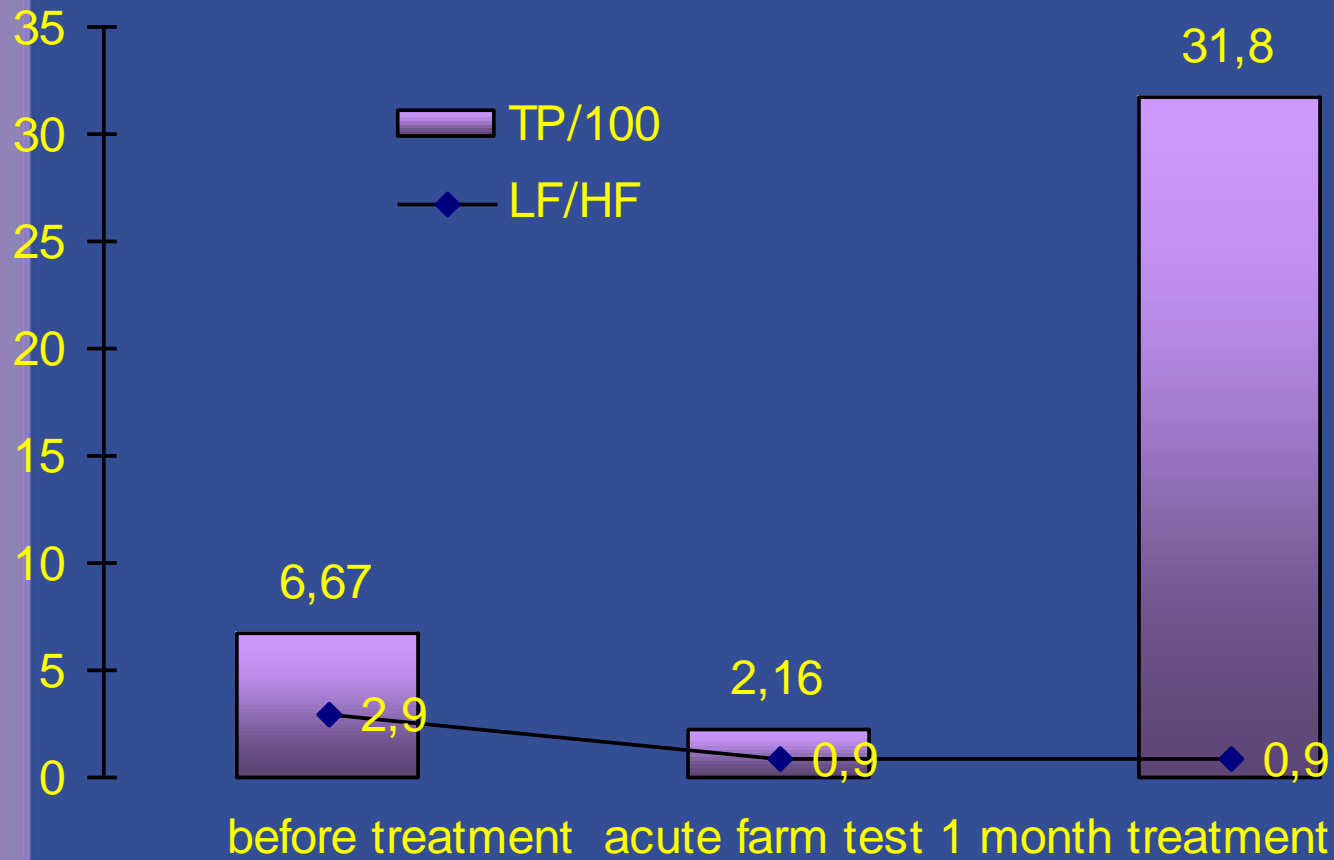


Comparison of treatment effects in N&K patients with positive and negative TP reaction on acute farm test



Patient N, 52 y.o

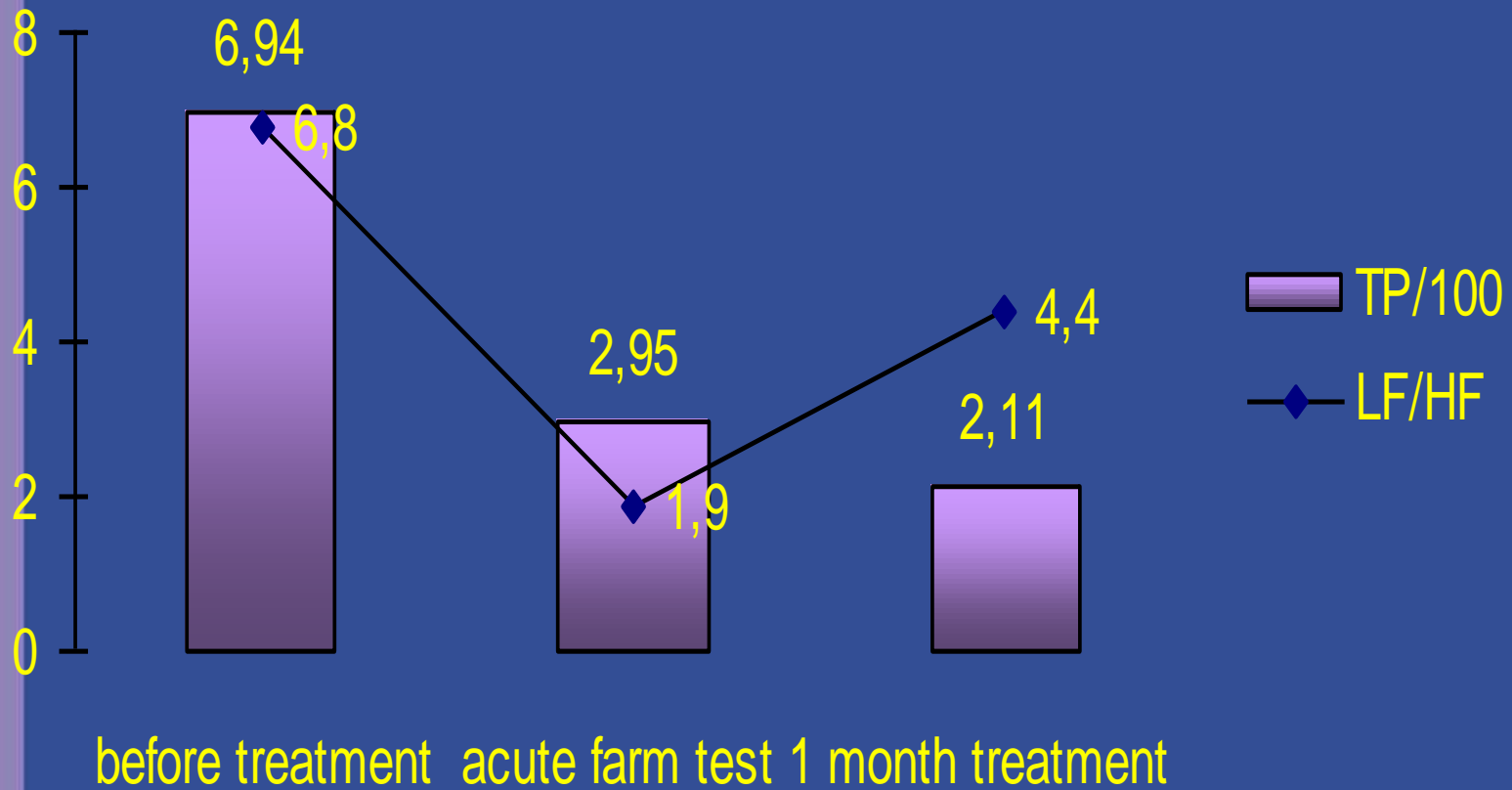
Changes in TP and sympathetic/parasympathetic balance in the treatment in





Changes in TP and sympathetic/parasympathetic balance in the treatment in patients K, 54 y.o

Kharkiv Karazin National University





Conclusion

Patients with hypertension can be divided into two groups with positive and negative TP reaction on EM acute farm test

The group with positive reaction has more good clinical characteristics and more significant hypotensiv EM treatment effects

The group with negative reaction has less clinical and hypotensiv EM treatment effects

HRV changes in acute farm test can predict the treatment results in patients with essential hypertension