

INTRARENAL HEMODYNAMICS AND BLOOD PRESSURE VARIABILITY IN HEART FAILURE

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Introduction

Blood pressure variability (BPV) has been proved to be promising in providing a great influence on the target organ damage (TOD) and intrarenal circulation.

Keywords

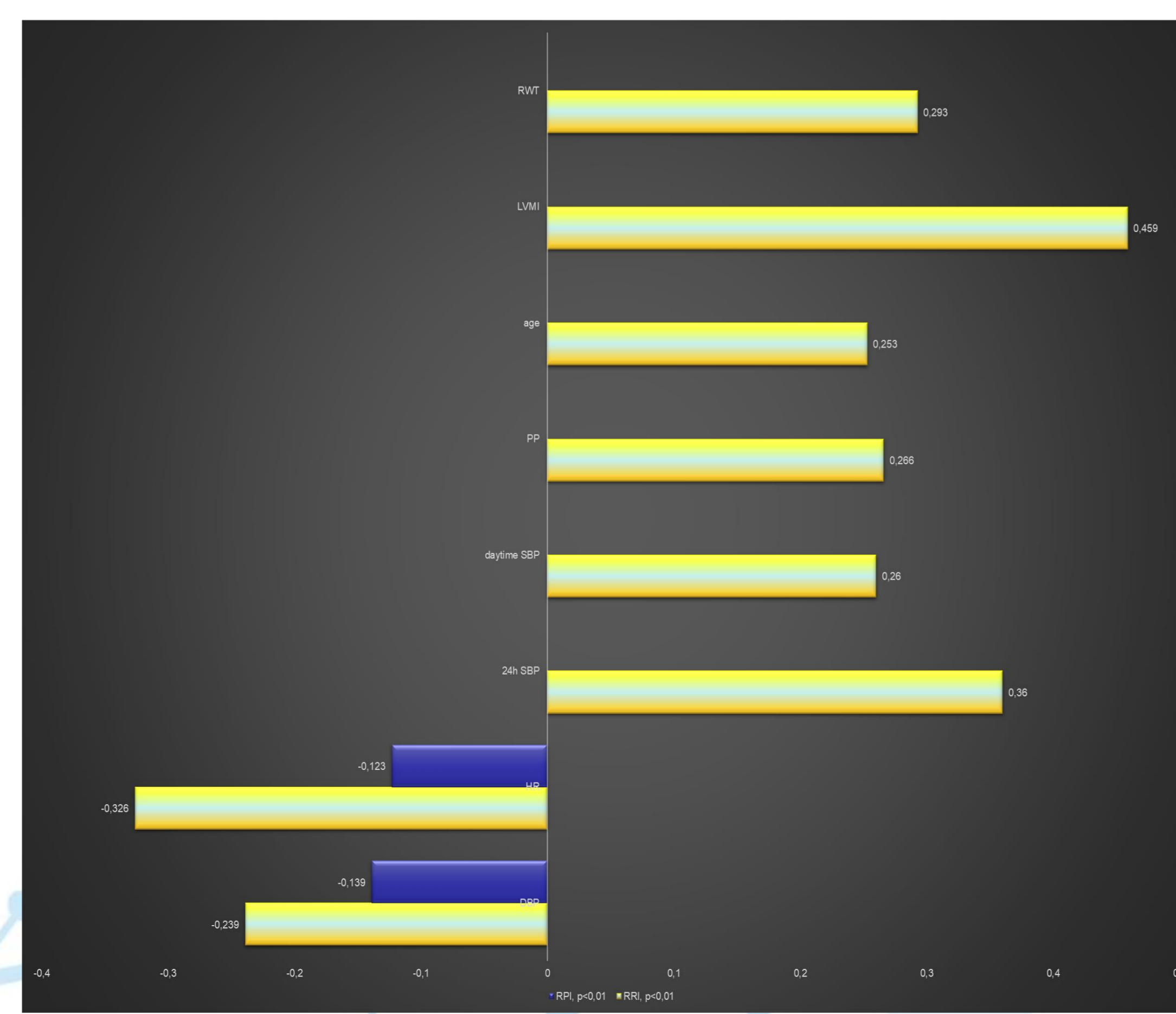
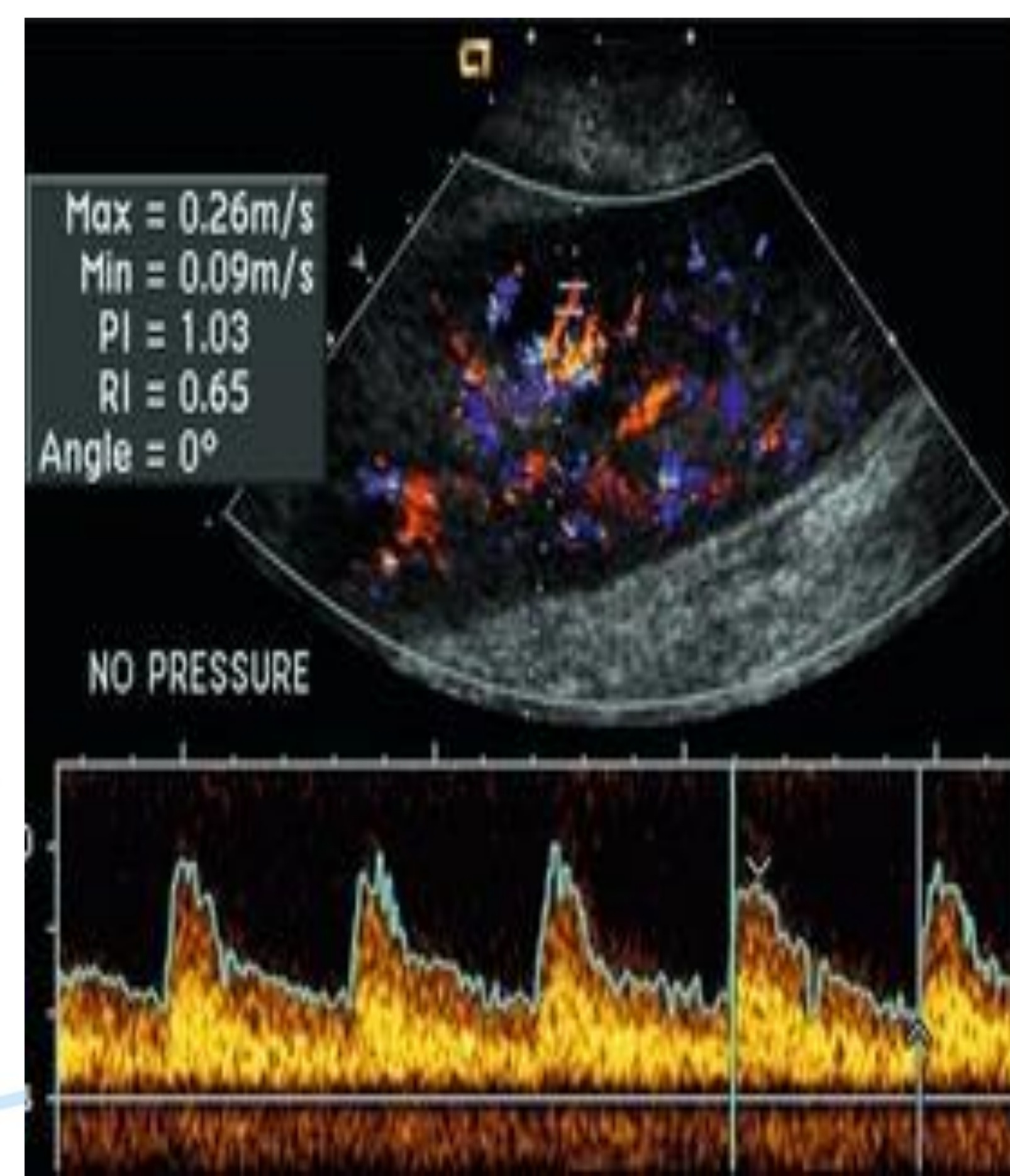
Intrarenal hemodynamics, heart failure, blood pressure

Purpose

The aim of our study is to analyze the complex interconnection between the intrarenal hemodynamics (IRH), TOD and BPV.

Material and methods

We included 30 patients aged 18-75 years, 53% were men and 47% were women. Patients underwent physical examination, blood biochemistry, echocardiography, 24-hours ambulatory blood pressure monitoring (ABPM), intrarenal Doppler obtaining: renal resistive index (RRI), renal pulsatile index (RPI), acceleration time (AT), carotid Doppler ultrasound on internal and common carotid



Results

The study of nictemeral BP patterns revealed four major phenotypes: dipper, non-dipper, reverse-dipper and extreme-dipper. according to SBP data, 3% of the studied population were assessed as night-peakers, 47%- non-dippers, 43% were dippers and 7 % - extreme dippers. The analysis of DBP variations included 3% of night-peakers, 43% - non-dippers, 40% - dippers and 13% of patients were assessed as extreme dippers. The comparative analysis of nictemeral SBP and DBP variations with IRH parameters revealed that RRI recorded the highest values in night-peakers followed by non-dippers, dippers, whereas the lowest being in extreme dippers ($0,679 \pm 0,0452$ vs. $0,675 \pm 0,0373$ vs. $0,662 \pm 0,0321$ vs. $0,641 \pm 0,0256$, $p < 0,01$). Similar correlations were assessed for RPI and AT but statistically insignificant ($p > 0,05$). The comparative analysis of HMOD parameters, left ventricle mass index (LVMI) and the indexed volume of the LA (left atrium) with SBP nictemeral variability patterns showed statistically significant differences in LVMI values that depend upon the assessed profile. Thus, the highest values for LVMI were found in patients with night-peaker patterns, followed by non-dippers and the lowest in extreme-dippers ($105,75$ vs $104,149$ vs $102,247$ vs $100,286$, $p < 0,05$); the assessment of IMT in both CCA and ICA showed the highest values for both CCA and ICA variables in patients with night-peaker patterns, whereas the lowest CCA values were found in dippers ($1,1$ vs $1,074$ vs. $1,021$ vs $1,057$, $p < 0,05$). The selective analysis of LVMI, IMT CCA and IMT ICA, and fasting glucose with nictemeral DBP variations revealed similarities with SBP variability.

Conclusions

The results of our study show the strong connection between IRH, TOD and BPV definitively shifting the paradigm to the complex evaluation of the cardiovascular patient (including ABPM, IRH and the careful evaluation of the TOD), from present status of research issue to being acknowledged as a compulsory algorithm in the prognostic stratification of hypertensive patients.