

# ENDOTHELIAL DYSFUNCTION AND RISK FACTORS IN NON-DIABETIC PATIENTS WITH CHRONIC RENAL FAILURE

TD Nykula, VO Moyseyenko

Bogomolets National Medical University, Kyiv, Ukraine

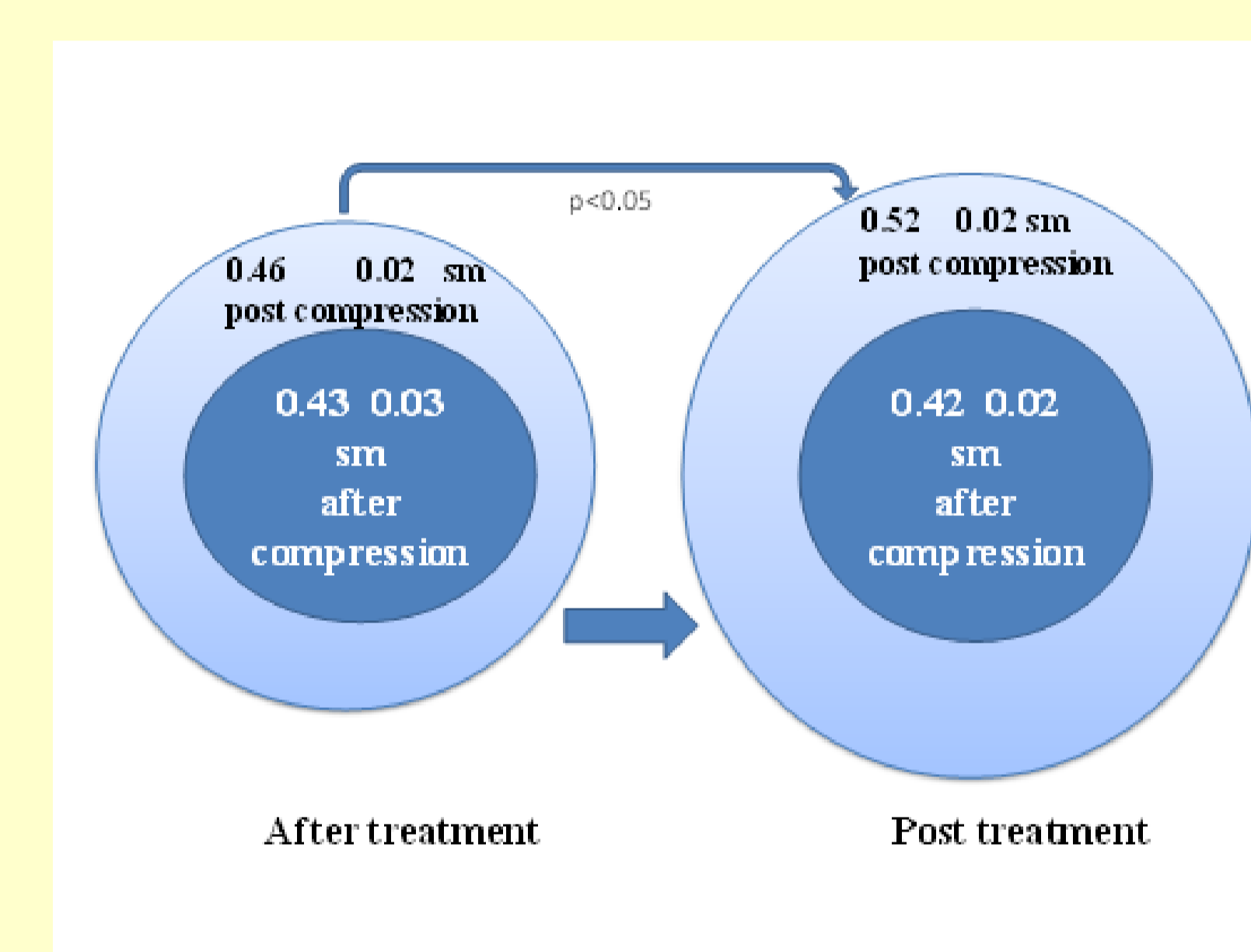
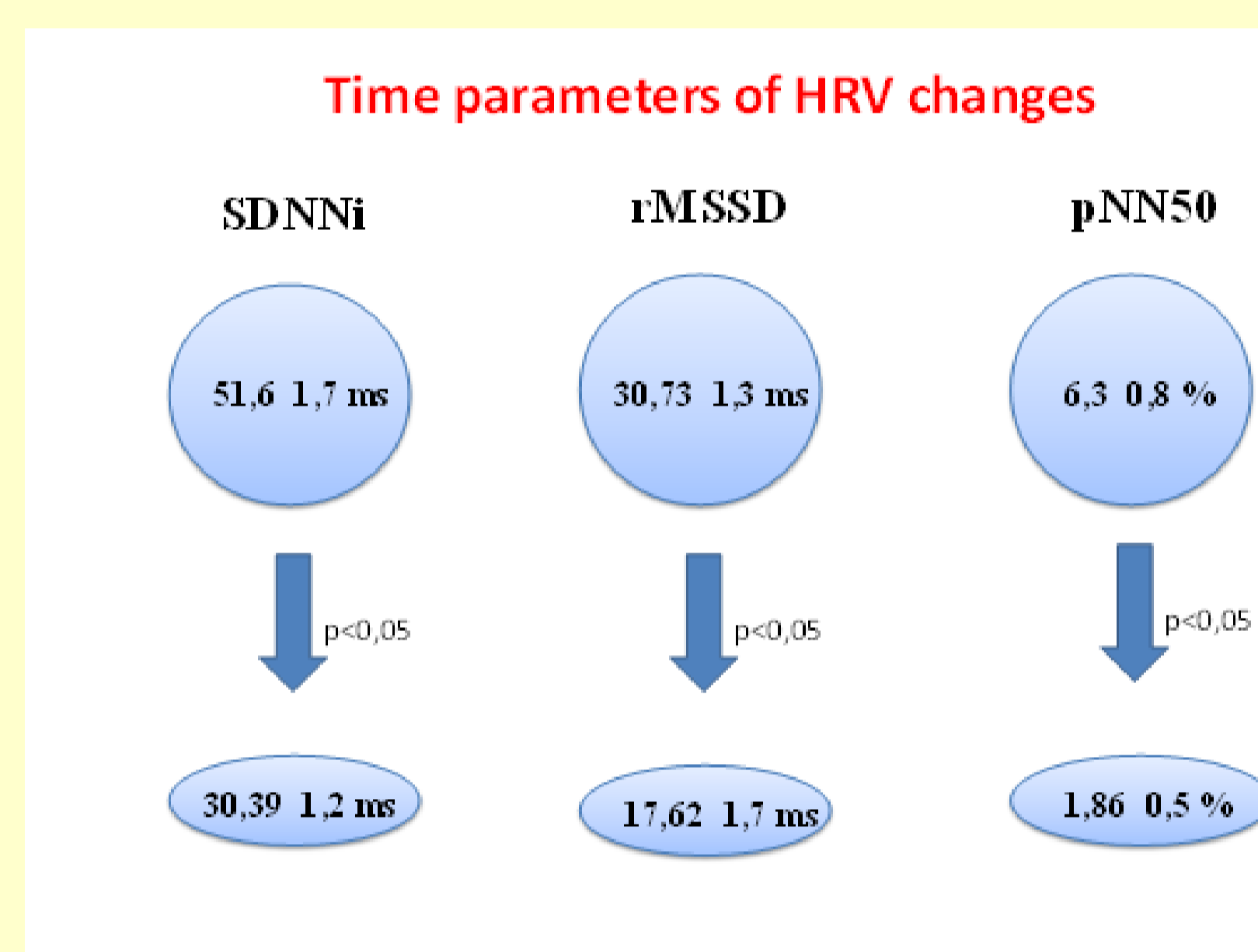
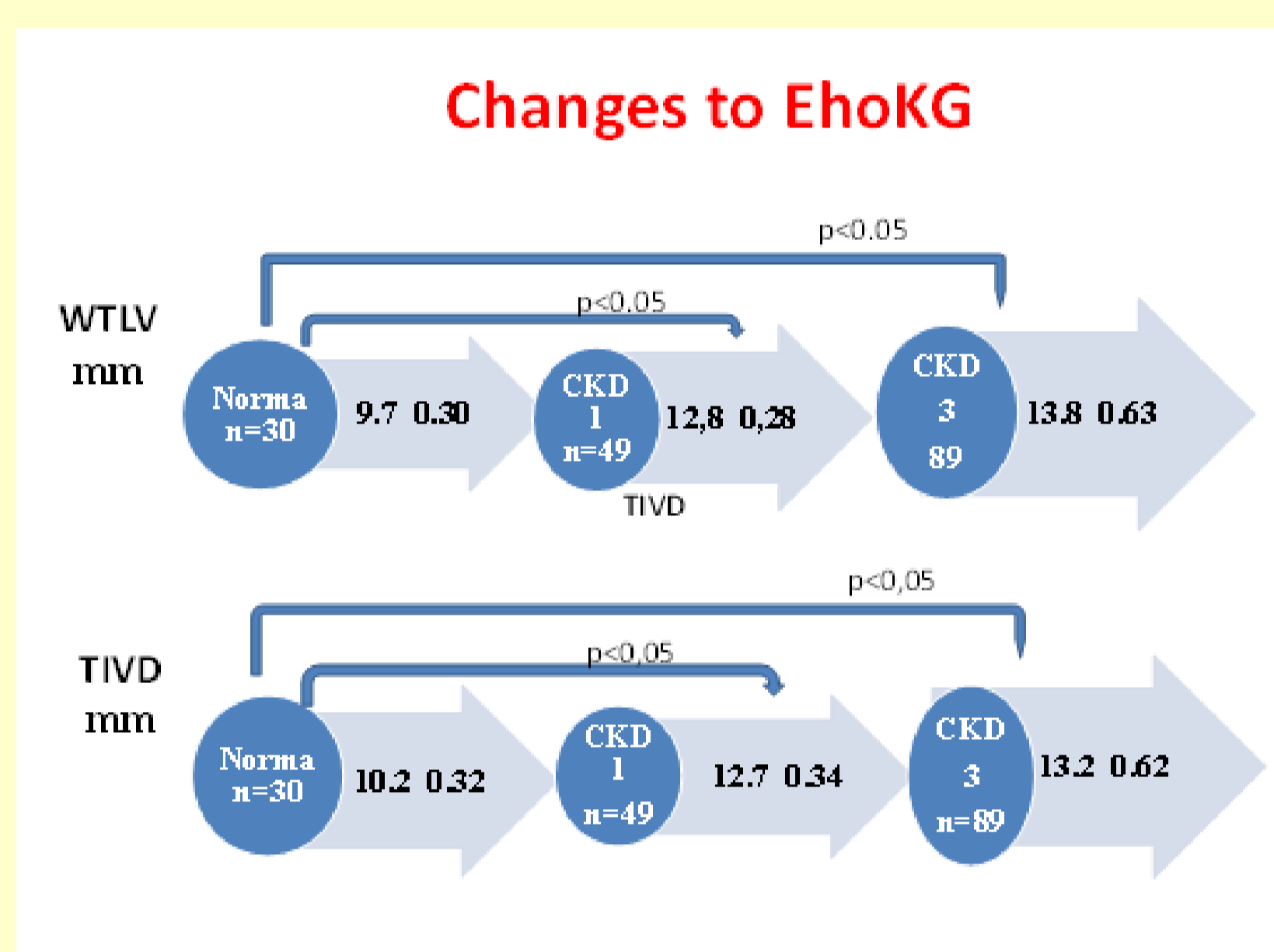
## Background:

- Endothelial dysfunction (ED) is accelerated in patients with end-stage renal failure but less is known about major risk factors such as hypertension, disorders of heart rate variability in patients with different stages of chronic renal failure (CRF).
- Traditional CVD risk factors such as hypertension and hyperlipidemia do not fully explain the high prevalence of CVD in CKD.
- The recognition that inflammation and ED are common abnormalities in CVD has led to a detailed exploration of these pathways in search of new risk factors.

## Methods:

- Open label, non-controlled, non-randomised observational study conducted from January 2012 to January 2014. Conducted in accordance with recommendations for the conduct of drug monitoring studies as detailed in the recommendations from the principles of the Declaration of Helsinki
- CKD was staged to Kidney Disease Outcomes Quality Initiative (K/DOQI) guidelines by using the Modification of Diet in Renal Disease (MDRD) GFR equation
- In our study 89 non-diabetic patients with CRF defined as CrEDTA clearance  $<90$  ml/min/1.73m<sup>2</sup> were included (mean 37.8 ml/min/1.73m<sup>2</sup>). Patients with known diabetes or inflammatory/autoimmune diseases (e.g., lupus) were excluded.

## Graphs and tables



## Results:

We compared intima-media thickness (IMT) and brachial artery vasodilatation after occlusion using high-frequency ultrasound (US) in these patients with that in 42 control subjects without renal failure (25 were women, 17 men; mean age was 48.6 years).

We also investigated the relationship of variables to renal clearance and to possible disorders of heart rate variability (HRV) risk factor in our patients. No difference in age sex between patients and control subjects was found.

The IMT values (0.78 versus 0.60 mm;  $P<0.001$ ) were higher in patient with CRF. More patients had disorders of heart rate variability (52.6% versus 18.5%;  $P<0.0001$ ) and number of patients with brachial artery vasodilatation were also higher ( $P<0.002$ ).

In CRF patients flow-mediated response increased both brachial artery diameter and flow, hyperaemic flow-mediated response during supine position and Head-Up Tilt test to stimulate sympathetic stimulation after 5, 15, 30 second showed a reduced brachial artery diameter and flow compared to subjects white normal renal function.

The daily value of SDNNi, characterizing the total HRV, was on average by 41.1% lower than in the subjects without renal failure ( $P<0.001$ ), rMSSD, was 42.64% lower in patients with hypertension than in those without, pNN50 was reduced by 70,45% compared to without renal failure ( $p<0.001$ ), the rate of daily LF / HF was higher by an average of 49.34% in patients with hypertension noted the predominance of sympathetic activity.

There was significant negative correlation between IMT and CrEDTA clearance ( $r=-0.348$ ;  $P<0.0001$ ), between presence of HRV ( $r=-0.245$ ;  $P<0.001$ ). With multiple regression analysis relationship between IMT and CrEDTA clearance ( $P<0.0001$ ) and presence of hypertension ( $P<0.005$ ) was found.

## Conclusions:

In CRF patients the HUT-test, as sympatic stimulation, seemed to influence less the endothelial reactivity. Our results showed a decrease of protective endothelial response in CRF patients, hypertension, disorders of heart rate variability may suggest a potential explanation in the increased cardiovascular mortality in this population.

## References:

V. Moyseyenko, T. Nykula (Certificate № S/2012-0440) «Modern medicine and pharmaceuticals: actual problems and prospects of development». – London, August 16 – August 23, 2012. - p.17-20.

