

RESISTANT HYPERTENSION A COMPARATIVE STUDY IN FOUR TYPES OF HYPERTENSIVE PATIENTS

Authors: Daniela Moteli, Adelina Mihaescu, Adalbert Schiller

Hospital: Emergency County Hospital "Pius Brinzeu" Timisoara, Romania

OBJECTIVES

To compare the epidemiology, clinical features and treatment of resistant hypertension (RHT) in four types of hypertensive patients: primary care, diabetes mellitus, chronic kidney disease patients and with both diabetes and renal disease.

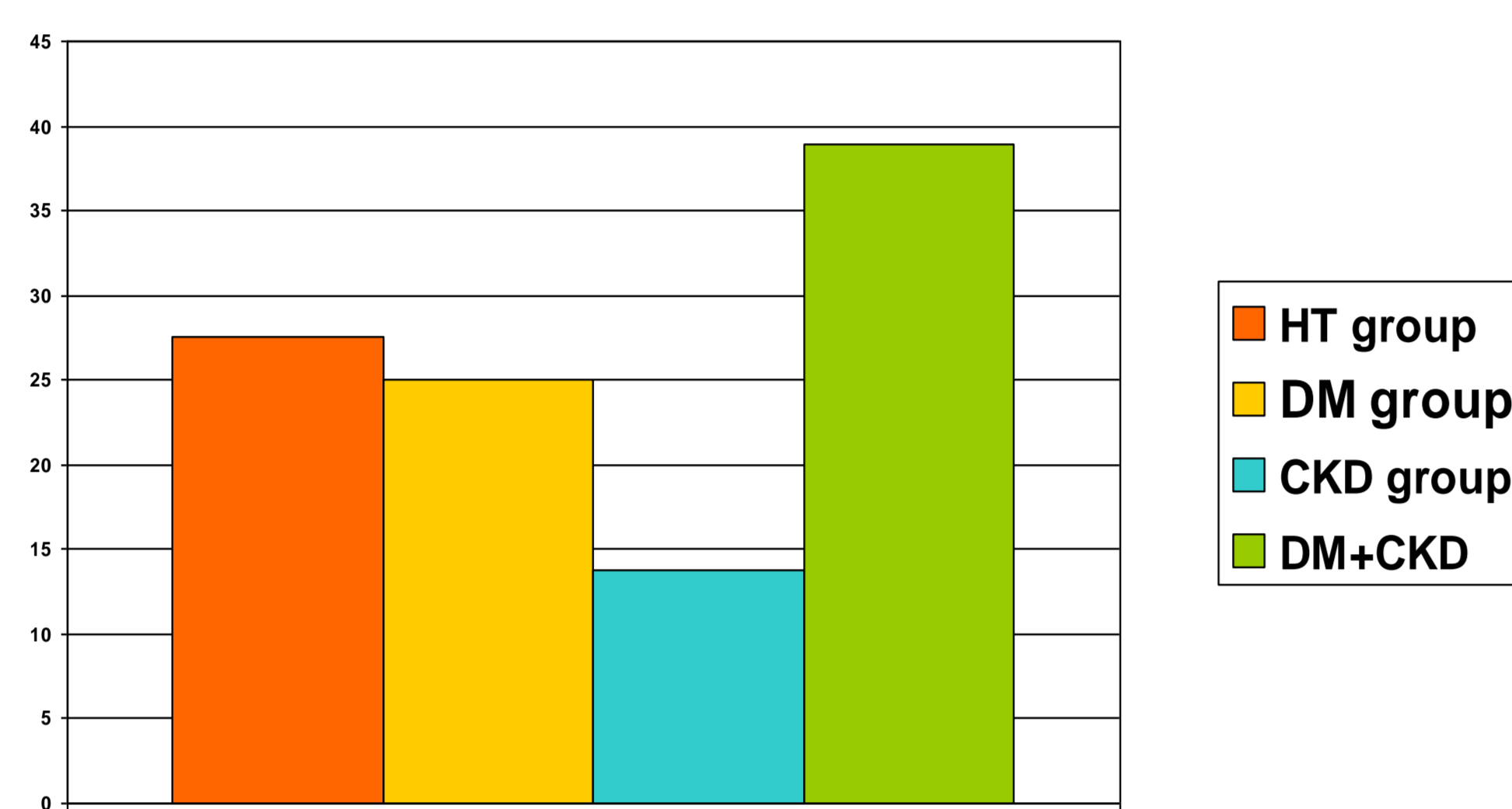


Table 1 - Prevalence of Resistant Hypertension in the four groups

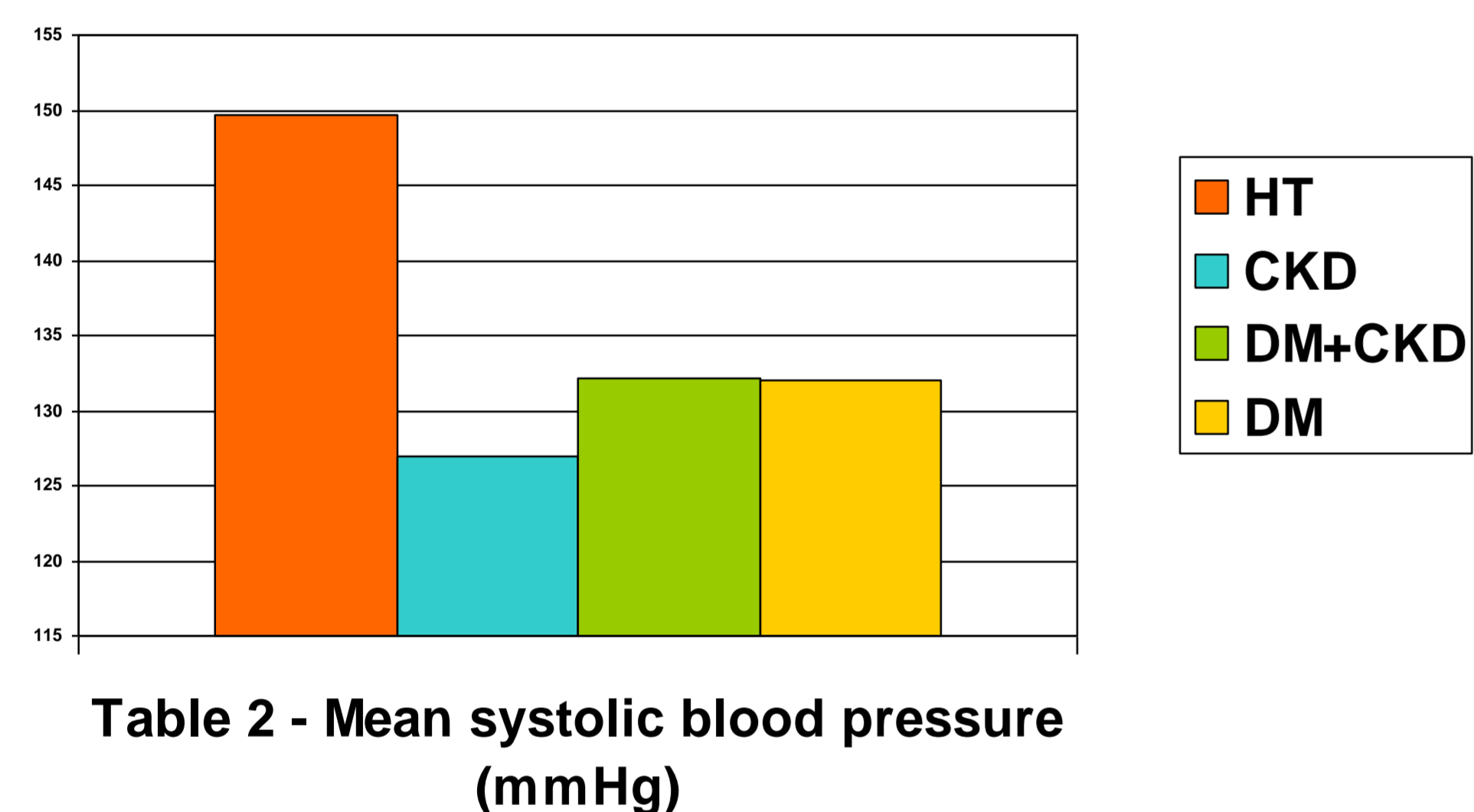


Table 2 - Mean systolic blood pressure (mmHg)

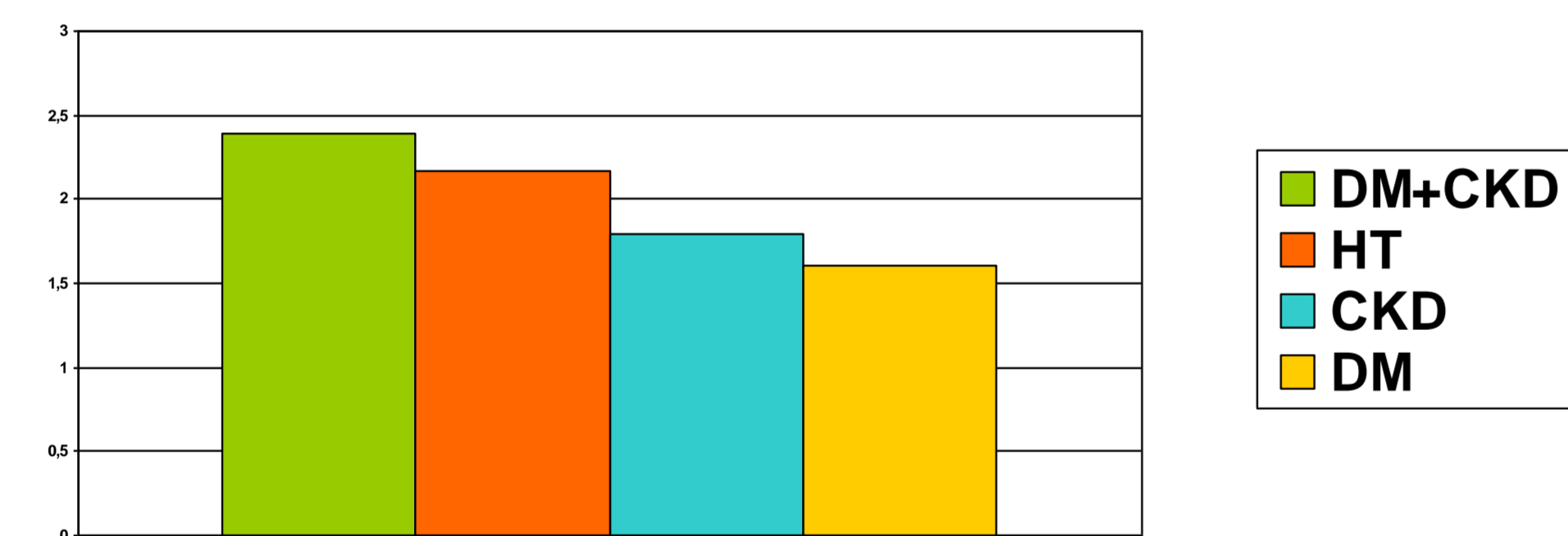


Table 3 - Mean number of antihypertensive medication

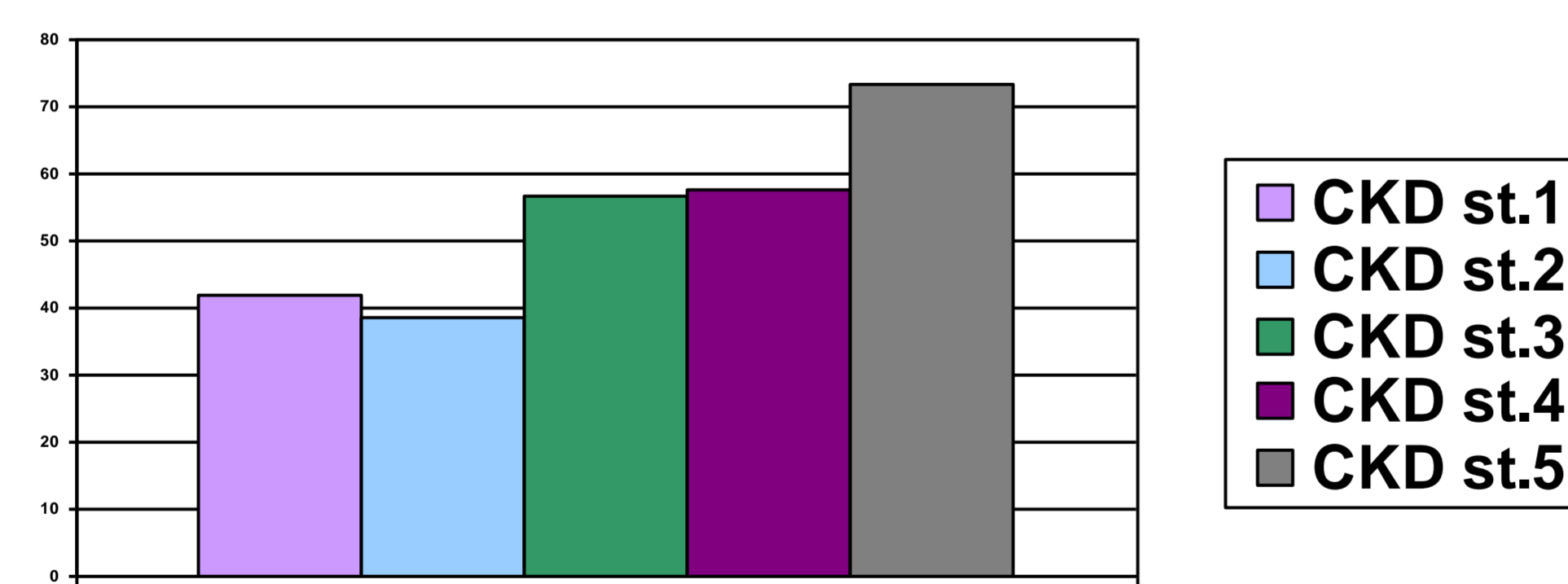


Table 4 - Resistant hypertension prevalence in DM+CKD patients

METHODS

In this cross sectional retrospective study we analyzed 3864 subjects divided into four groups of patients:

- **HT group** – 715 hypertensive adult patients with no diabetes or kidney disease from two general practices;
- **CKD group** - 1315 chronic kidney disease patients (CKD) from a secondary care nephrology unit;
- **DM group** - 538 diabetes mellitus patients admitted in a secondary care diabetes unit;
- **DM+CKD group** – 1296 patients with both diabetes and kidney disease from the diabetes outpatients clinic.

Patients were considered to have resistant hypertension if the target blood pressure was not reached using the adjusted doses of at least three antihypertensive agents (one being a diuretic), according to 2008 AHA criteria¹.

GFR was estimated by MDRD 4 formula.

Blood pressure control was defined according to KDIGO 2012 guidelines².

Data have been processed using SSPSS 16 and Statistica Windows 7.

RESULTS

- The prevalence of RHT was significantly different in the four groups: HT-27,5%, DM-25%, CKD-13,8% and DM+CKD-38,88%. (**Table 1**)
- The mean systolic blood pressure (SBP) was significantly higher in HT group compared to the CKD group ($149,7 \pm 0,82\text{mmHg}$ vs. $127,1 \pm 0,53\text{mmHg}$, $p < 0,0001$, $r^2 = 0,22$) to DM+CKD group ($149,7 \pm 0,82\text{mmHg}$ vs. $132,1 \pm 0,53\text{mmHg}$, $p < 0,0001$, $r^2 = 0,14$) and to DM group ($149,7 \pm 0,82\text{mmHg}$ vs. $132 \pm 1,06\text{mmHg}$, $p < 0,0001$, $r^2 = 0,14$). (**Table 2**)
- The mean number of antihypertensive medication was $2,39 \pm 0,03$ in DM+CKD, $2,17 \pm 0,03$ in HT, $1,79 \pm 0,03$ in CKD and $1,61 \pm 0,05$ in DM, significantly higher in the HT group than in those with DM or CKD ($p < 0,0001$). (**Table 3**)
- From the 1315 CKD patients 8.6% were stage 1 of the disease, 32.2% stage 2, 31.2% stage 3, 13.7% in stage 4 and 14.5% in stage 5 pre-D.
- RHT prevalence in DM+CKD patients increased with the progression of the CKD (42.1% for stage 1, 38.7% for stage 2, 56.8% for stage 3, 57.5% for stage 4 and 73.3% for stage 5 pre-D). (**Table 4**)
- Glomerular filtration rate (eGFR) was similar between the CKD and DM+CKD groups ($53,8 \pm 29,5$ vs. $52,6 \pm 28\text{ml/min/1,73m}^2$).

CONCLUSIONS

- This study highlights that patients treated in primary care have a worse blood pressure control with more medication but at a lower doses than the patients in specialized clinics.
- Chronic kidney disease added to diabetes mellitus carries a higher risk of resistant hypertension and increases the need for more medication in order to control blood pressure.
- Controlling hypertension gets harder by the progression of chronic kidney disease towards end stage renal disease, especially when diabetes mellitus is associated.

REFERENCES

1. Calhoun DA, Jones D, Textor S, et al. Resistant Hypertension: Diagnosis, Evaluation, and Treatment. *Hypertension*. 2008;51: 1403-1419.
2. KDIGO Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease, Kidney International supplements Vol 2, Issue 5, December 2012

