

# COMPARISON OF FORMULAS TO ESTIMATE THE GLOMERULAR FILTRATION RATE WITH THAT OF SCINTIGRAPHY EVALUATION OF KIDNEY FUNCTION IN HOSPITALIZED PATIENTS

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## Objectives:

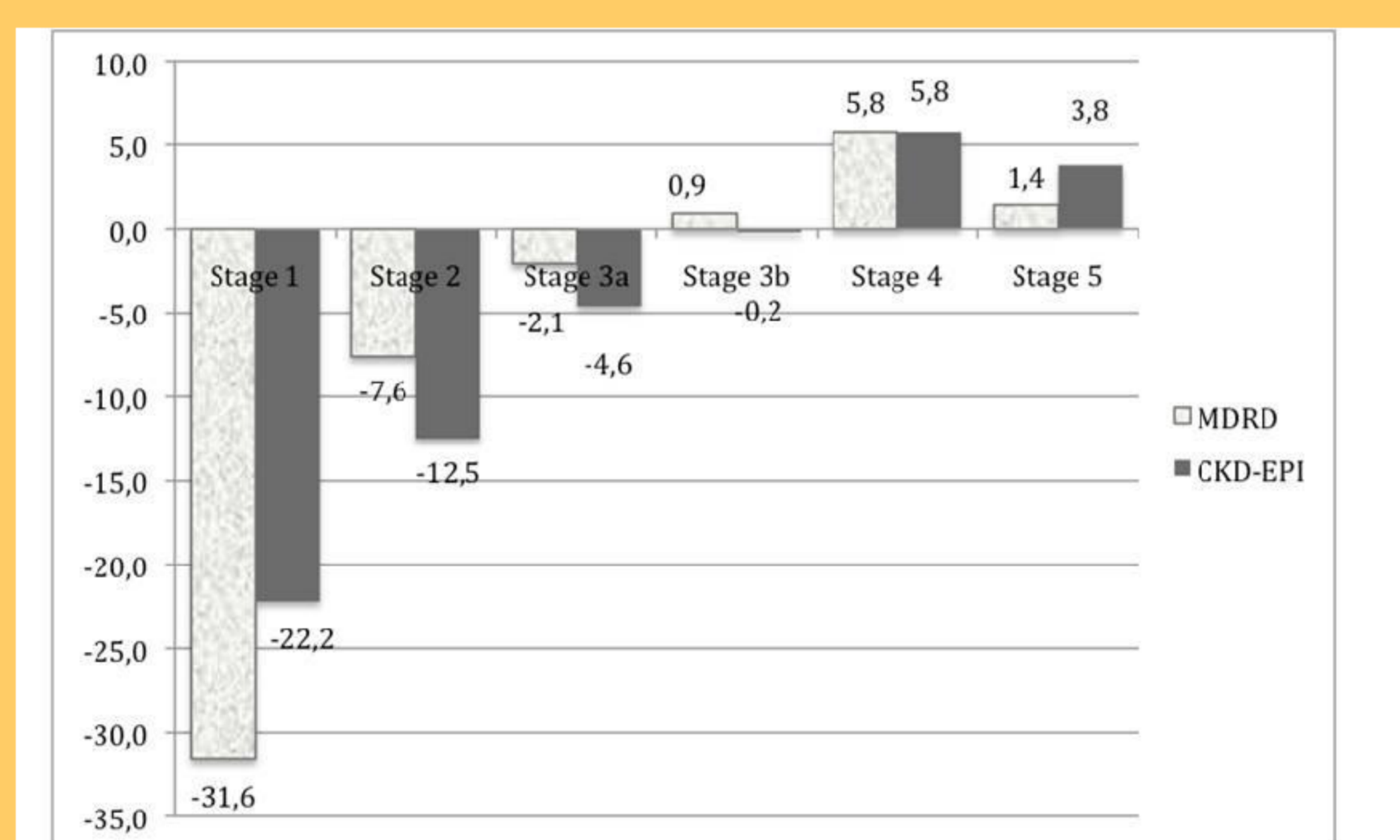
Accurate staging of chronic kidney disease (CKD) is very important in order to properly stratify, establish therapeutic interventions, and predict outcomes of patients with impaired renal function<sup>1</sup>. The evaluation of GFR (Glomerular Filtration Rate) can be obtained simply with creatinine serum dosage, resulting in estimated GFR (eGFR), or through Gates method at <sup>99m</sup>Tc-DTPA renal scintigraphy. We tried to identify difference in GFR evaluation between CKD-EPI and Gates method and which variables are associated with these differences.

## Methods:

We retrospectively reviewed the records of 341 patients who underwent dynamic renal scintigraphy in the last 5 years. Patients were categorized according to KDIGO staging I to V, using the eGFR calculated with the CKD-EPI equation. Secondly, we stratified patients according to treatment with renin-angiotensin system (RAS)-inhibitors.

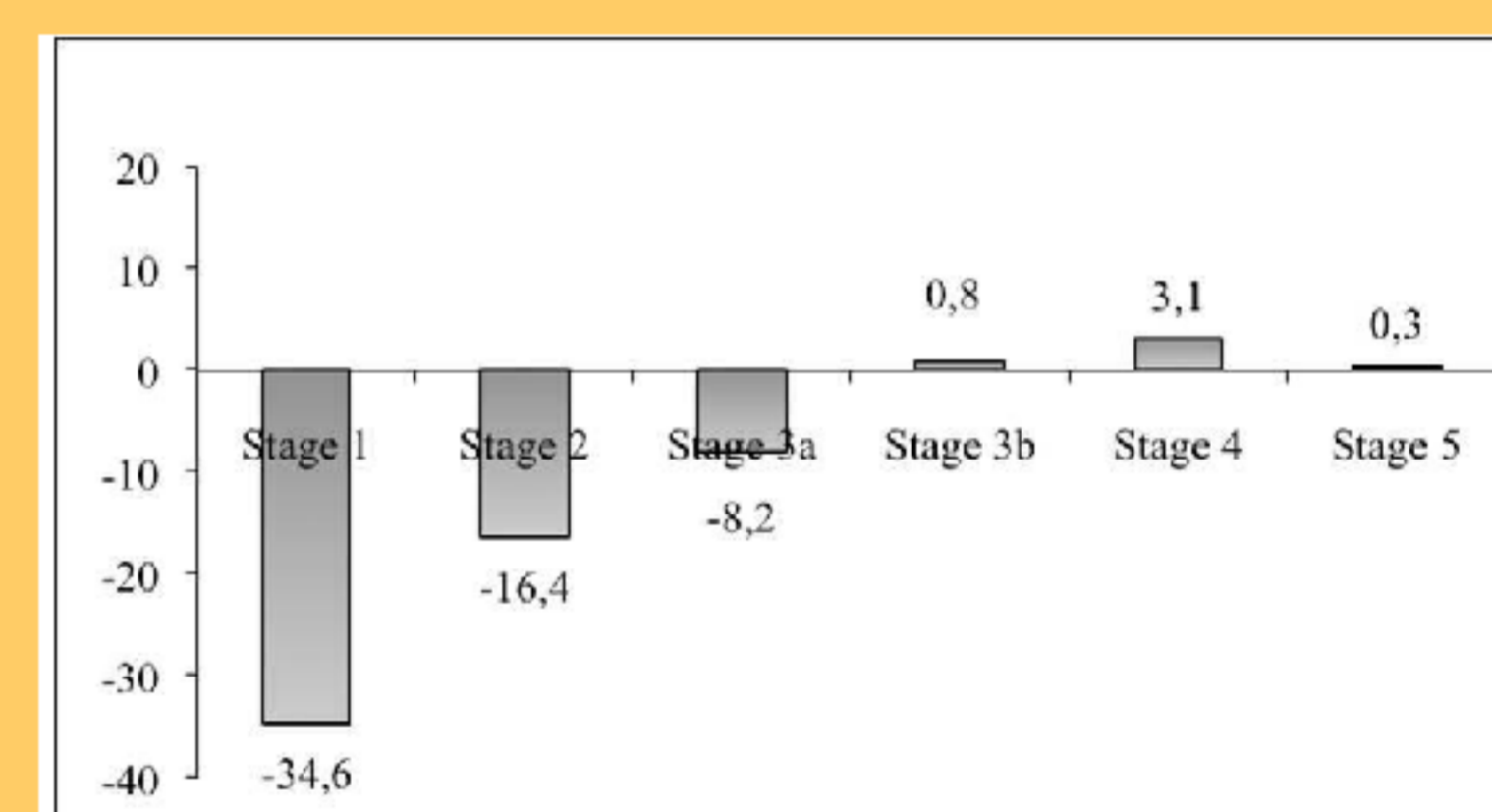
## Results:

Gates method tends to underestimate GFR in CKD stage I (mean - 22.2 ml/min) and II (mean - 12.5 ml/min), while it seems to overestimate in stages IV and V [Figure 1]. The division in quartiles of ages showed a progressive decline of renal function with ageing and an underestimation of GFR only in the first quartile of age (< 50 years old). Gates method underestimation of GFR was more pronounced in stage I patients treated with RAS-inhibitors (mean - 34.6 ml/min). The same occurs in stage II, even though to a lesser extent [Figure 2].

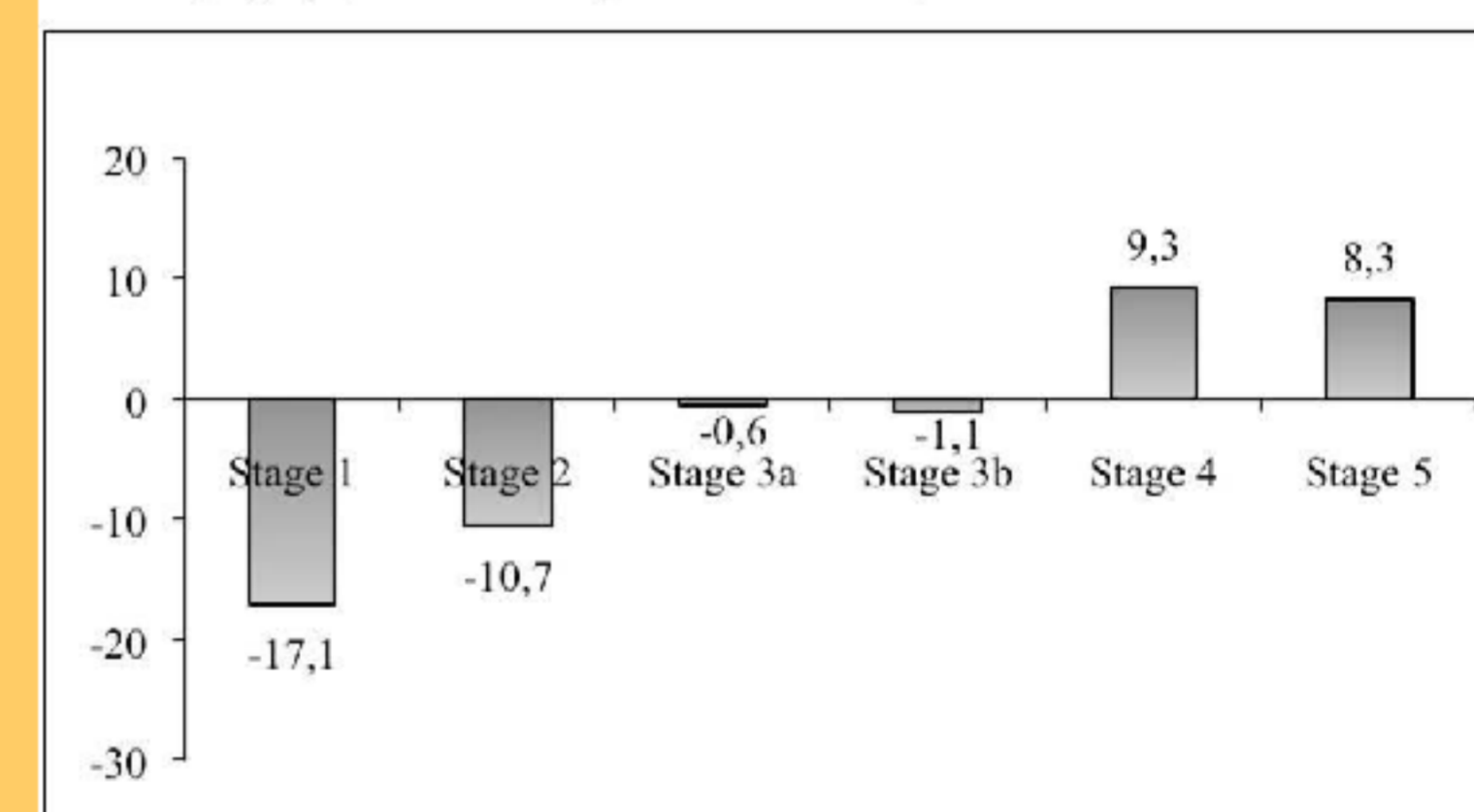


Difference between eGFR according to the MDRD and CKD-EPI formulae and that obtained with renal scintigraphy in the different KDIGO stages.

Figure 1



Patients (n.142) treated with RAS inhibitors: Δ between eGFR according to CKD-EPI formula, and GFR obtained with renal scintigraphy (calculated by Gates method)



Patients (n.199) not treated with RAS inhibitors: Δ between eGFR according to CKD-EPI formula, and GFR obtained with renal scintigraphy (calculated by Gates method)

Figure 2

## Conclusions:

The assessment of GFR by the Gates method must be carefully considered in the early stages of CKD, especially in younger patients. Moreover, the difference is more pronounced in patients treated with RAS-inhibitors. Longitudinal studies will prove which method better predicts cardiovascular or renal events.

## References:

1. De Serres SA et al. *Curr Opin Nephrol Hypertens.* 2012;21(6):619-627.

