KIDNEY FUNCTION EVALUATION IN PATIENTS TREATED WITH DABIGATRAN: COMPARISON OF GLOMERULAR FILTRATION RATE ASSESSED BY USING CREATININE AND CYSTATINE

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BACKGROUND

Dabigatran, an oral anticoagulant, is 80% renally excreted with a half-life of approximately 13 h with a glomerular filtration rate (GFR) > 90 mL/min. Glomerular filtration rate (GFR) estimation is recommended to evaluate the kidney function. GFR might be determined using invasive procedures, e.g. clearance of inulin. Creatinine (CRE) and Cystatin-C (CYS) based estimating equations for GFR have been suggested. In this paper we report same preliminary results about evaluation of CRE GFR and CYS GFR in a group of patients evaluated before Dabigatran treatment.

MATERIALS and METHODS

We considered 77 Caucasian patients, 36 males and 41 females, with age between 54 and 85 (mean 76). In these patients we performed a basal evaluation of kidney function using CRE and CYS based GFR prediction equations following the Lund model. CRE was measured using a IDMS traceable dry chemistry enzymatic method and OCD Vitros 5.1 analyzers. CYS was measured using an immunochemistry IFCC traceable assay and Tosoh AIA 2000 analyzer. After GFR calculation these patients were classified as recommended by KDIGO guidelines. In patients with discordant classification a creatinine clearance was performed Results were reported as mean ± 1SD, data comparison was performed by using a Student t test an a values $p<0.05$ was considered as statistically significant.

RESULTS

As reported in *Figure 1* we observed a relatively weak correlation between CRE GFR and CYS GFR ($R^2=0.54$) The mean CRE GFR was 58 ± 17 mL/min, the mean CYS GFR was 51 ± 21 mL/min this difference was statistically significant ($p=0.03$). Bland-Altman elaboration (*Figure 2*) confirmed that CYS GFR was lower than CRE GFR. Following KDIGO criteria, patients classification performed by using CRE GFR or CYS GFR was concordant in 44 subjects and discordant in 23 (29%). These results are reported in *Figure 3*. In 21/23 discordantly classified patients the creatinine clearance confirmed classification performed by using CYS GFR.

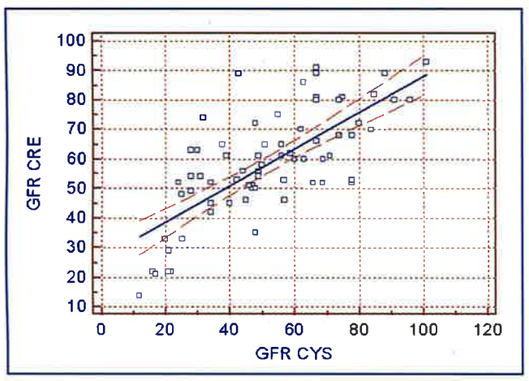

Figure 1: CRE GFR and CYS GFR

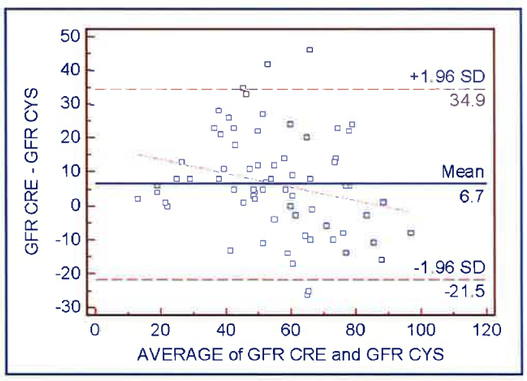

Figure 2: Bland Altmann

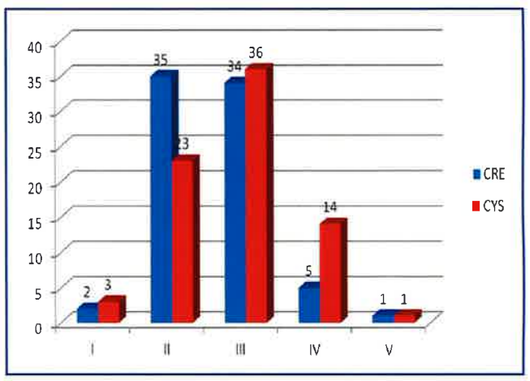

Figure 3: Patients Classification

CONCLUSIONS

Given that Dabigatran is largely cleared by the kidneys unchanged, it is important to assess and compare the performances of the renal function equations in patients treated with Dabigatran etexilat. CRE GFR is strongly influenced by muscle mass, age, sex and concomitant diseases. Moreover in elder patients CRE GFR demonstrated some reliability problems. On the other side CYS GFR is relatively independent of body composition. In this group of 77 patients evaluated before treatment with Dabigatran we observed: a relatively weak correlation between CRE GFR and CYS GFR, CYS GFR was significatively lower than CRE GFR. These differences in the estimation of GFR resulted in a different classification in 23 (29%) of considered patients. In these 23 patients, we performed a creatinine clearance which confirmed the classification performed according to CYS GFR in 21 cases (91%). Results obtained in this study, although preliminary and in need of confirmation, would seem to suggest that, in this particular subset of patients, the determination of CYS GFR can be a better renal function indicator than CRE GFR.