Time course of serial cystatin C levels in comparison with serum creatinine after application of radiocontrast media

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BACKGROUND: The delayed increase of creatinine after radiocontrast application is a potential reason for overlooking radiocontrast nephrotoxicity. Cystatin C may be more useful to rapidly assess a decrease in glomerular filtration rate (GFR). We compared cystatin C and creatinine to examine their kinetics after application of radiocontrast media. PATIENTS AND METHODS: Forty-one patients (60.8 +/- 8.8 years, 68% males) with normal to subnormal GFR scheduled for coronary angiography (27% with angioplasty), were studied for serum cystatin C and creatinine levels before, 5 h, 24 h and 48 h after angiography. Furthermore, alpha1-microglobulin was checked for evidence of tubular damage. RESULTS: At 5 hours after angiography, there was no significant change compared to baseline in either serum creatinine nor cystatin C. In comparison with the value immediately before coronary angiography, the increase of cystatin C achieved a maximum at 24 h after the application of the contrast agent (+7.2%). Within 48 h, cystatin C decreased to the level before angiography. Serum creatinine increased at 24 h (+7.7%) and continued to increase at 48 h (+11.3%). CONCLUSION: Cystatin C increases earlier after radiocontrast application compared with creatinine. Therefore, cystatin C needs to be investigated as a potential early marker for nephrotoxicity, especially in the upcoming setting of short-time hospitalizations for coronary angiographies and interventions. Thus, further studies in patients with renal failure undergoing radiocontrast application are warranted to assess the usefulness of cystatin C in respect of an earlier detection of radiocontrast nephrotoxicity.