RENAL BIOMARKERS PREDICT GRAFT FUNCTION AFTER DEC DONOR KIDNEY TRANSPLANT

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BACKGROUND

Delayed graft function (DGF) is a common complication after deceased donor kidney transplantation. In kidney transplantation using brain death donors DGF is associated with prolonged hospitalisation and greater risk of complications. The identification and validation of biomarkers allowing early detection of graft dysfunction may facilitate optimal clinical management immediately after transplantation.

AIM

This study evaluates the association between early graft function after deceased donor transplantation and changes in the following renal biomarkers:

- NGAL: Neutrophil gelatinase associated lipocalin
- L-FABP: Liver-type fatty acid binding protein
- Cystatin C
- YKL-40

MATERIALS & METHODS

Blood and urine sampling was conducted as part of a randomized, controlled, multicentre study (CONTEXT). 222 recipients of a deceased donor kidney transplant were included.

Analyses

- Urinary YKL-40 and L-FABP: ELISA
- Urinary cystatin C and plasma and urinary NGAL: automated assays

We analysed the correlation between biomarker levels and
- measured GFR (mGFR) on day 5 after transplantation
- the estimated time to a 50% reduction in P-creatinine (tCr50)
- their ability to predict the incidence of DGF defined as the need for dialysis within the first week after transplantation.

RESULTS

All biomarkers, when measured day 1 after transplantation, were significantly associated with mGFR on day 5 and with tCr50, except for urinary L-FABP/creatinine ratio (figure 1).

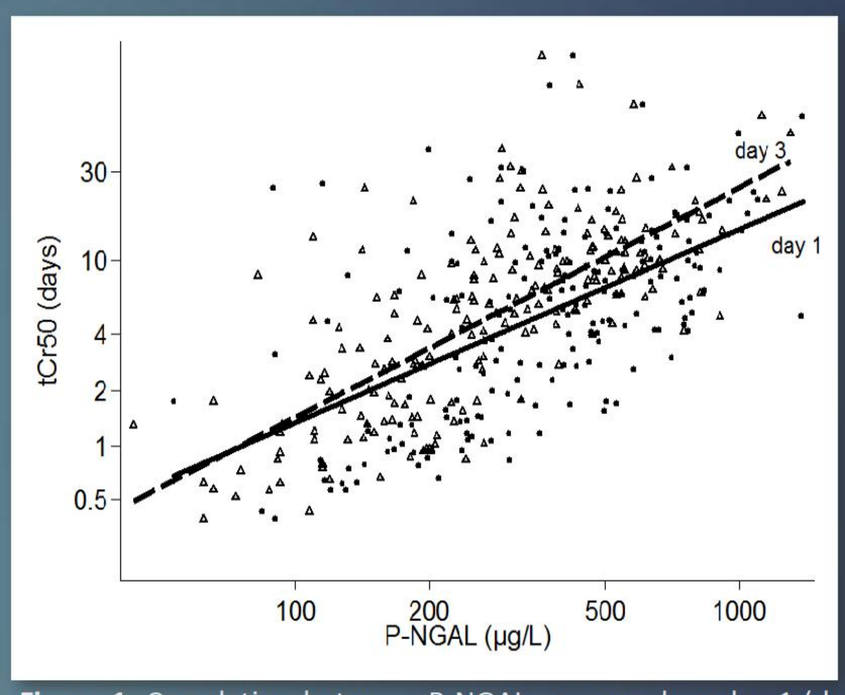

Figure 1. Correlation between P-NGAL measured on day 1 (dots) or 3 (triangles) and the estimated time to a 50% reduction in P-creatinine (tCr50).

Plasma NGAL on day 1 and day 3 predicted DGF (AUC= 0.91 and 0.93, figure 2). A timed urine output measured within the first day predicted DGF better (AUC= 0.97) than any of the analysed biomarkers.

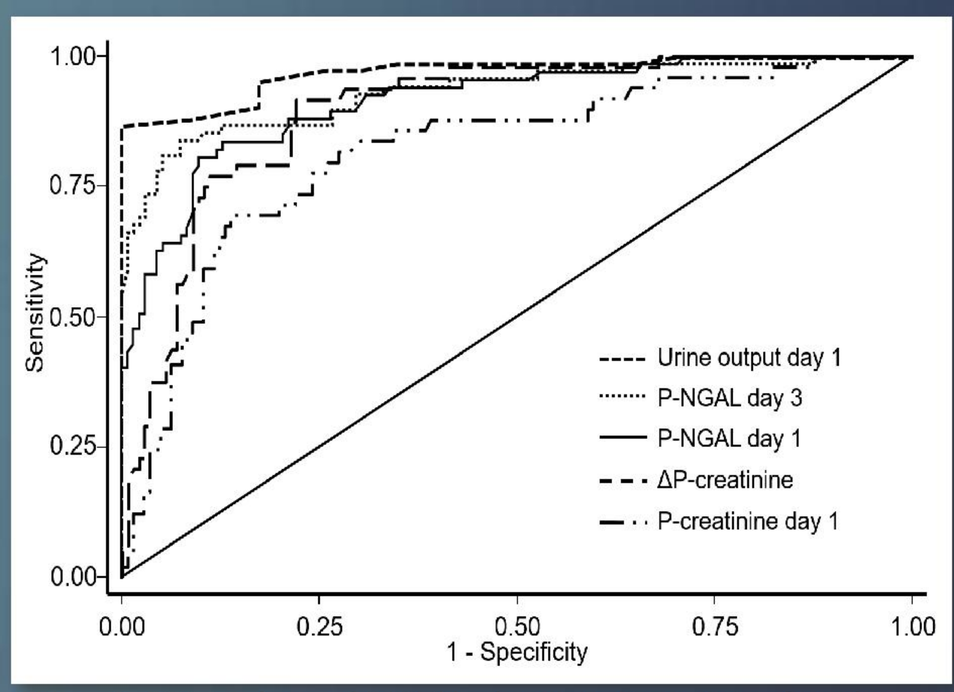

Figure 2. ROC-analyses of P-NGAL, change in P-creatinine from baseline to day 1, P-creatinine, and urine output's ability to predict the need for dialysis in the first week after transplantation.

CONCLUSION

Plasma levels of NGAL day 1 and day 3 are associated with a slower decline in P-creatinine after transplantation and may predict DGF. A timed urine output within day 1 predicts DGF with greater sensitivity and specificity than any of the measured biomarkers.

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CONTEXT

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