ALTERATIONS IN URINE TGF-BETA MRNA IN RELATION TO ACUTE DECOMPENSATED HEART FAILURE: AN INDICATOR OF PERMANENT KIDNEY INJURY?

Poster Contributions
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Background: Worsening kidney function following acute decompensated heart failure (ADHF) is a major concern, which may or may not be reversible. The mechanism of impairment of kidney function in ADHF is not totally clear and current understanding of its pathophysiology is unable to anticipate its reversibility. Production of TGF-beta in renal cells is an indicator of inflammatory and pro-fibrotic activity in the kidney and measurement of TGF-beta mRNA in the urine in relation with ADHF may provide insight regarding the pathophysiologic mechanisms of kidney injury associated with ADHF and its reversibility.

Methods: We examined urine pellet TGF-beta1 mRNA in 39 patients with ADHF during hospitalization and post-discharge as well as 172 healthy adult controls using reverse transcription-polymerase chain reaction technique. Urine TGF-beta1 mRNA to creatinine ratio (uTGFCr) was used as an index of inflammatory and profibrotic processes in the kidney.

Results: uTGFCr was 3.5 times higher in ADHF patients compared to healthy controls (3,334±7,015 x10^-6 vs. 933±2,982 x10^-6 respectively; P=0.002). uTGFCr was not different among ADHF patients with diabetes or hypertension (3,056±5,337 x10^-6) and ADHF patients without those comorbidities (3,417±7,523 x10^-6) (P=0.86). Post-hospital discharge uTGFCr was 4-fold higher than ADHF phase when it was measured within a month of discharge (10,310±24,364 x10^-6 vs. 2,528±4,764 x10^-6; P=0.047); conversely, it was 35-fold lower when measured after 3 months of hospital discharge (219±389 x10^-6 vs. 7,791±12,952 x10^-6; P=0.03).

Conclusion: uTGFCr, a marker of renal inflammation and profibrotic activity, is higher in ADHF patients compared to healthy controls. It is further increased during the first month after hospital discharge but subsequently decreases substantially. This suggests persistence of renal profibrotic activity, a postulated mechanism of permanent kidney damage, several weeks following clinical stabilization of ADHF. Measurement of uTGFCr during ADHF may help risk stratification of the patients for permanent renal damage and may help find the appropriate type and timing of therapeutic intervention to prevent permanent kidney injury in ADHF.