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Diabetic Foot Ulcer as a Cause of Significant Decline in the Renal Function Among South Indian Population With Type 2 Diabetes: Role of TGF- β 1 and CCN Family Proteins.

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Abstract

In the present study, a total of 428 South Indian subjects were divided into four different groups, consisting of individuals with type 2 diabetes without any other complications (T2DM), T2DM subjects with stage 2 and 3 diabetic kidney disease (CKD), T2DM subjects with grade 2 or 3 diabetic foot ulcer (DFU) and T2DM subjects having both diabetic kidney disease and diabetic foot ulcer (CKDDFU). The study was conducted ambispectively by comparing the changes in renal function among two consecutive periods, i.e., the period prior to the development of grade 2 and 3 diabetic foot ulcer (retrospectively) and after the development of DFU (prospectively). A gradual and uniform reduction of eGFR was observed throughout the study period in the subjects affected with either CKD or DFU alone. Whereas in subjects with both CKD and DFU, there was a sharp decline in the eGFR during the six months prior to the baseline, i.e., the period in which the development of ulcer and its progression to grade 2 or 3 happened. Remarkable elevations in the levels of TGF- β 1 and CCN2 (CTGF), as well as a significant reduction in the level of CCN3 (NOV), were observed in the serum of CKDDFU group subjects, compared to the other groups. Increased production of TGF- β 1 in response to the inflammatory stimulus from multiple sites in CKDDFU subjects caused a subsequent down-regulation of CCN3, followed by the activation of a large quantity of CCN2.

KEYWORDS:

CTGF; NOV; diabetic kidney disease; transforming growth factor

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