

Mechanisms of Diabetic Cardiorenal Syndrome

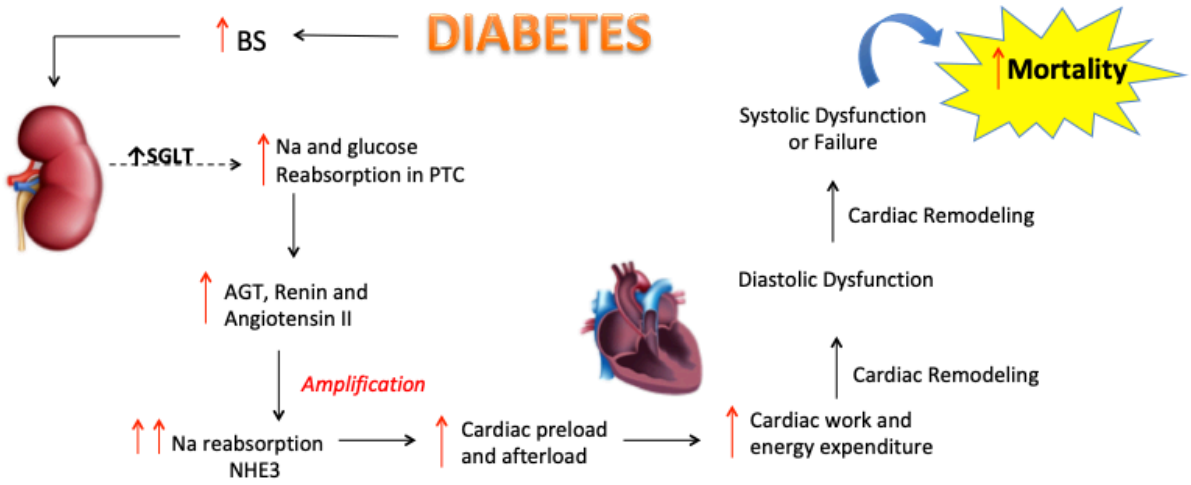
Sloan, L.A.

Texas Institute for Kidney and Endocrine Disorders, Lufkin, TX, USA,

University of Texas Medical Branch, Galveston, TX, USA

The hallmark of diabetes is high blood sugars, but diabetes is not just a disorder of high blood sugars. It is also a disorder of increased blood sodium which results in increased intravascular volume that over time can result in heart failure and eventually death. The aim of this paper is to review the mechanisms of how the hyperglycemic diabetic state drives the naturemic effects of diabetes and increases the risk of heart failure and death in diabetes. This increased naturemic effect is driven by increased sodium glucose transporter (SGLT), sodium proton exchanger 3 (NHE3), intrarenal renin angiotensin (iRAS) and renal sympathetic system (RSS) activity as illustrated in figure1. In summary, hyperglycemia results in pathologic kidney function changes with an increase in intravascular volume and neurohormonal activity, which leads to increased work and stress on the heart. SGLT inhibition will partially block and reverse these defects allowing the pathologic kidney function in diabetes to move back to more normal physiologic function.

Fig. 1: Diabetic renal hemodynamic mechanism that lead to cardiorenal dysfuncion



BS: blood sugar; SGLT: sodium-glucose transporter; AGT: angiotensin; NHE: Sodium-hydrogen exchanger

Keywords: diabetes – cardiorenal syndrome – sodium glucose transporter

Recent Publications (minimum 5)

1. Sloan LA. Effects on the Kidney of Glucagon-like Peptide-1 Receptor Agonists for the Treatment of Type 2 Diabetes Mellitus. J Diabetes 2019 Jul 18. doi: 10.1111/1753-0407.12969
2. Davidson, JA; Sloan, LA. Fixed-Dose Combination of Canagliflozin and Metformin for the Treatment of Type 2 Diabetes: An Overview. Advances in Therapy. 2016 DOI 10.1007/s12325-016-0421-7
3. Burini RC, Torezan G, Sloan LA, Corrente JE, McLellan KCP. Dietary Intake Association with IFG and Responses of a Lifestyle Changing Protocol in a Community- based Adult Cohort. Endocrinol Metab Synd 2014, 3: 125. doi: 10.4172/2161-1017.1000125
4. Ferreira JC, Corry D, Morgensen CE, Sloan L, et al. Efficacy and Safety of Sitagliptin in Patients With Type 2 Diabetes and ESRD Receiving Dialysis: A 54-Week Randomized Trial. American Journal of Kidney Diseases 2013;61:579-587
5. McGill JB, Sloan L, et al. Long-Term Efficacy and Safety of Linagliptin in Patients With Type 2 Diabetes and Severe Renal Impairment. Diabetes Care 2013;36:237-244

Biography: Dr. Sloan is triple board certified in Endocrinology, Nephrology, and Internal Medicine; and a Fellow of the American College of Endocrinology, the American Society of Nephrology, and the American College of Physician. Dr. Sloan is past president of the Texas chapter of the American Association of Clinical Endocrinology (AACE) and has been a regional leader for the Renal Physicians Association (RPA). He currently is a member of the Texas Diabetes Council Health Care Professionals Advisory Committee, and the Clinical Practice and Government Affairs Committees for the RPA. Currently he is President of the Texas Institute for Kidney and Endocrine Disorders and is Medical Director of the J.C. Polk Education Center and SNG Lufkin Dialysis. He is also a Clinical Assistant Professor at the University of Texas Medical Branch in Galveston, TX, USA.

E-mail: tikedlufkin@gmail.com

Presenting author details:

Full name: Lance Alan Sloan

Contact number: +1 936-632-4282

Linked In account: https://www.linkedin.com/in/lance-sloan-8654a7114/

Session name/number:

Category: Oral presentation