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Spexin, is it another bystander or an active regulator in diabetic kidney disease?

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Objectives: Spexin is a highly conserved active neuropeptide that has been recently identified in the involvement of controlling appetite and energy balance. Although few is known regarding to the role of spexin, spexin level was noted to be significantly lower in obese and diabetic patients. Therefore, we investigated the expression of spexin in diabetic kidney disease in clinical and experimental model.

Methods: Serum samples from patients who were diagnosed as type 2 diabetes were examined for circulating spexin level using commercially available ELISA kit (Spexin/neuropeptide Q(NQP)). Renal expression of spexin was examined in experimental mice models; 1) db/db mice, 2) fat chow diet induced obesity mice.

Results: Total 89 diabetic patients participated in the study. The circulating spexin level was significantly increased in patients on dialysis (both peritoneal and hemodialysis) compared to patients with estimated GFR ≥60 ml/min/1.73m2. Previous clinical studies on spexin have not included the patients with chronic kidney disease. In diabetic patients with chronic kidney disease stage 1 to 3, spexin level was significantly increased in patients with overt proteinuria (urine protein to creatinine ratio). There were no significant correlation with age, gender, BMI, blood glucose, lipid profiles and HOMA-IR or estimated GFR. In the mice kidney, immunoreactivity of spexin was mostly observed in tubular epithelium. In 20 week db/db mice, spexin expression in the kidney was decreased compared to db/m control, whereas the expression in was similar in 36 week diet induced mice model compared to b6 control.

Conclusions: The spexin expression in the kidney from experimental mice and circulating spexin level in diabetic patients may indicate that spexin may be a marker of kidney disease in metabolic disease. However, further study is needed to elucidate the mechanism of spexin in the chronic kidney disease.