

Low levels of Serum Sodium and Chloride in Diabetes Patients

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Background and Objective : The persistence of high blood glucose level in diabetes can cause abnormalities to both structure and function of several organs e.g. kidneys, eyes, nerve cells, blood vessels and heart. About 30-50% of diabetes in Thai population has albuminuria which reflects the complication or damage of glomerulus of the kidneys. However, the blood glucose >180 mg/dl which is excess renal threshold can damage the renal tubules. This event occurs in early stage of diabetic nephropathy. The renal tubule which normally controls the homeostasis of electrolytes including sodium, potassium, chloride, bicarbonate, magnesium, calcium and phosphate is affected. Therefore, this study aims to determine the levels of sever kinds of the electrolytes as previously mentioned above in the sera of diabetic patients.

Methods : The 157 sera were collected from diabetic patients, who went to Phukieo hospital, amphoe Phu Kieo, Chaiyaphum province.

Results : The results show the significant increase of

chloride and depletion of calcium levels were found in patients with microalbuminuria and macroalbuminuria than normoalbuminuria. However, there were no correlation between the urinary albumin level and overall 7 kinds of the electrolytes. Interestingly, the significant correlation of blood glucose and electrolytes were found. Also, significant depletions of sodium and chloride (presented as mean \pm S.D.) were found in 22 patients with blood glucose >180 mg/dl were 136.5 ± 2.5 and 97.2 ± 3.8 mmol/l, respectively when compared to 103 patients with blood glucose <180 mg/dl sodium and chloride were 138.6 ± 2.5 , 99.0 ± 3.0 mmol/l, respectively.

Conclusions : There is no correlation between the urinary albumin level and electrolytes. However, abnormal levels of serum sodium and chloride in diabetic patients found in this study were 50-55% in patients with blood glucose level excess renal threshold, 85-91% patients with blood glucose <180 mg/dl.

Keywords : serum sodium, serum chloride, diabetes patients