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Nephrotic syndrome in relation with diabetic ketoacidosis

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Objective: To determine the relation between nephrotic syndrome and diabetic ketoacidosis in a patient as per anion gap.

Introduction: Nephrotic syndrome is the combination of nephrotic-range proteinuria with a low serum albumin level and edema. It has many causes, including primary kidney diseases such as minimal-change nephropathy, focal glomerulosclerosis and membranous nephropathy. Nephrotic syndrome can also result from systemic diseases that affect other organs in addition to the kidneys, such as diabetes, amyloidosis and lupus erythematosus. Ketoacidosis is a life-threatening problem that usually affects people with diabetes. It occurs when the body cannot use glucose as a fuel source because there is not enough insulin and fat is used for fuel instead. When fat is broken down to fuel the body, chemicals called ketones build up in the body and high levels, ketones are poisonous. This condition is known as ketoacidosis.

Methodology: Two study groups of total 158 patients were made. Group A had 79 patients which were admitted with complain of nephrotic syndrome. Group B had the same number of subjects with diabetic ketoacidosis recruited from Medicine OPD. This study was conducted from September 2014-September 2016. Patients aged 30-70 years were recruited in this study. A history and examination form designed from an application "Forms", particularly for the study. Patients on medications or treatments for any other condition or any hereditary disease that could provide false positive results were excluded. For data analysis SPSS 16.0 software was used. The method used was the anion gap (AG). It is not only a function of "unmeasured" anions but also it is a function of plasma non-carbonate buffers (albumin and phosphate), the plasma pH and the method of measurement. To clarify the contribution of non-carbonate buffers to the AG, human plasma was applied to laboratory values obtained from two novel populations, patients with nephrotic syndrome and patients with diabetic ketoacidosis (DKA).

Results: Results show that 158 patients had minimal change NS, diagnosed either on the basis of corticosteroid response (n=89), verified by renal biopsy (n=14) or with minimal change plus mesangial immunoglobulin M on histological examination (n=12). The remaining 43 patients underwent a renal biopsy showing FSGS (n=29; 18.2%), diffuse mesangial hypercellularity (n=8; 5%), membranoproliferative glomerulonephritis (n=1; 0.6%), membranous nephropathy (n=3; 1.9%) or other diagnoses (n=3). The incidence of FSGS has increased significantly (P=0.0253). 64% of the patients had ketoacidosis (anion gap) with NS which shows the huge correlation between two diseases.

Conclusion: We confirm the increasing incidence of FSGS with idiopathic NS in a well-defined area. Also the nephrotic syndrome was related to diabetic ketoacidosis in great number of patients..

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