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Pathomorphological Features of Endotoxemia-Induced Pyelonephritis in Diabetic Nephropathy

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Editorial

Diabetic nephropathy or diabetic kidney disease is characterized by the presence of pathological quantities of urine albumin excretion, diabetic glomerular lesions, and loss of glomerular filtration rate in diabetics [1]. Pyelonephritis is a disease appearing by damage of the renal pelvis and parenchyma. Approximately annual incidence of pyelonephritis ranges from 459,000 to 1,138,000 cases in the United States and 10.5 million to 25.9 million cases in the world [2]. Acute pyelonephritis is severe contamination of the upper renal pelvis system by bacterial infection most often seen in young adult women [3]. The complication of acute pyelonephritis in patients with diabetes mellitus is manifested by *Escherichia coli* (*E. coli*) and klebsiella endotoxins and occurs in 80% cases. The biopsy should be taken during proteinuria to differentiate the renal complications of patients with diabetes mellitus from other kidney pathologies. For this reason, the reading of biopsy tissues has greater clinical and pathomorphological significances in revealing of alterations, created by *E. coli* colony toxins in the formation of the pyelonephritis.

Biopsy tissues were studied for specifying the pathologic diagnosis of 30 patients (14 women and 6 men) who applied clinic to the Education Therapeutic Clinic of Azerbaijan Medical University with clinical and laboratory signs such as edema and hematuria, and nitric oxide (NO) concentration in blood, creatinine level more than 0.87 mg/day, urine albumin concentration 2.8-3.5 mg/day, quantity of *E. coli* in bacteriological examination of urine 800,000 CFU/ml (10 patients), respectively.

Paraffin blocks were prepared from the biopsy tissues sent to the pathology laboratory and the sections for histological and histochemical staining were obtained. The Araldite-Epon blocks were prepared for ultrastructural study of each sample. 1 mkm thick semithin and 50-60 nm thick ultrathin sections were produced from those blocks and were imaged with a JEM-1400 Transmission Electron Microscope operating at 80 kV.

The histologic findings in studying biopsy specimens under the light microscope were an acute inflammation of the interstitial area in ten patients, a chronic lympholeukocytic inflammation, dystrophy and desquamation of the tubules in two patients. The focal sclerosis foci were determined in the glomeruli. Ultrastructurally, the hydropic, proteinaceous and fatty degenerations were observed in the tubular epithelium due to glycosuria. The smoothing of mitochondrial cristae was found. The disruption of basement membranes of some tubules, fatty degeneration and brush border absence in proximal tubules related to the long-term hypoxia were determined. Our findings confirm that there is a direct correlation between clinically detected endotoxemia and renal complications in patients with diabetes mellitus. *E. coli* endotoxemia causes to the development of acute pyelonephritis, which morphologically is characterized by glomerular alterations [4].

References

1. Andy KHL (2014) Diabetic nephropathy-complications and treatment. Int J Nephrol Renovasc Dis 7: 361-381.
2. Johnson JR, Russo TA (2018) Acute Pyelonephritis in Adults. N Engl J Med 378: 1162.
3. Colgan R, Williams M, Johnson JR (2011) Diagnosis and treatment of acute pyelonephritis in women. Am Fam Physician 84: 519-526.
4. Pourghasem M, Shafi H, Babazadeh Z (2015) Histological changes of kidney in diabetic nephropathy. Caspian J Intern Med 6: 120-127.