

LABORATORY INDICATORS OF NEPHROPATHY IN TYPE II DIABETES MELLITUS

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Abstract

Diabetic nephropathy is one of the most serious complications of diabetes mellitus, leading to early disability and death of patients from end-stage renal failure [2, 12]. The prevalence of diabetic nephropathy is continuously increasing, which is associated with the interaction of genetic and environmental factors in patients with both type 1 and type 2 diabetes mellitus [1, 11]. The article discusses clinical and laboratory changes in patients with nephropathy in type 2 diabetes mellitus, assessed using laboratory tests [4, 6]. It has been established that the presence of even slight renal dysfunction in patients with type 2 diabetes mellitus can be diagnosed using laboratory tests [2, 7].

Keywords: laboratory parameters, diabetic nephropathy, type 2 diabetes mellitus, monitoring, forecasting.

Introduction

The World Health Organization has officially recognized diabetes as an incurable disease at the current level of medical science and clinical practice, imposing a fee on the patient for a responsible attitude towards their health [2, 5]. Diabetic nephropathy in diabetes mellitus is characterized by damage to the arteries, arterioles, glomeruli and tubules of the kidneys, resulting from disturbances in the metabolism of carbohydrates and lipids [2, 8]. It is customary to distinguish three stages of diabetic nephropathy: the stage of microalbuminuria; the stage of proteinuria with preserved renal function and the stage of chronic renal failure [1, 10]. And only at the stage of microalbuminuria is it possible to prevent progression [1, 4].

The frequency of detection of diabetic nephropathy is closely dependent on the duration of diabetes mellitus; this dependence has been better studied in type 1 diabetes mellitus (insulin-dependent), due to a more accurate definition of the onset [1, 3]. The formation of kidney damage in diabetes mellitus and the development of diabetic nephropathy is a continuously progressive multifactorial process, among the pathogenetic theories of which metabolic, hemodynamic and genetic are recognized as significant [2, 9].



Purpose of the Study:

to evaluate the course of nephropathy in diabetes mellitus using laboratory parameters.

Materials and Methods of Research

The study was carried out on the basis of the Samarkand Regional Multidisciplinary Hospital, Nephrology Department. To achieve this goal, a retrospective study was conducted from the patients' charts.

The number of patients with nephropathy in diabetes mellitus is 20. Of these, 12 (60%) are men, 8 (40%) are women. Average age 59.5. All patients were examined: general clinical blood test, biochemical blood test, test for hepatitis B, C, D. Based on the presence of functional signs of kidney damage, 2 groups of patients were formed: group 1 – control group, patients without changes in functional markers of kidney damage - 20 patients (10 men and 10 women, average age 55.8); group 2 – patients with changes in functional markers of kidney damage - 20 patients (12 men and 8 women, average age 59.5).

The analyzes were carried out on the following analyzers: general blood test - "DIRUI BCC-3600", biochemical tests - "Mindray BS -120", general urine analysis on the analyzer "Mindray UA -66", enzyme immunoassay - "Mindray -96".

Research Results and Discussion

The distribution of patients by age showed that 65% were in the age group of 50-60 years. There were 12 men (60%), 8 women (40%).

The main group included 20 patients with different courses of nephropathy. During a clinical and laboratory examination, it turned out that in a general blood test, the erythrocyte sedimentation rate in 18 (90%) patients was sharply increased. The number of red blood cells is sharp decreased in 17 patients (85%), which is probably due to a decrease in the production of erythropoietin by the kidneys due to chronic kidney damage. The concentration of hemoglobin in the peripheral blood and color index were also reduced in all patients, which is associated with the redistribution and increased consumption of iron from the depot. This shows that patients have hypochromic anemia.

When studying the biochemical parameters of patients' serum, it was found that creatinine and urea were sharply increased in 18 (90%) patients, due to a decrease in the nitrogen excretory function of the kidneys. Total protein was reduced in 15 (75%) patients and cholesterol levels were increased in all patients.

A general urine test revealed protein in high concentrations in 16 (80%) patients, white blood cells (WBC) in 7 (35%) patients, and red blood cells (RBC) in 8 (40%) patients in insignificant quantities.

Conclusions

From the above, we can conclude that in many patients in the main group, nephropathy is complicated by end-stage chronic renal failure and uremia is detected in the blood of these patients, which requires certain therapeutic measures in order to improve the condition.

An increase in protein levels in the urine to high levels is observed in all patients. This indicates that in many patients the glomerular endothelium is severely damaged.



Dispensary observation of patients with diabetes mellitus should include determination of indicators of a general blood count, a biochemical blood test (determination of creatinine, urea, total protein, cholesterol and low- and high-density lipoproteins, glucose, glycated hemoglobin), a general urine test (mandatory determination of microalbumin) , in order to prevent various complications.

Thus, studies show that using laboratory research methods it is possible to assess the level of renal damage, monitor and predict the condition of a patient with nephropathy in diabetes mellitus.

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