

Introduction

According to the literature, cryoglobulinemic vasculitis (CGV) in every third observation is accompanied by renal disease, wherein the cryoglobulins in the blood serum are detected in 50-60% of patients and carriage of hepatitis C virus (HCV) - in 15%. Criteria for of diagnostics and predicting the course of renal pathology at CGW, assessment of the nature of its manifestations, the relationship with extrarenal signs and issues of pathogenesis of such nephropathy remain insufficiently studied that became the purpose and objectives of this study.

Materials and methods

The study included 95 patients with CGV (40% of men and 60% of women at an average age of 52 years). At the time of examination cryoglobulins in the blood were found in 97% of cases. Moderate and high degree of activity CGV took place in 35% and 58% of cases, acute or subacute course of the disease was ascertained in 39% of cases. 34% of men and 26% of women were the carriers of HCV. Hypertension (level of the average pressure exceeds 115 mm Hg) was diagnosed in 65% of patients. Renal ultrasound was performed on the unit «Envisor-Philips» (Netherlands). To evaluate laboratory parameters analyzers «BS-200" (China) and «Olympus-AU640» (Japan), reader «PR2100-Sanofi diagnostic pasteur» (France), immunoblot «Euroline-Euroimmun» (Germany) were used. The index of progression of nephropathy (iPN) was determined by the formula: $iPN = (1 + S^2) : Q$, where S - the stage of chronic kidney disease, Q - the duration of the disease. Indices of severity of heart (iWH) and blood vessels (iWV) damage were calculated by the formula: $iWH (iWV) = \Sigma N : n$, where ΣN - the number of changed signs, n - the total number of the studied signs. Parameters of creatinine, urea, uric acid, nitrites, fibronectin, β 2-microglobulin, immunoglobulin (Ig) A, G and M, circulating immune complexes and rheumatoid factor were studied in blood serum and / or urine. Interfacial tensiometry of urine was conducted using computer devices «ADSA-Toronto» (Germany-Canada) and «PAT2-Sinterface» (Germany). The surface viscosity, elasticity, relaxation, tension and module of viscoelasticity of urine were studied. Nephrobiopsy was made in 4 patients on the background of ataralgesia under the control of kidneys ultrasound (used technique «True-Cut» with the use of high-speed gun «Biopty-Bard»). Histological sections were stained with hematoxylin-eosin, Van Gieson, PAS-reaction, silver impregnation of Jones Maury were performed. Immunohistochemical study was performed using polyclonal antibodies to IgA, IgG, IgM, C1q, C3 fractions of complement (DAKO, Denmark). Microscopic examination was performed on the microscope "Olympus-BX40» (Japan) with digital camera "Olympus-C3030-ADU», software «Olympus DP-Soft». The morphometric study with counting the cells was conducted by the morphological program of analysis «AnalySIS-Pro-3.2» (Company «SoftImaging», Germany) using microscope «Olympus-AX70» (Japan) with a digital video camera «Olympus-DP50».

Results

Renal involvement was diagnosed in 67% of patients with CGV that inferior by frequency only to cutaneous syndrome, was interrelated with the presence of pathology of myocardial, joints, lungs and peripheral nervous system, with the severity of integral extrarenal signs of the disease, and renal failure was diagnosed in 48% of cases (an average glomerular filtration rate in patients with nephropathy were 19% less), nephrotic syndrome – in 17%, sonographic changes of the kidneys – in 69%. Proteinuria was found in 97% of cases, microhematuria – in 80%, cylindruria – in 69%, leucocyturia – in 8%. Reduction of corticomedullary differentiation was found in 17% of the total studied patients, thinning of renal parenchyma - in 15%, increase its echogenicity – in 12%, renal cystosis – in 10%, nephrocalcinosis – in 5%. iPN was $1,21 \pm 0,273$ ru. Morphological lesion of glomeruli, tubules and stroma of the kidneys resembled primary mesangioproliferative or mesangiocapillary glomerulonephritis with severe tubulointerstitial component, deposition of IgA and IgG, and C1q-C3- components of complement in the renal structures with lymphohistiocytic infiltration, fibrinoid swelling and necrosis of the vascular wall, at this renal function and the rate of progression of nephropathy determine the levels of high molecular weight proteins in the urine (fibronectin, β 2-microglobulin) and nitrogen products (uric acid, urea, nitrites), as well as physicochemical surface-active properties of urine (viscosity, elasticity, tension, relaxation, viscoelasticity module). According to the analysis of variance the duration of the disease, disorder of electrical conduction of the heart, the contents of rheumatoid factor IgG, and circulating immune complexes in serum affect the development and nature of renal pathology at CGV, but not the level of cryoglobulinemia and HCV carriage. IgM concentration in the blood has significant exposure to the glomerular filtration rate estimated by Cockcroft-Gault, with which there is an inverse correlation. It was established that prognostically negative indicators for renal function is the surface viscosity of urine less than 6 mN/m, and for the pace of progression of nephropathy - the surface tension of urine more than 49 mN/m.

Conclusions

Renal involvement at CGV refers to the most common clinical signs of the disease, that proceeds in the form of primary chronic mesangiocapillary or mesangioproliferative glomerulonephritis with severe tubulointerstitial component, but immune complex mechanism involved in its pathogenetic constructions, and there is an interrelation with the pathology of the heart (myocardium), lung and peripheral nervous system.