Almost all chronic kidney disease in varying degrees, are associated with disorders of the internal environment, mainly autoimmune nature. Drug therapy is not always effective and can lead to additional disorders. Pathogenetically justified is the use of plasmapheresis.

**Key words:** kidney diseases, autoimmunity, plasmapheresis.

Practically all **chronic kidneys diseases** are in a varying degree connected with structure of the internal environment of an organism disorders, mainly the autoimmune nature. And, mechanisms of these disturbances are the most various.

So, the **glomerulonephritis** most often is a serious complication of a streptococcal infection when toxins on the way of removal distort antigenic structure of cells of the glomerular membrane of kidneys and provoke formation of autoantibodies which are fixed on a basal membrane of a nephron with irreversible and progressing lesion of the last. Similarity of such succession of events observed at a rheumatic disease, is confirmed by the fact that in 25% of cases the glomerulonephritis is really combined with a rheumatic disease.

Considering the autoimmune nature of a disease, here expediently whenever possible earlier carrying out a plasmapheresis – since the first signs of its emergence [Haris A. et al., 2011] though often resort to a plasmapheresis only at steroid-resistant forms of a glomerulonephritis [Ginsburg D.S., Dau P., 1997; Couzi L. et al., 2004]. However steroid therapy is followed by many complications and in hard cases of its opportunity are limited [Müller-Deile J. et al., 2015].

The retrospective analysis of results of treatment of 48 children with idiopathic quickly progressing glomerulonephritis, and also a kidney or not kidney vasculitis, subjected to plasmapheresis courses against the background of the previous ineffective treatment by corticosteroids and cytostatics, showed the considerable improving of function of kidneys at 58% patients and lasting positive effect at all patients from vasculitis [Madore F., 2002; Walters G.D. et al., 2010; Beweja S. et al., 2011; Walsh M. et al., 2011]. And, D.G.Jayne et al. (2007) marked considerably bigger efficiency of a plasmapheresis in comparison with hormonal therapy.

The same results were achieved by Yu.V.Komyagin and Yu.S.Milovanov (2000) at 18 patients with quickly progressing glomerulonephritis against the background of a systemic lupus erythematosus, a hemorrhagic vasculitis, Wegener's granulomatosis and microscopic polyarteritis by means of courses from 5-10 procedures of a plasmapheresis with removal a session of 1,5-2 l of plasma. It has allowed to stabilize
or improve the course of kidney process and to increase survival of patients. Of course, it is necessary to consider what glomerulonephritis, as well as any other autoimmune pathology, finally it is impossible to cure and systematic carrying out courses of a plasmapheresis throughout all life is required. In cases of interruption of such treatment patients inevitably become dialysis-dependent or demand transplantation.

Glomerulonephritis can arise also against the background of pregnancy and the plasmapheresis together with high doses of steroids has allowed to stop in 3 months signs of a disease [Adnan M.M. et al., 2015].

Switching on of a plasma exchange in case of treatment of a glomerulonephritis against the background of a nephrotic syndrome is especially indicated [Shelukhin V. A., Kostyuchenko A.L., 2003]. G.E. Russo et al. (2000) applied at the same time technique of the cascade plasma filtration cycles on 3 sessions with introduction after the last Prednisolonum (300 mg/kg) and repetition of such courses monthly within half a year that allowed to reduce considerably a level of a proteinuria and with permanent kidney function improving.

T. Kobayashi and coworkers. (2006) described a case when at treatment by steroids of a nephrotic syndrome at the patient who had hepatitis B the liver failure developed. In the subsequent the cascade plasma exchange in the form of monotherapy prior to 9 sessions was applied that led to depression of level of a proteinuria from 9,2 g/day to 0,2 g/day and such state kept also in 12 months.

Nevertheless, only timely removal of antibodies is capable to prevent or, at least, to reduce the degree of organic damages of kidneys parenchyma. The same tactics is justified also at the subsequent aggravations, even at already arisen signs of a renal failure, for a slowing of prospect of transition to a chronic hemodialysis.

So, P.A.Vorobyov and B.A. Aynakevka (1997) have reported about use of a plasmapheresis at 10 patients in a conservative phase of a chronic renal failure when the glomerular filtration is still kept at the level of 10-15 ml / (min • m²). As indications were symptoms of uraemic intoxication (weakness, nausea), a skin itch, arterial hypertension. After a course of 5 sessions of a plasmapheresis noted prompt improvement of health with a lowering of arterial pressure, disappearance of an itch, decrease in level of creatinine and urea, increase in a glomerular filtration. In such cases the plasmapheresis allowed to remove the moment of a chronic hemodialysis beginning.

But even at full loss of kidneys function, the hemodialysis isn't able to provide removal of all pathological substances, especially molecules weighing over 1000 dalton, i.e. average size molecules which don't pass through the known dialysis membranes, but cause a number of metabolic by-products among which the skin itch most of all disturbs patients. In a varying degree expressed it occurs at 60-90% of patients during a hemodialysis. In its pathogenesis there are a lot of metabolic factors – a hypercalcemia, a hyperphosphatemia, a hypermagnesemia, secondary hyperparathyroidemia. But even
without such metabolic deteriorations the skin itch considerably interrupts day activity and a night sleep [Inui S., 2015; Moledina D.G., Perry Wilson F., 2015].

In such cases, obviously, the hemodialysis is simply not able to remove rather fully all pathological products of the broken metabolism and periodic addition of sessions of a plasmapheresis can improve quality of life of these patients considerably. In particular, at an acute renal failure against the background of a glomerulonephritis plasmapheresis in combination with a hemodialysis promoted faster stopping of clinical implications and achievement of permanent remission [Zverev D.V. et al., 2002]. Also "tandem method" of simultaneous carrying out a plasmapheresis and a hemodialysis is used. At the same time the blood passes through the plasma filter in the beginning, and then through a dialyzer [Dechmann-Sultemeyer T. et al., 2009]. At a chronic hemodialysis quite often develops the anemia at which administrations of erythropoetin and iron preparations (sorbifer) not always helped. In such cases periodic carrying out a plasmapheresis promoted stabilization of a hemoglobin level and enlarged intervals between infusions of the packed red cells up to 6 months [Petrova V.I. et al., 2012].

In essence, even at any other type of a kidney parenchyma damages (the nephrosis or nephrites exo- or endotoxic genesis, lupus nephritis) therapeutic apheresis is able to prevent or reduce the severity of the arisen pathology [Loo C.Y. et al., 2010]. And at a number of acute diseases – poisonings, burns, severe injuries, a crush syndrome, etc., timely removal of pathological products is capable to prevent organic damages of kidneys and will allow to avoid need of the subsequent hemodialyses [Popov A. S., 2011].

Of course, not any acute renal pathology passes in chronic, but in advance it is almost impossible to prognosticate such situation therefore even preventive holding in general absolutely safe procedure of a plasmapheresis is represented justified, and even at children's age. Especially, if to consider that neither the age, nor body weight frame any additional restrictions for a membranous plasmapheresis.

**IgA nephropathy** or Berger's disease is the form of a glomerulonephritis, most widespread in the world, and, at the same time, the leading reason of a terminal renal failure [Monteiro R.C., 2005; Wieliczko M., Dylewska M., 2016]. Its etiology includes increase of production of polymeric A1 immunoglobulin in structure with carbohydrate chains. The increasing quantity of the circulating immune complexes is deposited in a glomerular mesangium with development of an immune inflammation [Lechner S.M. et al., 2015; Raska M. et al., 2016]. Its treatment is not full effective. Usually it includes control of arterial hypertension and a proteinuria and steroid therapy [Tomino Y., 2016]. Use of a cyclosporine A yes a cyclophosphamide is limited and limited to their rather high toxicity [Ulinski T., Aoun B., 2012]. At the steroid resistant forms of a disease it is applied mycophenolate mofetil including at children, but its application is limited at tubular atrophic / interstitial fibrosis with the kidneys dysfunction [Kang Z. et al., 2015].
Therefore in cases of resistance to treatment and quickly progressing the plasmapheresis courses can be used also [Chaudhary K. et al., 2008; Wen Y.K., Wen K.I., 2013; Greenhall G.H., Salama A.D., 2015]. The IgA nephropathy can be followed by also pulmonary bleedings, and the plasmapheresis helps to cope them also, including at children [Ke C.L. et al., 2012; Saad M. et al., 2015; Yim D.K. et al., 2015].

Kidneys are a target organ at the most different types of autoimmune diseases, especially such as system lupus erythematosus (lupus nephritis), Goodpaster's syndrome, Henoch-Schönlein purpura, Wegener's granulomatosis, polyarteritis nodosa at which vasculitis is an important component of their pathogenesis. And application of a plasmapheresis here is justified also [Dalpiaz A. et al., 2015].

The polyarteritis nodosa representing a generalized autoimmune necrotizing inflammation of an endothelium and the average layer of small arteries as a result of the antigen-antibody reactions is most widespread. The formed granulomatosis at the same time sometimes is called "a rash at the level of vessels". The clinical picture depends on a primary lesion of any organ of an abdominal or thoracic cavity, a brain, extremities. Renal arteries at the same time are aneurysmal expanded, with the clotting and gaps leading to kidneys infarcts and hemorrhages.

At other form of a disease – a "microscopic" polyarteritis – generally small arteries are destroyed with a development of a necrotizing glomerulonephritis. Development and an amyloidosis of kidneys with a proteinuria and a renal failure is possible [Yorioka N. et al., 1999]. In treatment of this disease, along with steroid therapy, also the plasmapheresis was used [Guillevin L. et al., 1993; Chen K.R., Carlson J.A., 2008], especially, if to consider that high doses of glucocorticoids in 80% of cases are followed by appreciable toxicity [Lugmani R.A., 2014].

Kind of a granulomatosis angiitis is Wegener's granulomatosis with severe damages of both lungs, and kidneys, ulcers of mouth and nose. It is possible involvement of a nervous system, skin, muscles and even heart also. Rather sensitive and specific markers of this illness, as well as a "microscopical" polyangiitis" (Horton's disease), is detection of anti-neutrophilic cytoplasmatic autoantibodies (ANCA), especially in the period of an exacerbation. Immunosuppressive therapy considerably reduces a lethality at patients with a systemic vasculitis, but the morbidity remains rather high because of frequent exacerbations and even iatrogenic complications including infectious [Kyndt X. et al., 1999; Walsh M. et al., 2013].

Development of the rapidly progressing glomerulonephritis and diffusion alveolar hemorrhage are indications to a plasma exchange [Shelukhin V. A., Kostyuchenko A. L., 2003; De Groot K., Reinhold-Keller E., 2009; Omori K. et al., 2009; Picard C. et al., 2009; Wang C.C. et al., 2009; Al Abshashe A. A. et al., 2010; Bolton W.K., 2010; PetterssonT., Karjalainen A., 2010; Villiger P.M., Guillevin L., 2010; Walters
G.D. et al., 2010; Balogun R.A. et al., 2011; Casian A. et al., 2011; Walsh M. et al., 2011; Gregersen J.W. et al. 2012; Ozaki S. et al., 2012; Sinico R.A. et al., 2013; Sugiyama K. et al., 2013; de Joode A.A. et al., 2014; Lugmani R.A., 2014; Pendergraft W.F. et al., 2014; Dhaun N. et al., 2015; Szabó M.Z. et al., 2015; Wilde B. et al., 2015]. Use of a plasma exchange reduces need of carrying out dialysis by 40-60% [Lugmani R.A., 2014; Walters G., 2016]. In such cases also the cascade plasma filtration was applied [Iwatani H. et al., 2004; Isoda K. et al., 2010]. Transplantation of a kidney at such patients is possible only after decrease of an ANCA titre.

**Goodpasture's syndrome** – the hyperergic angiitis proceeding also in the form of a pulmonary and renal syndrome. This autoimmune disease is characterized by infiltration of a pulmonary tissue with bleedings and a hemoptysis, besides, autoantibodies damage of a glomerular basal membrane of kidneys with a hematuria, anemia and development of a glomerulonephritis. The forecast at this disease bad – a mortality within 6 months from the beginning of a disease makes about 21% [Hirayama K. et al., 2009]. Successful treatment by repeated sessions of a plasmapheresis with involution of the disorders confirmed clinically and also data of laboratory and X-ray inspections is described [Delogu L.G. et al., 2011; Lin Y. et al., 2009; Risso J.A. et al., 2009; Cigarrán S. et al., 2010; Pérez-Suárez G. et al., 2010; Jiao L.P. et al., 2012; Connor J.P. et al. 2014; Moog P., Thuermel K., 2015].

The plasmapheresis at patients with hemorrhagic vasculitis leads to normalization of coagulative potential, increase of activity of an antithrombin III, decrease of maintenance of products of paracoagulation, acceleration of a fibrinolysis, normalization of thrombocytes aggregation ability. Level of the circulating immune complexes, IgA and IgE decreases also. It is followed also by clinical signs of retrogress of vascular disorders [Marsagishvili M. A., etc., 1999]. Antibodies to a glomerular basal membrane and IgG can be lowered significantly by 24% by means of a cascade plasma exchange. The subsequent its sessions lead to their depression to 52%, 57% and 60% [Hajime N. et al., 2009]. In Great Britain Goodpasture's syndrome is the direct indication for a plasmapheresis [Thompson G.R., 2013]. Moreover, the plasmapheresis results in success and without the accompanying immunosuppressive therapy, especially at contraindications to it [Shiferaw B. et al., 2016].

**Lupus nephritis** is the irreversible progressing glomerules damage from what, generally and perish in case of this disease. Frequency of its development in patients with SLE makes 60-70%. Glomerules are damaged of anti-nuclear (anti-DNA) autoantibodies which collect in walls of capillaries and in a mesangium [Seery J.P. et al., 1997]. Massive collection of immune complexes in kidneys vessels can develop also without the phenomena of the active glomerular damages [Takazoe K. et al., 1997]. Lupus nephritis can develop and at children also [Szymanik-Grzelak H. et al., 2016].
Nevertheless, therapeutic apheresis (against the background of, of course, hormonal and cytostatic therapy) plasmapheresis courses to two in a year allows to slow down progressing for the long period and even to keep efficiency of patients [Sekine A. et al., 2015]. Also tactics of three consecutive daily sessions of a plasmapheresis (for the purpose of intra- and the extravascular antibodies removal), with three consecutive intravenous "pulses" of a cyclophosphamide (400 mg/ m² x 3), then prednisolone with transition to its supporting doses is used [Dyomin A. A. et al., 1996; Yamaji K. et al., 2008]. Special danger at such patients causes the necessity of of a kidney transplantation when the risk of the thrombotic vasculopathy is especially high. In such cases the plasmapheresis is also expedient [Choi J.Y. et al., 2016]. At a combination of lupus nephritis to a thrombotic microangiopathy the most severe damage of kidneys is observed and the plasmapheresis is especially expedient in such cases [Li Q.Y. et al., 2016].

At lupus nephritis the greatest efficiency was reached at the plasma leukocytapheresis leading to reduction of hypostases and anasarca, to a lowering of arterial pressure and intoxication against the background of decrease in contents T-helpers and increase in concentration T-suppressors [Vlasenko A. N., 2003; Shelukhin V. A., Kostyuchenko A. L., 2003].

The striking effect has been gained also at application of a course of the cascade plasma exchange (7 sessions in 2 weeks) which has led to total disappearance of a proteinuria [Agishi T. et al., 2000]. Nevertheless, C.Y. Loo et al. (2010) consider, as immunoadsorption and a plasmapheresis are equally effective at lupus nephritis.

In recent years actively began to use also inhibitors of a calcineurin (tacrolimus) [Yoon K.H., 2010], however it is necessary to consider also negative consequences of its application, mainly nephrotoxicity [Hesselink D.A., et al., 2010] that is especially dangerous at high risk of development of lupus nephritis.

The cryoglobulinemia is characterized by emergence in circulation the precipitated cryoglobulins on cold of with their deposits in small vessels walls including kidneys (capillaries, arterioles and venules) and symptoms of a systemic vasculitis that promotes development and a glomerulonephritis [Ferri C., 2008].

The plasmapheresis plays an important role in treatment of a cryoglobulinemia [Dominguez J.H., Sha E., 2002; Scarpatto S. et al., 2007; Cocoub P., 2015; Giuggioli D. et al., 2015; Michaud M. et al., 2015; Blank N., Lorenz H.M., 2016], especially in cases of inefficiency of other methods of correction [Pietrogrande M. et al., 2011]. The technology of a cascade plasma filtration with success is used also [Valbonesi M. et al., 2001; Strunk J. et al., 2002]. At this A.Ramunni et al. (2008) have held 30 sessions of a cascade plasma filtration in 6 months and have achieved not only full healing of the trophic ulcers which have arisen because of a cryoglobulinemia but also considerable reduction of number of HCV RNA in blood.
**Paraproteinemic hemoblastosis** – the group of diseases which is characterized by monoclonal proliferation of B-lymphocytes, the immunoglobulins secreting [Ansell S.M. et al., 2010]. First of all the myeloma and Waldenström's macroglobulinemia concern to them. At the same time the nephropathy develops also. Method of the choice are plasmapheresis courses – daily before stabilization of controlled indicators (the total protein, viscosity of blood), in the subsequent – repeated procedures 1-2 times a week at preservation of a hyper viscose syndrome [Zarkovic M., Kwan H.C., 2003; Varlamova S. V., etc., 2006, 2013; Stone M.J., 2009, 2012; Treon S.P., 2009; Stone M.J., Bogen S.A., 2013; Adam Z. et al., 2014; Woiniak K., 2015].

**Myeloma cast nephropaty** develops owing to deposite in kidney tubules of free light chains (M-protein) with the progressing renal failure that defines the indications to a plasma exchange approved and the International Myeloma Foundation [Durie B.G. et al., 2003; Clark W.F. et al., 2005; El-Achkar T.M. et al., 2005; Cserti C. et al., 2007; Kleeberg L. et al., 2009; Gupta D. et al., 2010; Santos R. et al., 2011; Chapdelaine I., Madore F., 2013; 2015; Santos T. et al., 2015].

B.T.Ciccarelli et al. (2009) noticed that if rituximab caused raising of maintenance of IgM from 3515 to 5270 mg/dl, then the plasmapheresis promoted its depression from 6940 to 4770 mg/dl. Disturbances of microcirculation of an eye retina at Waldenström's disease can also be stopped by means of a plasmapheresis [Menke M.N. et al., 2008].

S.M.Ansell et al. (2010) consider that all patients with symptoms of the increased viscosity of a blood have to be subjected first of all to treatment with a plasmapheresis.

Deposits of an amyloid in intercellular spaces are frequent that is followed also by a picture of a kidneys amyloidosis. Short chains of an amyloid can be deposited in kidneys at lambda myeloma [Kozlowski P. et al., 2017]. The nephrotic syndrome with the progressing suppression of functions of kidneys is characteristic also of a gelsolin amyloidosis [Sethi S. et al., 2017]. Amyloidosis of kidneys can accompany a current and Crohn's disease [Steinhoff J. et al., 1988]. As it is paradoxical, but amyloidosis can develop against the background of a chronic hemodialysis as at the same time in blood level a beta-2 microglobulins which is perfectly metabolized by healthy kidneys increases, but against the background of lack of such opportunity dialysis membranes don't promote their removal and there is its accumulation appeared [Ameer G.A. et al., 2001; Grovender E.A. et al., 2004].

It is necessary to notice that there are no agents who could dissolve directly the amyloid deposits which are collected in tissues and any advantages of medicinal therapy, in comparison with a plasmapheresis, it is noted. It is represented to us, as at such form of "illnesses of accumulation" as an amyloidosis, therapeutic apheresis can provide elimination of these pathological products and smooth, thereby, clinical signs of
Focal segmental glomerulosclerosis results to a serious steroid resistant nephrotic syndrome with the expressed proteinuria [Cameron J.S., 2003; Bagga A. et al., 2007; McCarthy T. et al., 2010; D'Agati V.D. et al., 2011]. The plasmapheresis can reduce a proteinuria, up to its complete remission [Garcia C.D. et al., 2006; Haris A. et al., 2011]. Quite often it recurs also after renal transplantation [Keith D.S., 2010]. In such cases the plasmapheresis was carried out for a long time (up to 133 sessions within 35 months) weekly, before the next introduction of a retuximab [Passerini P. et al., 2009; Rodriguez-Ferrero M. et al., 2009; Gonzalez E. et al., 2011; Gundor O. et al., 2011; Vlachopoulos G. et al., 2015]. The plasmapheresis which is carried out before transplantation of a kidney for the purpose of deleting antibodies helped to reduce the frequency of a recurrence to 26% against 54% in a check group [Bosch T., Wendler T., 2001; Gohh R.Y. et al., 2005].

Thrombotic microangiopathy (TMA) is a serious complication of the trombotic thromboticytopenic purpura (TTP), as well as the hemolytic uremic syndrome (HUS) developing because of a microvessels thrombing of platelet microaggerates. At the same time system and kidney microvessels with development of both an anury, and encephalopathy with injury and other vitals are damaged [Coppo P. et al., 2002, 2009; Barrientos G.L., Michelangelo H., 2006]. The role of a complement of C5 activation is possible also and the methods of release of a complement inhibitor – anti-C5 monoclonal antibodies is now developed [Davin J.C., van de Kar N.C., 2015] though efficiency and intensive courses of a plasmapheresis is shown also [Barrientos G.L., Michelangelo H., 2006; Nakanishi T. et al., 2014; Scenkman B., Einav Y., 2014; Sun L. et al., 2014; Mariotte E., Veyradier A., 2015; Woniak K et al., 2015; Esmaili H. et al., 2016]. TMA case with the phenomena of a acute renal failure against the background of an anti-phospholipid syndrome with a favorable outcome after a plasmapheresis with immunosupression is described [Sharma R.K. et al. 2011].

Membranous nephropathy (fibrillary glomerulonephritis) is the most frequent reason of an idiopathic nephrotic syndrome [Glassoks P.J., 2003], often leading to development of a chronic renal failure, despite the carried-out immunosuppressive therapy [Perna A. et al., 2004; Cheugpasitporn W. et al., 2016]. Carrying out three courses of a plasmapheresis on 5-6 sessions each 3-5 months allowed to lower proteinuria degree from 7 g to 1 g a day [Pliquett R.U. et al., 2012].

The lesion of kidneys occurs at an amyloidosis, a sarcoidosis, a psoriasis, gout [Henvels J. et al., 1999; Scarpato S. et al., 2007]. Most it is possible to tell also about a
viral hepatitis C at which the renal failure demanding a hemodialysis can develop [Cao H. et al., 2013]. Hepatitis B can also lead to development of a secondary membranous nephropathy at which the plasmapheresis renders clinical effect [Tan Z. et al., 2014; Balwani M.R. et al., 2016]. Therefore in all these cases the plasmapheresis is pathogeneticaly justified method of treatment and prophylaxis of advance of kidneys lesions [Shelukhin V. A., Kostyuchenko A. L., 2003; Scarpato S. et al., 2007; Sinico R.A. et al., 2013]. And it is valid, use of a plasmapheresis against the background of immunodepressants allows to stabilize quicker function of kidneys with the termination of advance of a renal failure [Komyagin Yu. V. et al., 2002; Narayanan M. et al, 2014].

Kidneys suffer also at a number of infectious diseases. In particular, the combination of the hemorrhagic fever caused hantavirus to a kidney syndrome is frequent. At the same time the acute renal failure develops on the second week of a disease when IgM-antibodies to "no-Goodpaster's-antigene" of a kidney glomerular membrane come to light [Billheden J. et al., 1997]. Development of a hemorrhagic syndrome against the background of infectious and toxic shock is characteristic [Rabinovich V. I. et al., 2003]. When using a plasmapheresis in volume of 0,9 CPV with partial replacement with fresh frozen donor plasma the best results are achieved, than at the isolated dialysis therapy [Matveeva I. B. et al., 2005]. Positive results are provided also by carrying out a plasmapheresis before a hemodialysis [Rabinovich V.I. et al., 2007].

Kidneys suffer also and at a diabetes mellitus – the diabetic nephropathy is the leading reason of development of a chronic renal failure. The diabetic nephropathy came to one of the first places among the reasons of a terminal renal failure which demands a hemodialysis from 40-45% of patients [Bergrem H., Leivestad T., 2001; Pérez Garcia R. et al., 2001; Patschan D., Müller G.A., 2016]. Such need usually arises in 15-16 years of a course of a disease [Rychlik I., 2008; Gazzaz Z.J. et al., 2010]. Patients with a diabetes mellitus of the first type in Europe and the USA now about a half among subjected to a hemodialysis [Sura V.V., et al., 1995]. Direct toxicity of the increased concentration of a glucose for structures of a nephron with the accompanying disturbances of lipid metabolism (deposits of lipids in kidneys are frequent) and the subsequent sclerotic changes of cells of a mesangium, together with deposits of the circulating immune complexes, are the cornerstone of lesions of a renal parenchyma at diabetes.

In a pathogenesis of a diabetic kidneys lesion the oxidative stress with accumulation of intracellular active oxygen in a vessels mesangium matters also [Aghadavod E. et al., 2016]. If for a diabetes mellitus of the type 1 the immunocomplex glomerulonephritis, then for Diabetum of the type 2 – atherosclerotic nephro-angiosclerosis is characteristic. In recent years paid attention to a role of "a vascular endothelial growth factor" as the multipurpose cytokine known also as a factor of vascular permeability, in
development of micro- and macrovascular complications at diabetes and, in particular, at diabetic retino- and nephropathy [Cooper M.E. et al., 1999; Gupta R., Misra A., 2016].

Owing to increasing of vessels permeability at a nephropathy the earliest signal of such pathology appearance is detection of a microalbuminuria (concentration - 30-200 mg/l, or an excretion with a rate of 20-200 mkg/min.) that can be detected at 29-41% of diabetics lasting illness more than 5-7 years [Mattock M.B. et al., 1998]. 70% of diabetics with a microalbuminuria had also arterial hypertension that strengthens this communication of diabetic nephropathy. In the USA, except 1 million patients with a diabetes mellitus of the type 1 and 13 million patients with a diabetes mellitus of the type 2, there are about 6 million more people at whom this form of diabetes remains not diagnosed. It occurs owing to still not adjusted screening diagnostics of the microalbuminuria preceding a proteinuria therefore its measurement radio by the immune or immunoenzymatic methods capable to measure the levels of 30-200 mg/l is advisable [Sheth J.J., 1999]. It must be assumed that and in our country the situation is far not in the best way also.

Treatment of a diabetic nephropathy is based generally on control of levels of glucose and arterial pressure and there is practically no specific therapy capable to stop a progression of a kidneys lesion [Lacava V. et al., 2017]. Therefore in all these cases the plasmapheresis is pathogenetically only a justified method of treatment and prophylaxis of advance of kidneys lesions [Ahuja T.S. et al, 1998; Shelukhin V. A., Kostyuchenko A. L., 2003]. And it is valid, use of a plasmapheresis against the background of immunodepressants allows to stabilize function of kidneys quicker with the termination of advance of a renal failure [Komyagin Yu.V., et al., 2002]. At the same time, removing of very massive volumes of plasma – to 2-2,5 l (1 CPV), 3 such sessions in the beginning every other day, then 2-3 sessions every 2 week often is required [Milovanov Yu.S., 2006]. In cases of a recurrence of IgA-nephropathy after the kidney transplantation early and intensive plasma exchange is capable to stop this process also [Ponticelli C., Glassock R.J., 2010; Otsuka Y. et al. 2014]. There is confirmed indirectly results of its use at development of a diabetic angiopathy with a syndrome of "diabetic foot" an efficiency of a plasma exchange [Agishi T. et al., 2000; Klingel R. et al., 2003] that was confirmed on our own experience also [Voynov A.V., et al., 2003; 2012].

It is necessary to consider also that with age the risk of development of lesions of the kidneys bound to disorders of a biochemical and immune homeostasis is enlarged. In particular, the number of patients, the suffering metabolic syndrome with disorders of lipide metabolism, arterial hypertension and a diabetes mellitus 2 types increases. On the other hand, there are vascular disorders developing owing to an atherosclerosis with narrowing of vessels lumens including renal which also not always respond in to
medicamental therapy and operations of shunting or stenting of coronary vessels can't be used for correction of renal vessels.

With age also the autoimmune deteriorations which are followed by system damages of various organs including kidneys accrue. Especially it concerns different types of the system vasculitis mentioning and kidneys vessels. Emergence of signs of a paraproteinemia with accumulation of monoclonal M-components of the immunoglobulins reminding now a myeloma is characteristic of senile age. Contents and cryoglobulins increases. All this substantially breaks microcirculation including at the level of kidneys globules.

At the same time there is an accumulation of many pathological products which size of molecules won't be allowed them to pass through a kidney, the liver doesn't destroy them. On the other hand, the fact of their accumulation specify on that, as no medicines are able to help with their removal from an organism.

The most widespread tactics of autoimmune diseases treatment is based on two-component medicamentous therapy – corticosteroids and cytostatics. They are designed to detain reproduction of clones the autoreactive T- and B-lymphocytes. In essence, immunosuppressive therapy fills the reduced T-suppressor function.

However such therapy isn't deprived of a large number of side effects. Corticosteroids lead to a cushingoid syndrome. Glucocorticoids, in particular, are diabetogenic hormones owing to suppression of glucose consumption by them of tissues and increases in its production by liver.

Other complication of long glucocorticoid therapy is the osteoporosis. It is considered that these hormones inhibit proliferation and differentiation of osteoblasts, stimulate their apoptosis. There is also an indirect mechanism of a resorption of bones as a result of a secondary hyperparathyreosis owing to depression of adsorption of a calcium in an intestine.

Cytostatics lead to essential disorders of a metabolism including healthy organs and systems.

Often intravenous administration of high doses of the immunoglobulins leading to considerable decrease in maintenance of pathological autoantibodies and inhibitors began to be used, and this effect exceeds the period of life of these immunoglobulins that specify more essential regulatory correction of pathological autoimmune processes in an organism of patients.

However at intensive intravenous administration of immunoglobulins there is described also larger number of complications. Most often described the facts of infection of patients with viruses of hepatitis G [Berger A. et al., 1997; Lefrère J.J. et al., 1997; Vento S. et al., 1997]. It is possible also a development of an acute renal failure after such immunoglobulin therapy [Ahsan N., 1996]. Besides, there are described also such serious complications as vasculitis and a lupus owing to by-effect of the
autoantibodies entered together with immunoglobulins and accompanying the circulating immune complexes, a lethal hyper sensitive (allergic) myocarditis and a congestive heart failure, a leukopenia, a neutropenia, not to mention transfer of viruses of hepatitis C and D, etc. [Brannagan Th. H. et al., 1996; Hashkes P.J., Lovel D.J., 1996; Howse M. et al., 1998; Bjoro K. et al., 1999]. Also essential increase of a blood viscosity at introduction of high doses of immunoglobulins becomes perceptible that can create a series of problems at elderly patients with vascular illnesses, at a cryoglobulinemia, a monoclonal gammapathy, high level of lipoproteins [Dalakas M.C., 1994].

It is necessary to consider also that circumstance that immunoglobulins are no other than complexes of the most various antibodies. Among them there are not only antibodies, valuable to health, against various microbes and viruses with which to donors it was necessary to enter on different parts of the life counteraction, but also autoantibodies against antigens of own tissues. And even if these donors formally are considered healthy, nevertheless, these or those diseases latent proceeding and not shown the demonstrating symptoms yet aren't excluded. At an intensive immunoglobulin therapy immunoglobulins from many donors are at the same time entered and the total amount of some autoantibodies can exceed the known critical mass and be shown by additional pathology. At the same time such mass of immunoglobulins from "a health concentrate" can turn into "a concentrate of illnesses" [Voinov V.A., 2016].

In recent years treatment of autoimmune diseases by means of a rituximab – the chimeric monoclonal antibodies to CD20 antigen of B-lymphocytes that has to reduce production of autoantibodies [Boye J. et al., 2003; Rodriguez-Ferrero M. et al., 2009; Solovyyov S.K., Nasonov E.L., 2011]. Nevertheless, also complications of such treatment up to development of a multiple organ failure are described [Ruch J. et al., 2009]. At the same time also the exacerbation of a chronic viral hepatitis C is possible, up to a life-threatening acute liver failure [Sagnelli E. et al., 2012]. Direct nephrotoxic effect possess rituximab, cetuximab and panitumumab [Abbas A. et al., 2015]. At the same time it is necessary to consider also that when using a rituximab already collected autoantibodies and other toxic metabolites remain in an organism, and it is possible to remove them only by means of a plasmapheresis.

**Conclusion**

The material given above sets thinking and appreciate seriously almost safe (in skillful hands) procedure of a plasmapheresis and above-mentioned dangers of an intensive immunoglobulin therapy, especially, if to consider that the doctors using
medicines of authoritative European pharmaceutical firms report about them. Same treats also various options of hormonal and cytostatic therapy.

Therefore, the plasmapheresis is able to remove not only immune complexes and an autoantibodies, but also pathological products of a biochemical homeostasis out of an organism that contributes to normalization of the main metabolic processes. It must be kept in mind that such high-molecular substances as a autoantibodies and immune complexes of a kidney aren't able to be filtered and they can be removed from an organism practically only by means of a plasmapheresis.

And only after restoration of a biochemical and immune homeostasis it is possible and it is necessary to carry out the medicamentous or non-drug therapy corresponding to a type of these diseases, using considerably smaller doses of these medicines. At the same time it is necessary to consider that not all medicines and even not medicines are safe and harmless.

It was confirmed also by recommendations of the American Society for Apheresis (ASFA) of 2013 for such diseases as: ANCA-associated rapidly progressive glomerulonephritis (granulomatosis with polyangiitis; Wegener’s granulomatosis), anti-glomerular basement membrane disease (Goodpasture’s syndrome), focal segmental glomerulosclerosis, hemolytic uremic syndrome atypical, myeloma cast nephropathy, thrombotic microangiopathy (drug-associated), thrombotic thrombocytopenic purpura [Schwartz J. et al., 2013].

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