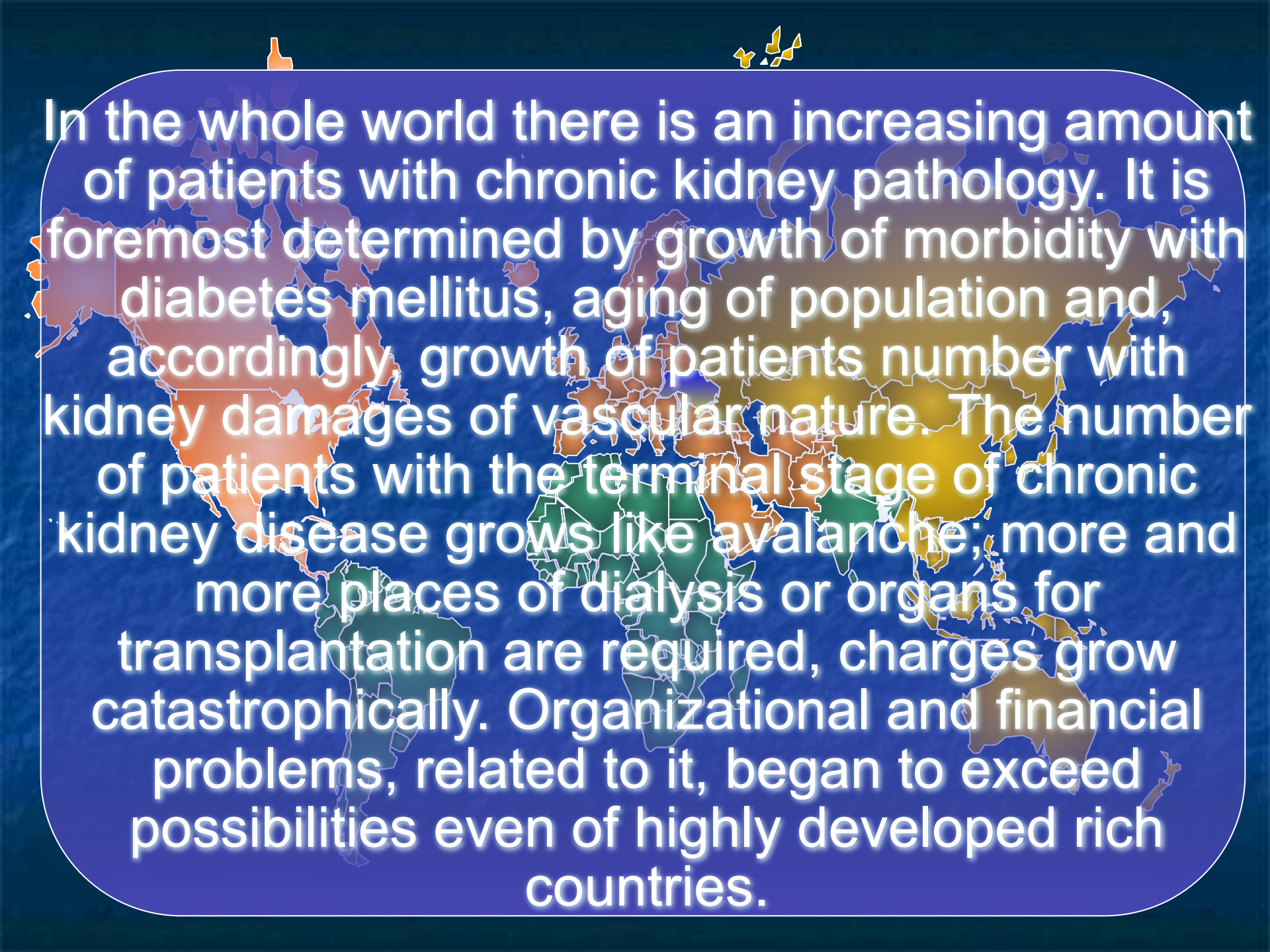
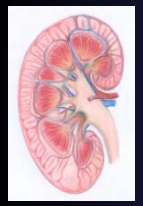
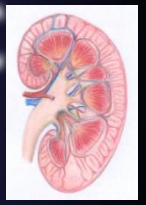

ЗАПОРІЗЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ
chronic kidney disease
ЗАПОРІЗЬКИЙ
ЕРЖАВНИЙ МЕДИЧНИЙ
УНІВЕРСИТЕТ


In the whole world there is an increasing amount of patients with chronic kidney pathology. It is foremost determined by growth of morbidity with diabetes mellitus, aging of population and, accordingly, growth of patients number with kidney damages of vascular nature. The number of patients with the terminal stage of chronic kidney disease grows like avalanche; more and more places of dialysis or organs for transplantation are required, charges grow catastrophically. Organizational and financial problems, related to it, began to exceed possibilities even of highly developed rich countries.

Verification of pathogenesis of chronic kidney disease progress, exposure of risk factors of its origin and development lately promoted working out of the grounded schemes of conservative therapy, which allow effectively to control the process of disease, really to remove beginning of vicarious renal therapy or diminish the amount of lethal complications.



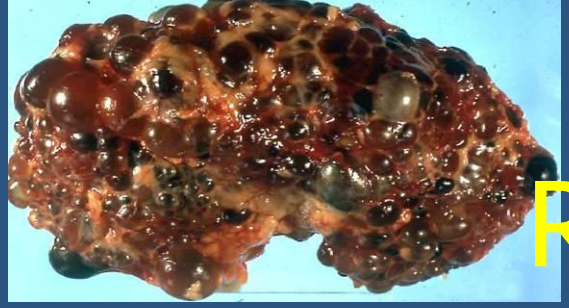
Criteria of definition of chronic kidney disease



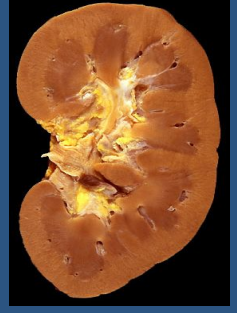
Criteria	Description
1	Damage of kidneys duration more than 3 months, which shows up as structural or functional violations of organ activity with decline or without of glomerular filtration speed. These damages are demonstrated by: pathomorphological changes of renal tissue, or changes in composition of blood or urine, and also changes at the use of visualization methods of kidney structure
2	Glomerular filtration speed < 60 ml/min/1,73m^2 during three and more months, at presence or absence of other signs of kidney damage

Classification of chronic kidney disease (NKF, USA)

Stage	Characteristic	GFS ml/min/1,73 m^2	Recommended measures
	Presence of risk factors	>=90	Observation, measures for diminishing of risk of kidney pathology development
I	Damage of kidneys with normal or increased glomerular filtration speed (GFS)	>=90	Diagnosis and treatment of the main disease for slowing down of progress and diminishing of risk of cardio – vascular complications development
II	Damage of kidneys with moderate decrease of GFS	60 - 90	Valuation of progress speed
III	Middle stage of GFS decrease	30 – 59	Exposure and treatment of complications
IV	Expressed stage of GFS decrease	15 – 29	Preparation for vicarious renal therapy
V	Renal failure	<15 or dialysis	Vicarious renal therapy



RISK FACTORS



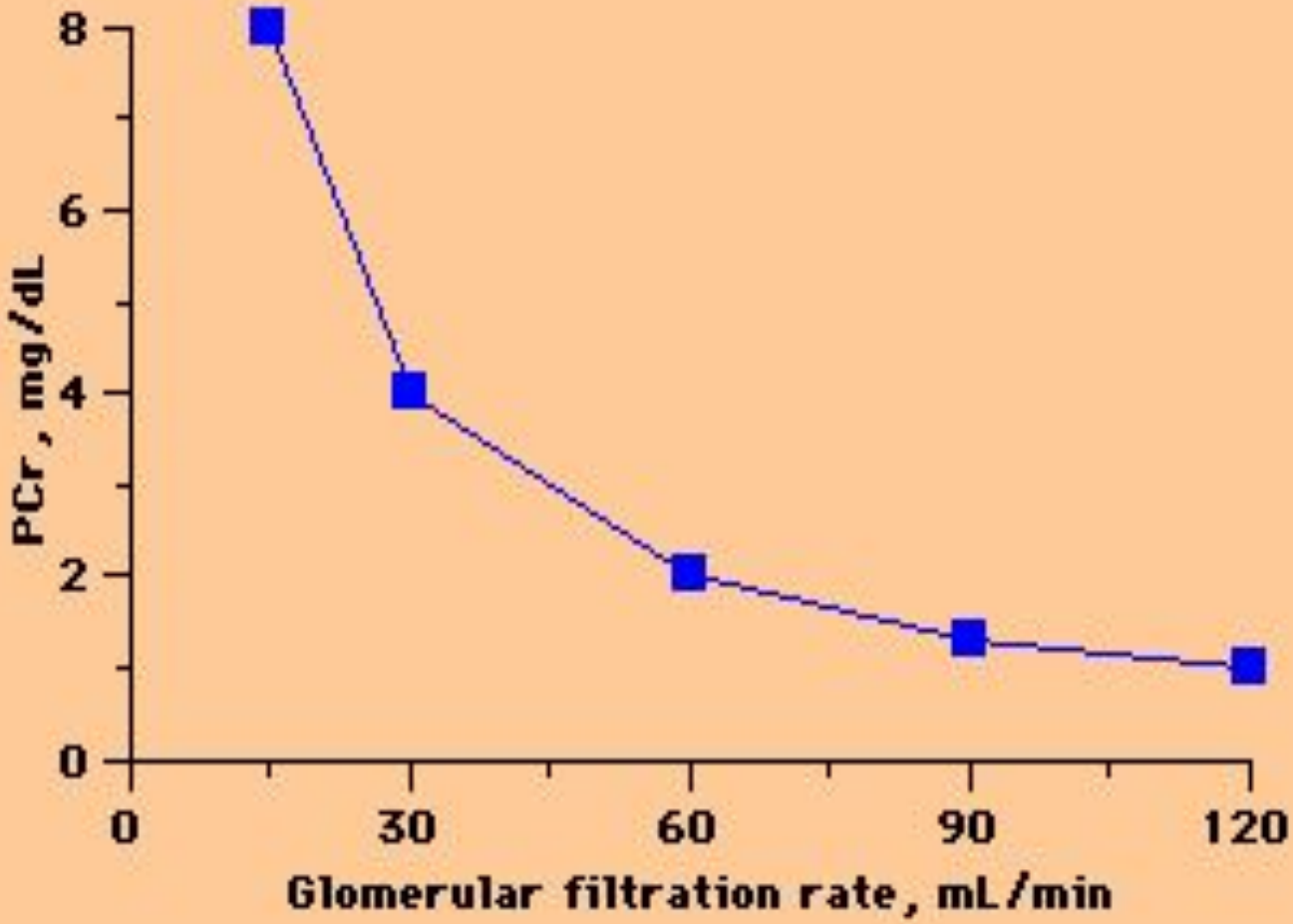
- **Modified**

age
sex of men
race
inborn diminishing of nephron amount
genetic factors

- **Potentially modified**

persistal activity of the main pathological process
proteinuria
systemic arterial hypertension
high protein diet
dyslipoproteinemia
anemia
smoking
concomitant diseases (factors): infections, heart failure, pregnancy, obesity
Iatrogenic factors (nephrotoxic antibiotics, analgetic drugs)

DEPENDENCE OF CREATININE LEVEL ON GLOMERULAR FILTRATION RATE



In accordance with modern ideas, level of creatinine of whey blood in many cases do not allow correctly to estimate condition of kidney function.

The world experts cosider more preferable to count glomerular filtration level. Its determination is ratified as standard for estimation of kidney function in Ukraine. From similar methods the Cockcroft-Gault method is widely used. But it is not recommended if glomerular filtration rate is below 30 ml/ min.

$$GFS = \frac{((140 - age) \times mass(kg))}{72 \times creatinine\ (mg/dl)}$$

where GFS is in ml/min, age - in years.

Lately for large exactness simplified variant of equation of MDRD - modification of Diet in Renal Disease was widespread, it was shown out during the controlled multicentral research. This equation is recommended for using in everyday clinical practice.

GFS ml/min/1,73m2 =186 * (SCR) -1,154*(age)-0,203* (0,742 w) * (1,210 aa),

where: SCR – creatinine of whey blood, W – women, aa – afroamericans.

For transfer of whey creatinine from mmol/l в mg/dl rate in mmol/l must be multiplied by 0,0113.

Situations, when it is necessary to use clearance methods of determination of glomerular filtration speed:

- 1. Very elderly age and non-standard sizes of body (patients with amputation of extremities).
- 2. Expressed exhaustion and obesity.
- 3. Disease of skeletal musculature.
- 4. Paraplegia and quadriplegia.
- 5. Vegetarian diet.
- 6. Rapid decline of kidney function.
- 7. Before setting of nephrotoxic preparations.
- 8. At the solution of question about beginning of vicarious renal therapy.

Example of diagnosis formulation:

CKD II: glomerulonephritis (mesangio – proliferative), nephrotic syndrome, arterial hypertension.

If there is a secondary damage of kidneys, at the beginning a nosological basis of CKD origin must be specified, then a stage of CKD and name of kidney disease with morphological clarification. For example: Systemic lupus erythematosus, CKD II stage: lupus – nephritis (morphological characteristic), arterial hypertension.

Diabetes mellitus, type I, CKD III stage: diabetic nephropathy stage V, AH, anemia, hyperacidity, dyselectolytemia.

If it is impossible to define a nosological basis of CKD, the diagnosis of CKD is set only.

Examples of diagnoses:

CKD II st.: mesangio – proliferative glomerulonephritis, nephrotic syndrome, AH

CKD II stage, glomerulonephritis, nephrotic syndrome, AH, anemia;

CKD II stage: glomerulonephritis, nephrotic syndrome, AH;

CKD III stage: nonobstructive pyelonephritis, flare, AH, anemia;

CKD III stage: tubulointerstitial nephritis, anemia;

CKD IV stage: polycystosis of kidneys of grown - up type, AH, anemia.

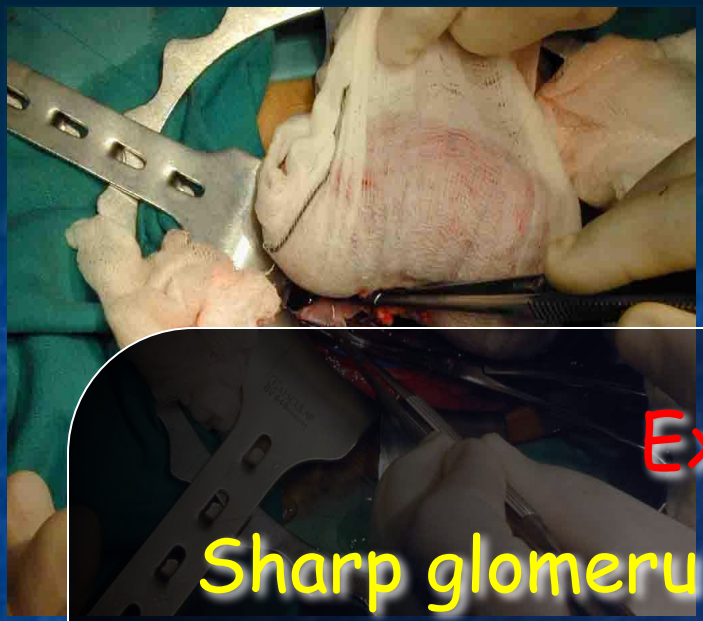
Systemic lupus erythematosus, CKD II stage: lupus – nephritis (morphological characteristic), AH;

Diabetes mellitus, I type, CKD III stage: diabetic nephropathy, nephrotic syndrome, AH, anemia, diabetic foot;

Hemmorhagic vasculitis, CKD III stage: pseudomembranousproliferative type (class VI), AH, anemia;

Secondary amyloidosis, CKD III stage: nephrotic syndrome, anemia;

Hypertensive disease III st., CKD III stage: hypertensive nephropathy, anemia.

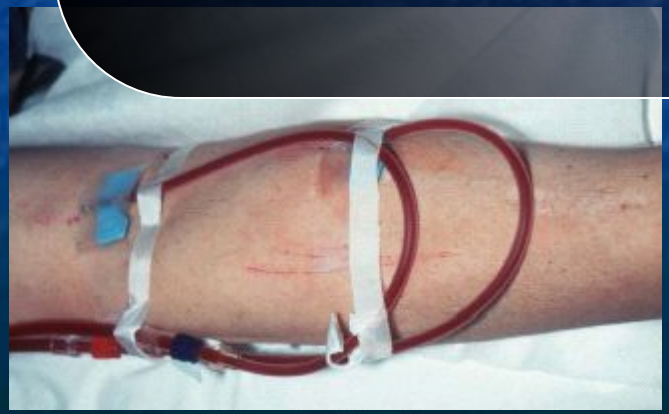


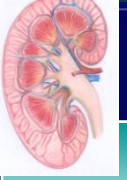
Examples of diagnoses:

Sharp glomerulonephritis, nephritic syndrome;

Sharp tubulointerstitial nephritis with violation of kidney function, anemia;

Sharp uncomplicated pyelonephritis





Classification of CKD/CRF (Ukraine,2005)

Stage of CKD	Characteristic	GFS ml/min/ 1,73 m^2	Creatinine mmol/l	Recommendations
I	CKD with normal or Increased GFS	> 90	< 0,123	Treatment of CKD
II	CKD with chronic renal failure with moderately low GFS	60-89	0,123-0,176	Treatment of CKD, renoprotection
III	CKD with chronic renal failure with middle stage low GFS	30-59	0,177-0,352	Treatment of CKD, renoprotection, Treatment of complications
IV	CKD with chronic renal failure with expressed low GFS	15-29	0,353-0,528	Treatment of CKD, renoprotection, Treatment of complications, preparation for vicarious renal therapy
V	CKD with terminal chronic renal failure	<15	>0,528	Vicarious renal therapy, treatment of complications

ACE inhibitors are indicated to all patients with CKD of I – IV stages for normalization of arterial pressure, diminishing of proteinuria and slowing dow of decline of kidney function.

Approaches to using of ACE inhibitors at CKD

- Beginning of taking ACE inhibitors on the earliest stages of CKD.
- Using of ACE inhibitors at CKD desirably even at absence of AH, diabetes, heart failure and ischemic heart disease.
- To begin treatment is necessary from a low dose, gradually increasing it to effective. Nephroprotective action rises with increasing of a dose. It is necessary to control kidney function (clearance of creatinine, GFS).
- The criterion of effective diminishing of intraglomerular pressure is decreasing of proteinuria on 30 – 40 %.
- Stable increase of creatinine level more than on 30% after setting o ACE inhibitors is an absolute indication to abolition of these preparations.


Thank you
for
attention