



Posledice nefrotskog sindroma po bubreg i mehanizmi oštećenja

Višnja Ležaić

Klinika za nefrologiju, KCS

Medicinski fakultet, Univerzitet u Beogradu

Beograd

Komplikacije nefrotskog sindroma

- Edemi, efuzije, anasarca
- Malnutricija,
- Hipovolemija,
- Akutno oštećenje bubrega,
- Gubitak hormona mokraćom
- Hiperlipidemija i potencijalno ubrzana ateroskleroza,
- Sklonost ka venskim ili arterijskim trombozama,
- Povećana osetljivost ka infekcijama
- Ostali:
 - Disfunkcija proksimalnih tubula:glikozurija, aminoacidurija, fosfaturija, renalna tubulska acidoza, nedostatak vitamina D.
 - Poremećaj funkcije tiroidne žlezde (smanjenje tiroksin-vezujućeg globulina)
 - Anemija (poremećena sinteza i gubitak eritropoetina mokraćom)

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Nefrotski sindrom

Oporavak

HBI

Promenliivi faktori:

- Proteinurija
- Hipertenzija
- Dijabetes
- Gojaznost
- Pušenje
- Dislipidemija
- Starost
- Nefrotoksini

Ćelijski putevi:

- Inflamacija
- Tubulska/epitelna aktivacija/ tranzicija
- Stimulacija fibroblasta
- Aktivnost u intersticijskim kapilarima

Ožiljci

Molekulski putevi

Profibrotski:

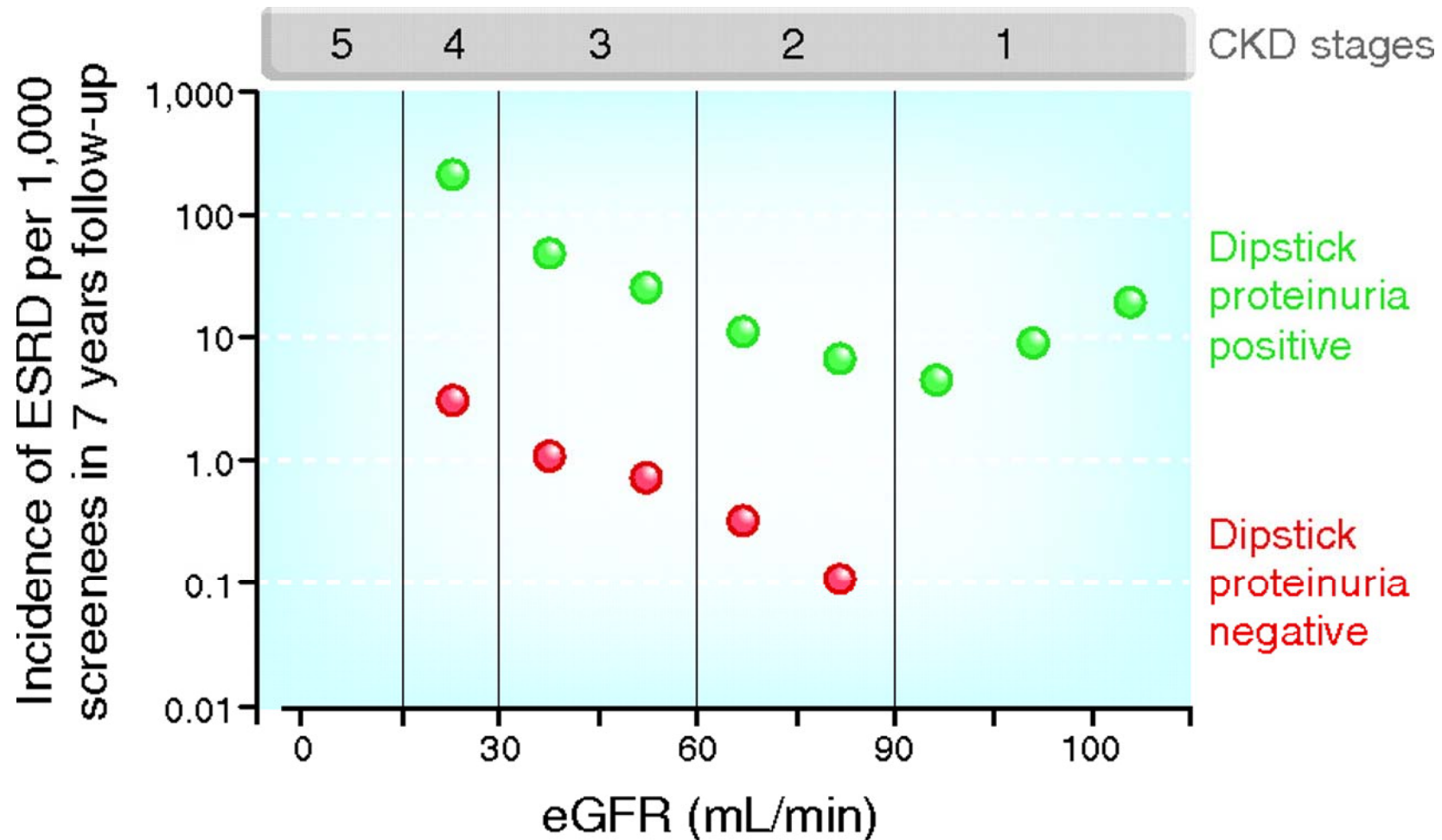
RAAS
Oksidativni stres
Faktori rasta: TGF- β , CTGF, PDGF, FGF

PAI-1
Endotelin 1
Proteaze
Hemokini
Adhezioni molekuli

Protiv fibroze:

HGF
BMP-7
VEGF
Angiopeptin

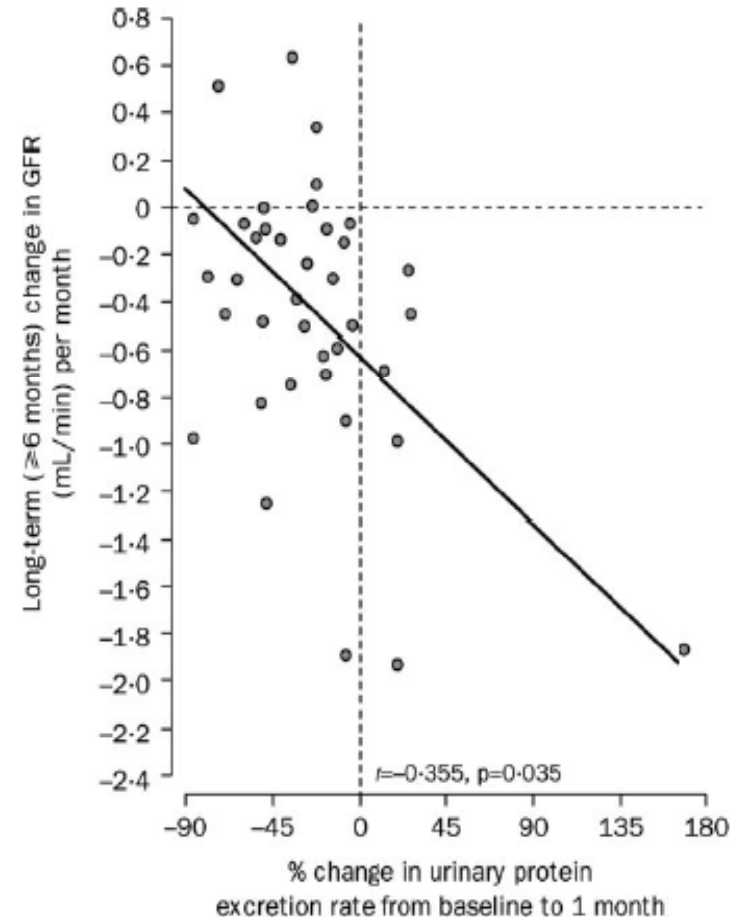
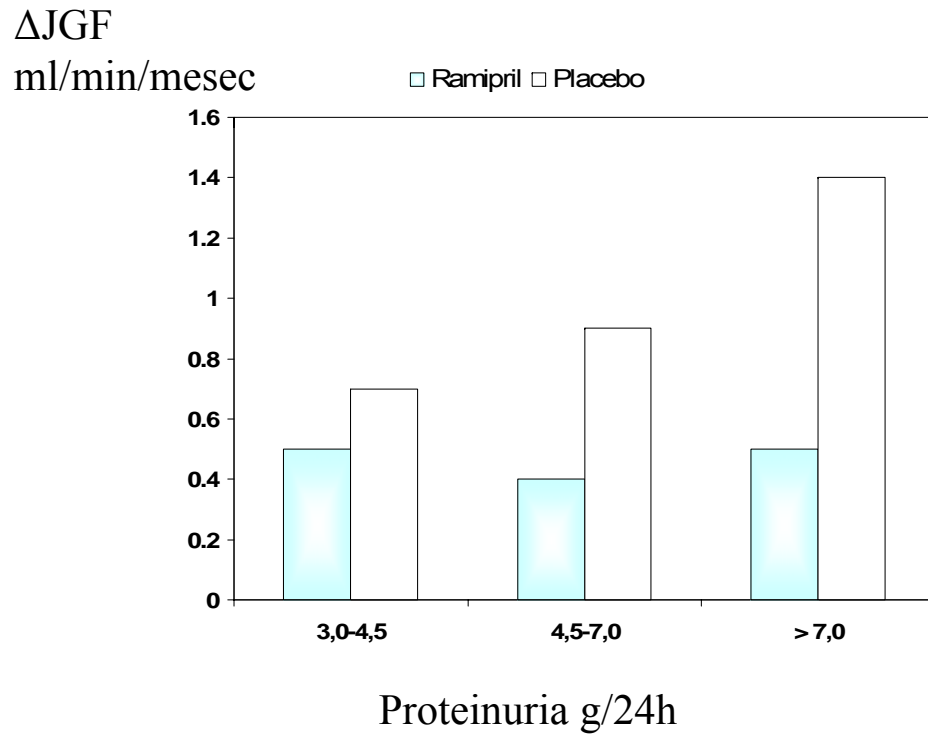
Incidencija terminalne insuficijencije bubrega u zavisnosti od stepena smanjenja JGF i prisutne proteinurije: 95252 osobe, 17 godina praćenja



Gansevoort R T , de Jong P E JASN 2009;20:465-468



iACE smanjuju proteinuriju i štite bubrežnu funkciju



Lancet 349: 1857-1863, 1997

The Relationship Between Magnitude of Proteinuria Reduction and Risk of End-stage Renal Disease

Results of the African American Study of Kidney Disease and Hypertension

Lea J et al.

Arch Intern Med. 2005;165:947-953

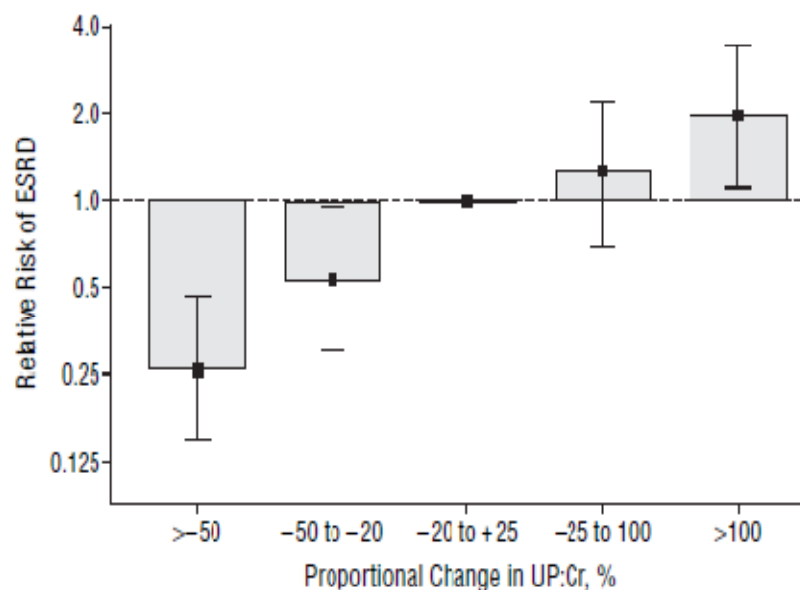


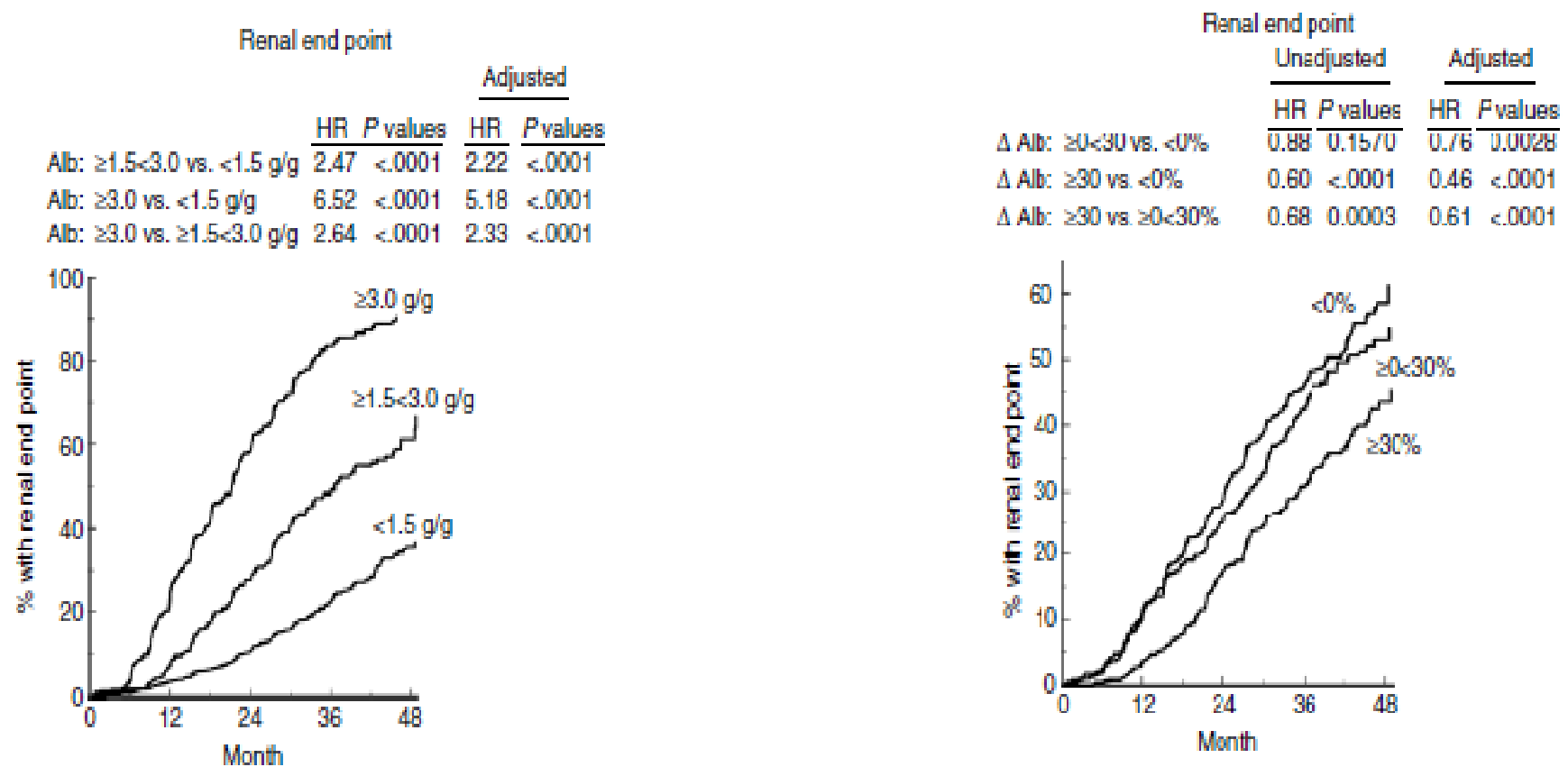
Table 2. Rates of ESRD Throughout Follow-up*

Baseline UP:Cr Group	Baseline GFR Group, mL/min per 1.73 m ²				All
	>48	>40 to ≤48	>30 to ≤40	<30	
<0.08	0.5 (367)	0.5 (89)	1.1 (62)	3.2 (23)	0.7 (541)
0.08-0.22	1.6 (85)	2.4 (31)	4.4 (43)	7.0 (33)	3.2 (192)
0.23-0.66	1.1 (63)	3.8 (26)	4.8 (54)	15.2 (34)	5.0 (177)
>0.66	4.8 (33)	4.1 (22)	11.4 (39)	28.8 (86)	15.2 (180)
All	1.0 (548)	2.0 (168)	4.5 (198)	16.8 (176)	3.8 (1090)†

Proteinuria, a target for renoprotection in patients with type 2 diabetic nephropathy: Lessons from RENAAL

DICK DE ZEEUW, GIUSEPPE REMUZZI, HANS-HENRIK PARVING, WILLIAM F. KEANE, ZHONGXIN ZHANG, SHAHNAZ SHAHINFAR, STEVE SNAPINN, MARK E. COOPER, WILLIAM E. MITCH, and BARRY M. BRENNER

Kidney International, Vol. 65 (2004), pp. 2309–2320

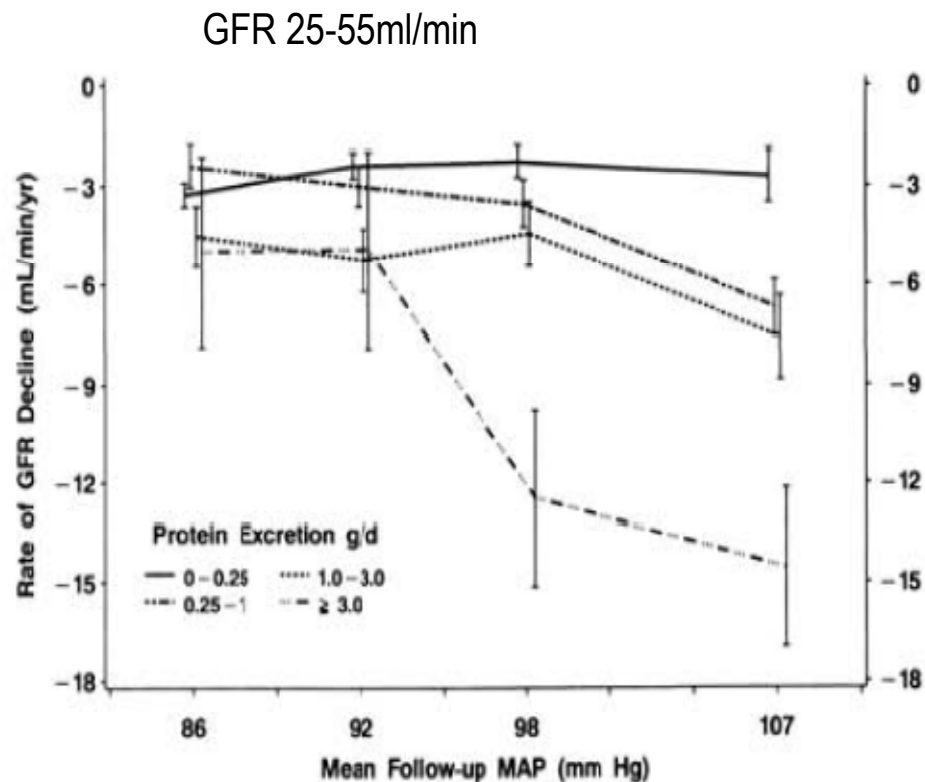


Blood Pressure Control, Proteinuria, and the Progression of Renal Disease

The Modification of Diet in Renal Disease Study

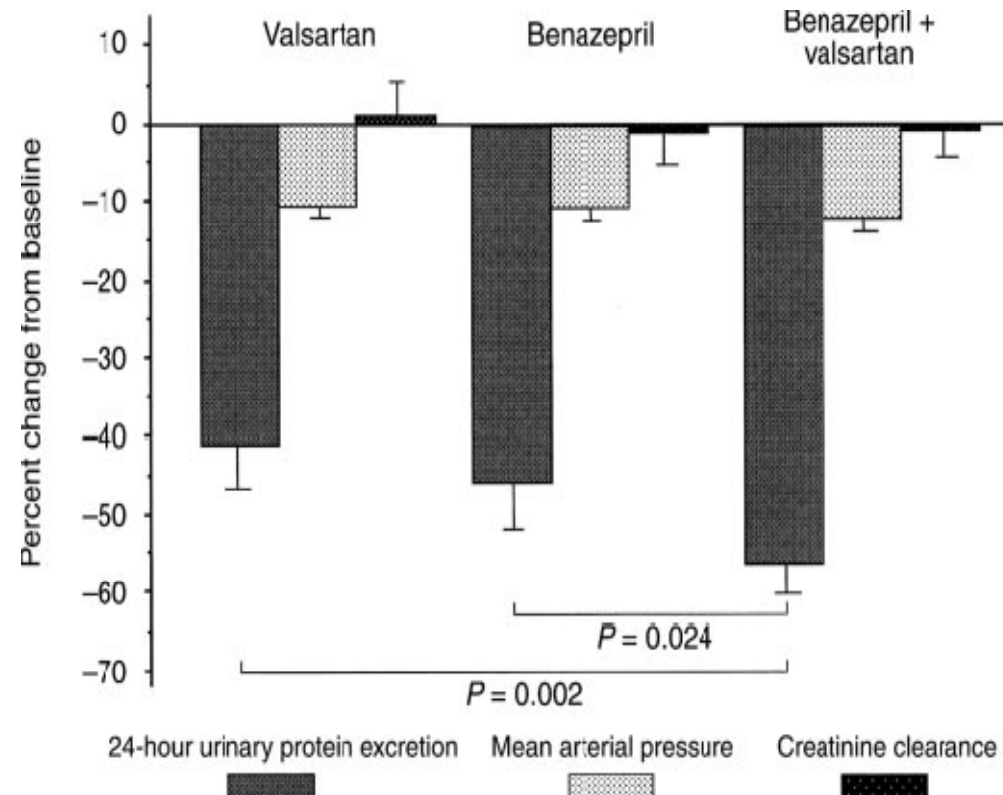
John C. Peterson, MD; Sharon Adler, MD; John M. Burkart, MD; Tom Greene, PhD;

Ann Intern Med. 1995;123:754-762.

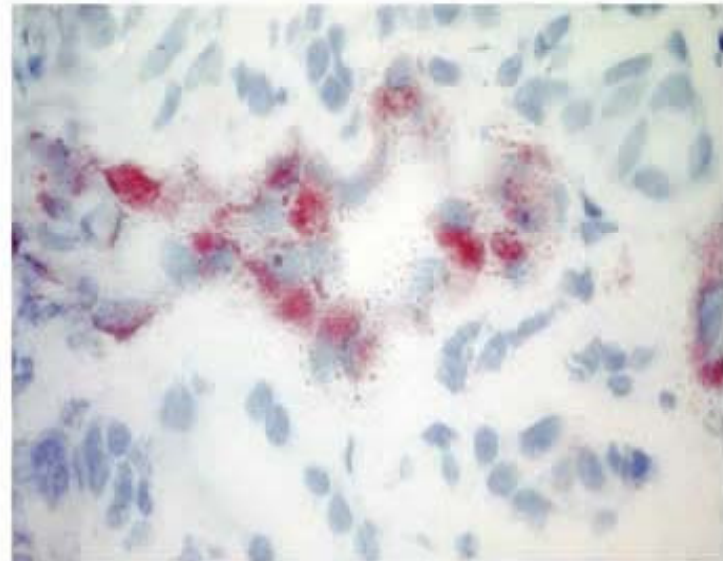
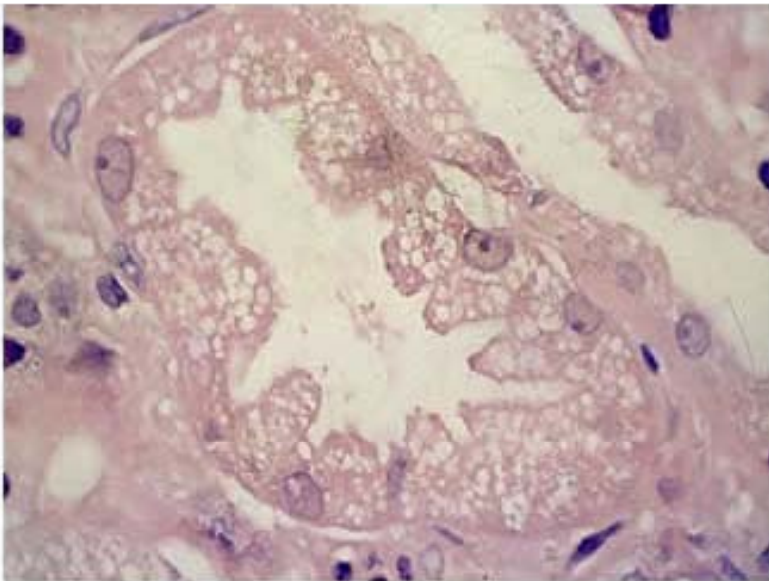


■ **Conclusions:** Our study supports the concept that proteinuria is an independent risk factor for the progression of renal disease. For patients with proteinuria of more than 1 g/d, we suggest a target blood pressure of less than 92 mm Hg (125/75 mm Hg). For patients with proteinuria of 0.25 to 1.0 g/d, a target mean arterial pressure of less than 98 mm Hg (about 130/80 mm Hg) may be advisable. The extent to which lowering blood

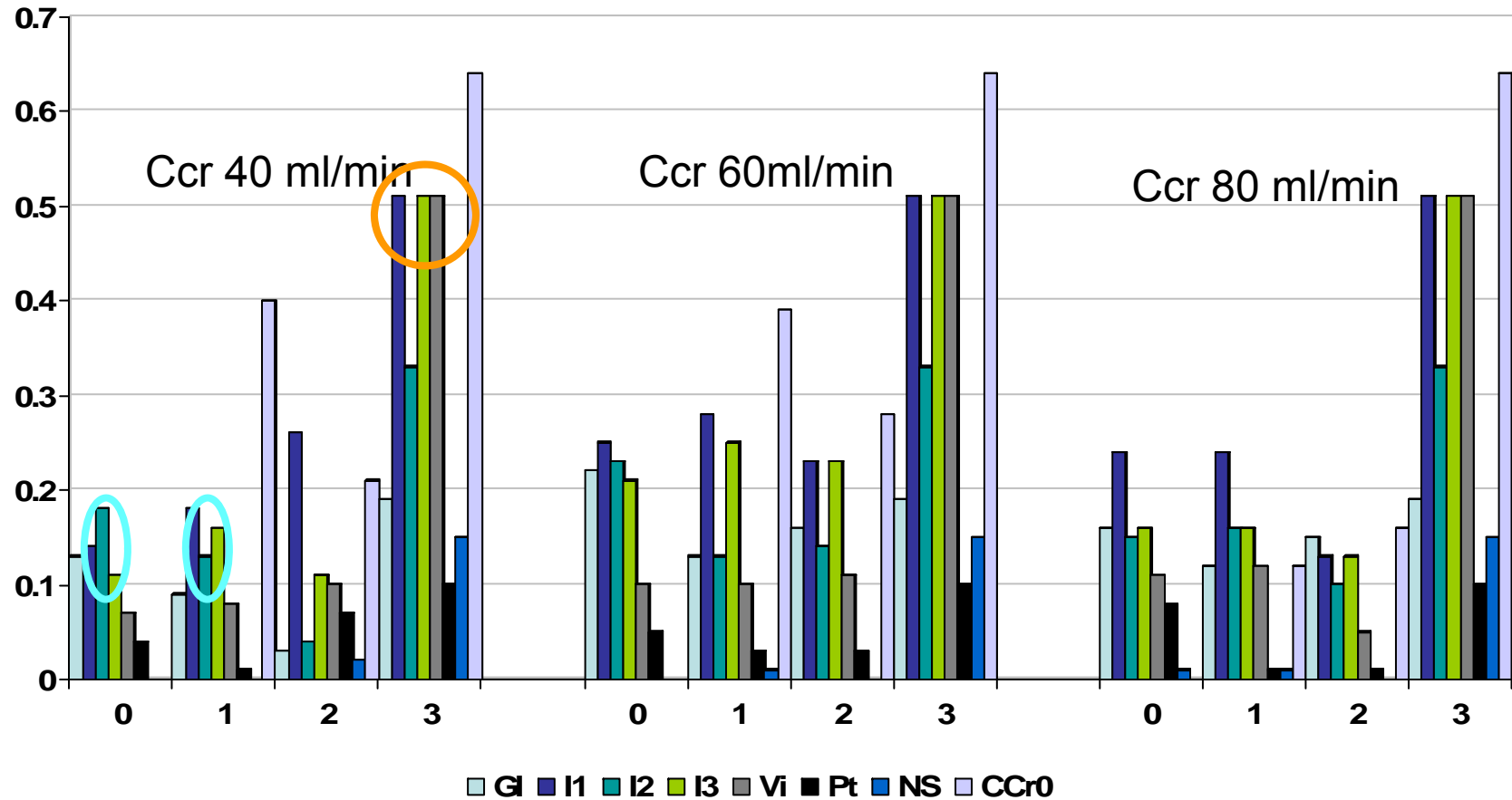
iACE i ARB smanjuju proteinuriju nezavisno od uticaja na krvni pritisak



Proksimalni tubul u bolesnika sa proteinurijom i lipidurijom

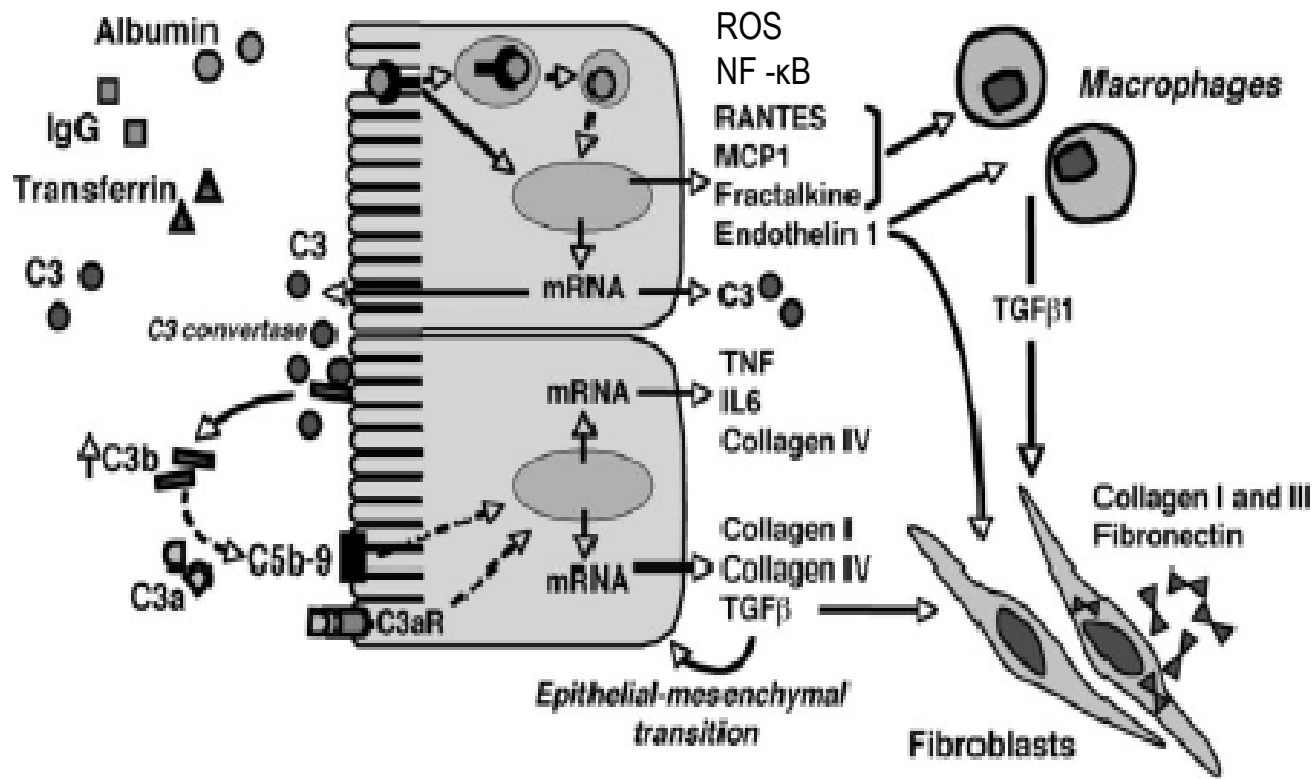


Povezanost histoloških promena i funkcije bubrega

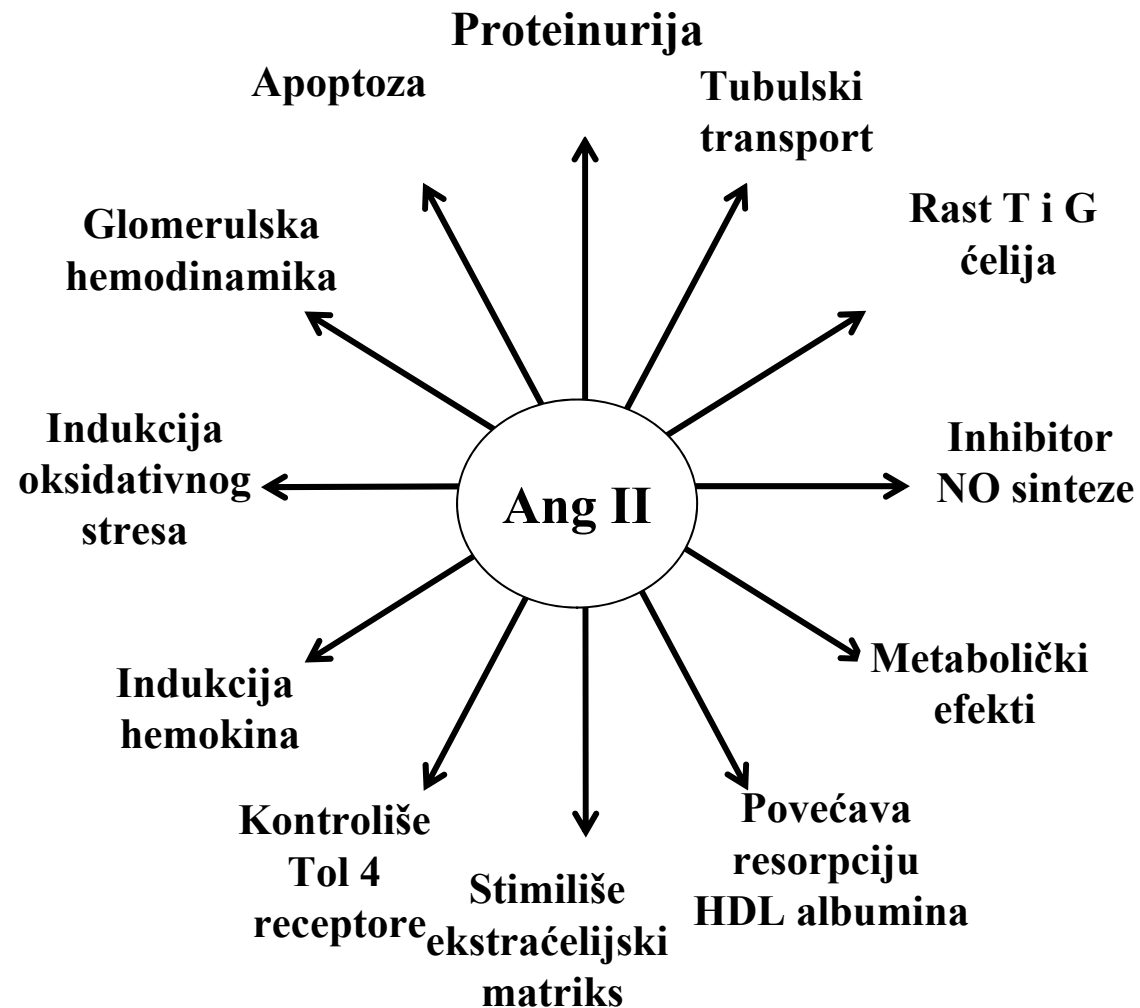


Vreme pracenja funkcije, godine

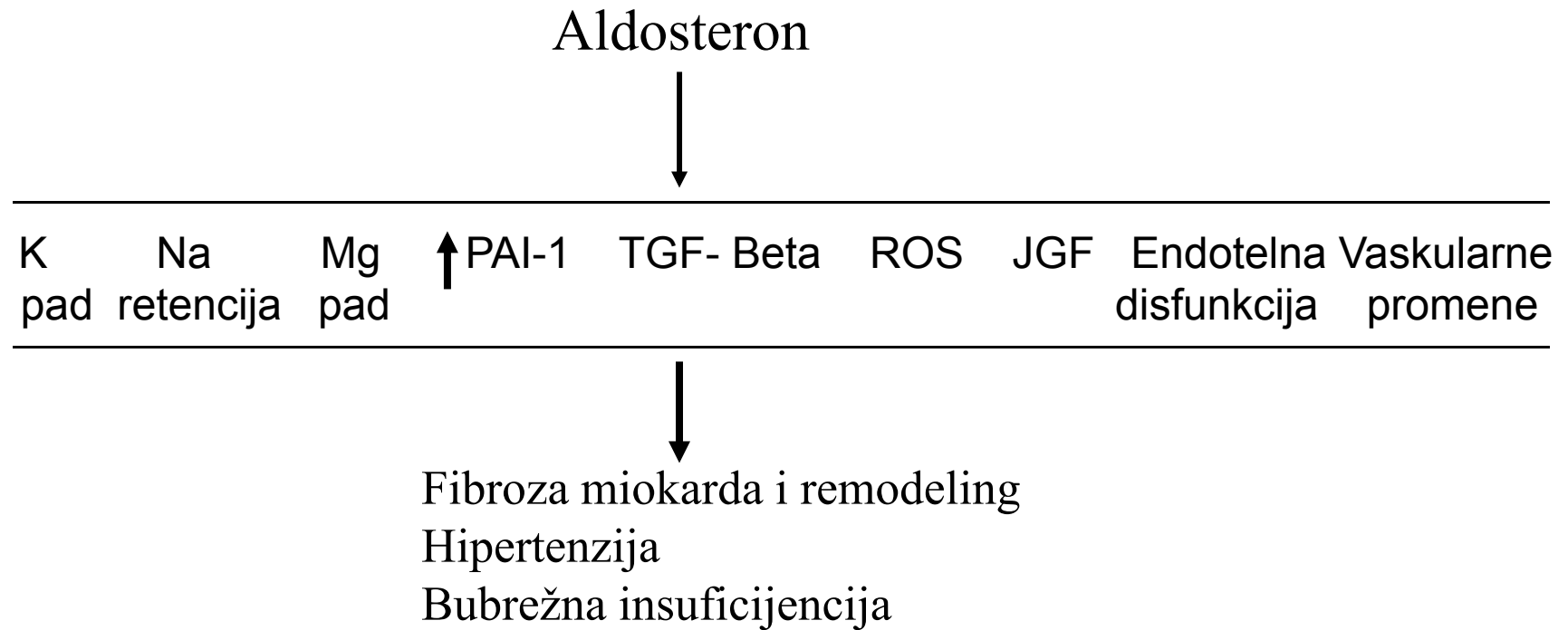
Mehanizam kojim filtrirani proteini započinju inflamamaciju i fibrozu u parenhimu bubrega



Angiotenzin II ima brojne uticaje na bubrege



Aldosteron u oštećenju bubrega



Uputstvo za lečenje bolesnika sa nefrotskim sindromom

- Terapija koja sprečava nastanak proteinurije preko glomerulsko-kapilarne barijere:
 - Kortikosteroidi,
 - Imunosupresivi,
 - Citostatici ,

+

- Lekovi upravljani protiv sekundarnih puteva oštećenja bubrega:
 - Primena ACEi sa ili bez AT blokatora
 - Blokatori aldosterona
 - Antioksidansi
 - Antilipemici
 - Neslana hrana,.....