

9 Aprile 2022

Lezione D NEFROLOGIA IN MEDICINA TERRITORIALE

Approccio globale e Gestione complessiva dei pazienti con ridotta funzionalità renale in presenza di ipertensione, cardiovasculopatie, diabete o semplicemente grandi anziani



UNIVERSITÀ
DEGLI STUDI
DI MILANO

LA STATALE



Fondazione IRCCS
Ca' Granda
Ospedale Maggiore
Policlinico

Sistema Socio Sanitario



Regione
Lombardia

Agenda

- **- Cosa accade quando il rene si ammala cenni sull'IRC : concetti generali.**
- **L'invecchiamento e la malattia renale: come leggere il decremento del GFR nel tempo.**
Quali segni di allarme? Quando inviare dal nefrologo?
- **Disidratazione, acidosi, alterazioni elettrolitiche** di interesse in medicina del territorio: il ruolo del rene, il ruolo dei farmaci.
- **Valutazione dei segni nefrologici e del loro significato clinico**
- **Insufficienza renale acuta**
- **Diabete e patologia renale**
- **Novità in nefroprotezione**

Domanda 1.

Quale tra questi segni è sospetto per la presenza di malattia nefrologica non correlata al diabete in pazienti affetti da diabete mellito?

- 1) Macroalbuminuria associata a retinopatia diabetica
- 2) Microalbuminuria isolate
- 3) Rapido decremento della funzionalità renale associata a sedimento urinario attivo.

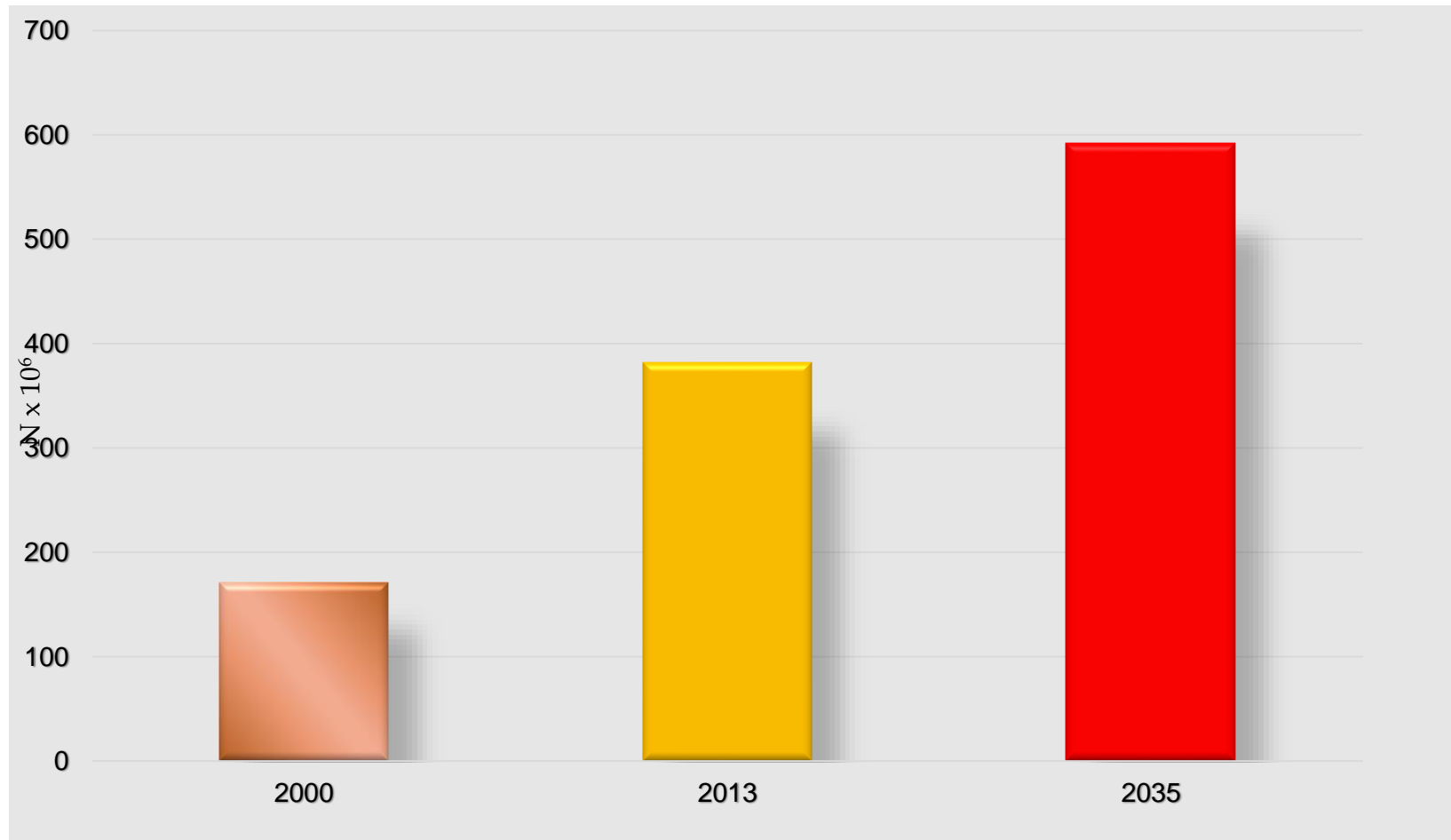
Domanda 2.

Quale è il razionale nefrologico dell'utilizzo degli inibitori del Sistema renina angiotensina nei pazienti affetti da diabete mellito?

- 1) Per controllo della pressione arteriosa
- 2) Per le note capacità anti fibrotiche
- 3) Per ottenere una riduzione della iperfiltrazione glomerulare

Epidemiology of DM

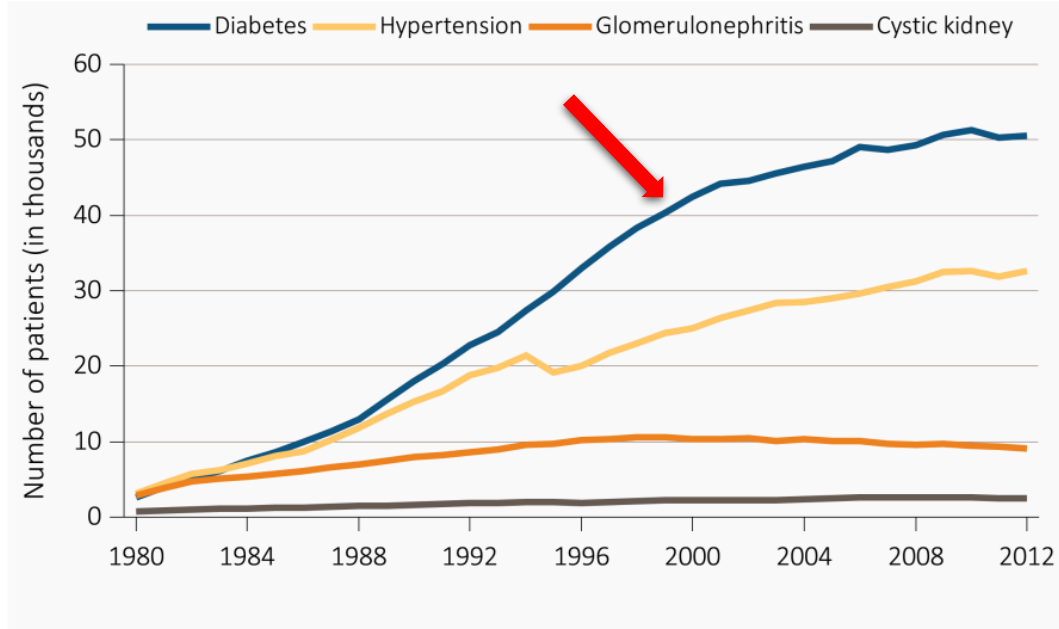
- **Worldwide prevalence**



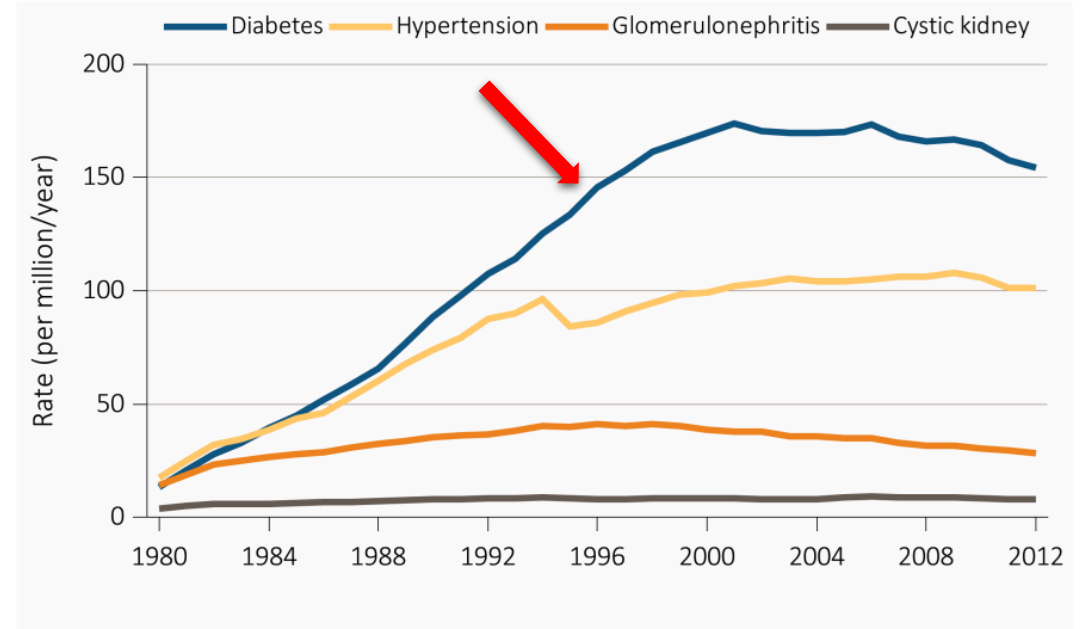
Type 2 DM 85-95%

6 Trends in (a) ESRD incident cases, in thousands, and (b) adjusted ESRD incidence rate, per million/year, by *primary cause of ESRD*, in the U.S. population, 1980-2012

(a) Incident Cases



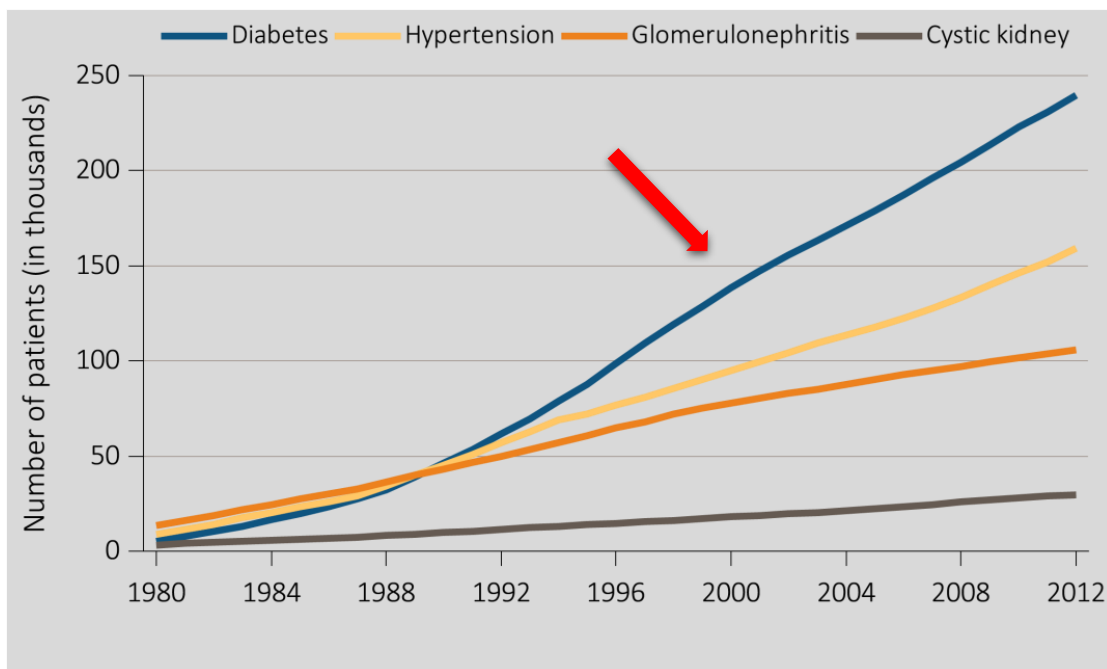
(b) Incidence Rates



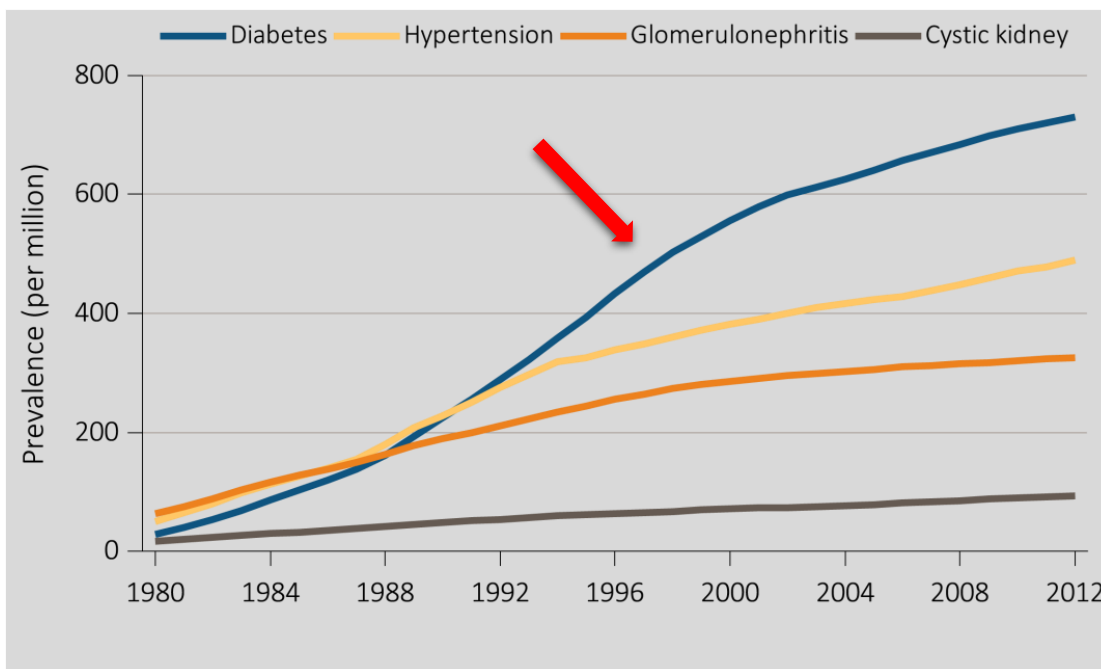
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Trends in (a) prevalent ESRD cases and (b) adjusted prevalence of ESRD, per million, by *primary cause of ESRD*, in the U.S. population, 1980-2012

(a) Prevalent Cases



(b) Prevalence per million

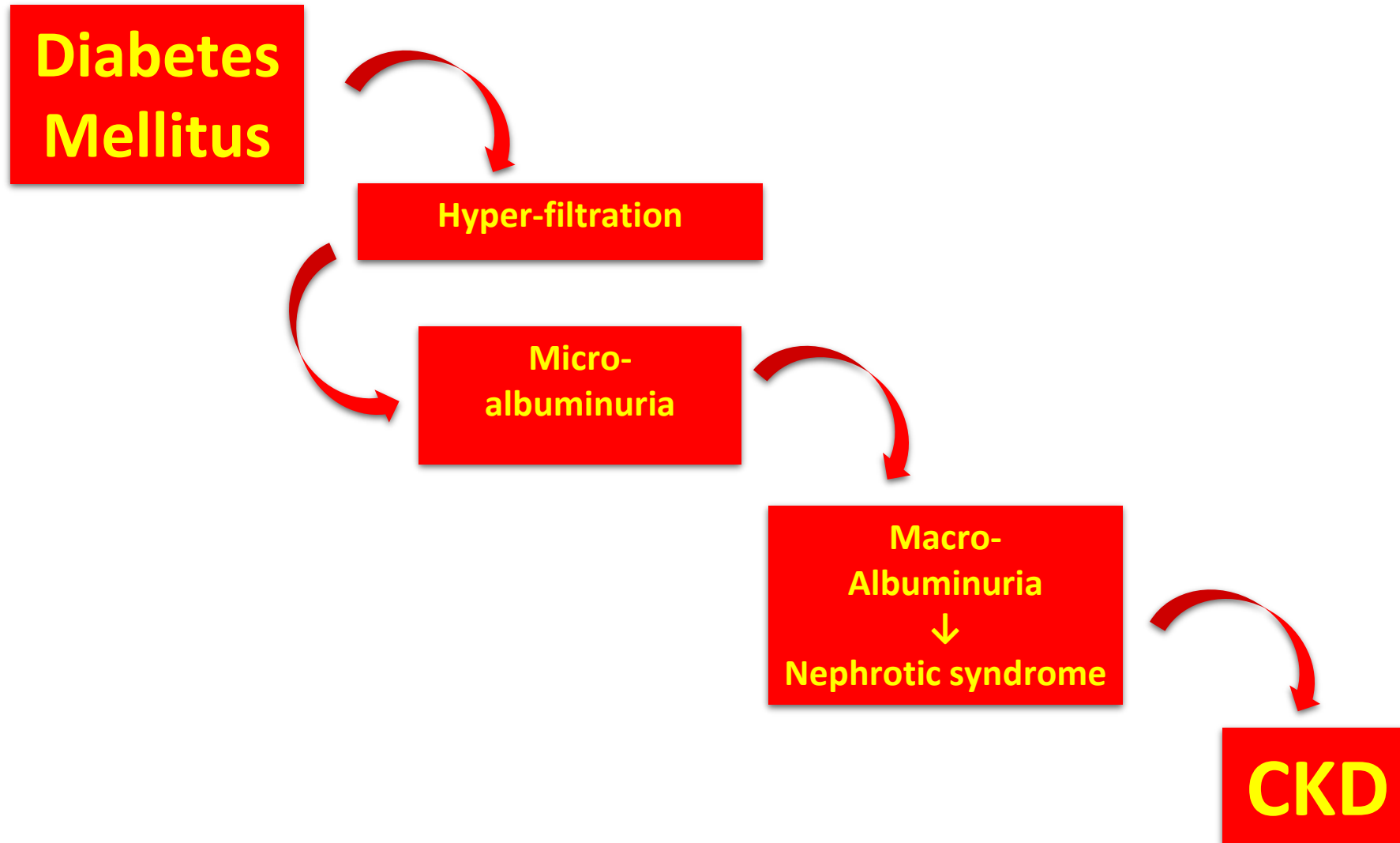


Definition of Diabetic Kidney Disease

A chronic kidney disease [CKD] in :

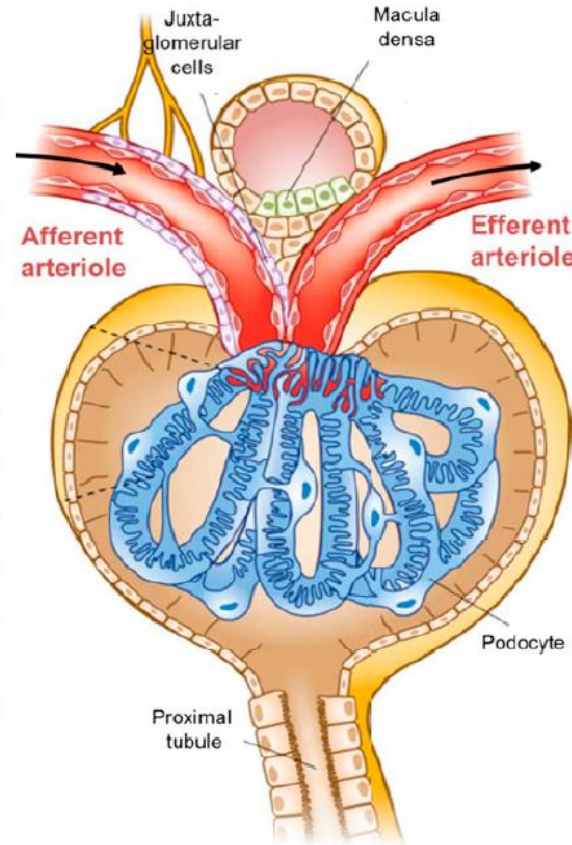
- Patients with either type 1 or type 2 diabetes
- Persisting **albuminuria** of >300 mg/24 h or an albumin-to-creatinine ratio (ACR) of >300 mg/g, confirmed in at least 2 of 3 samples,
- Concurrent presence of **diabetic retinopathy**
- absence of **signs** of **other forms of renal disease**.

Time line of the DKD



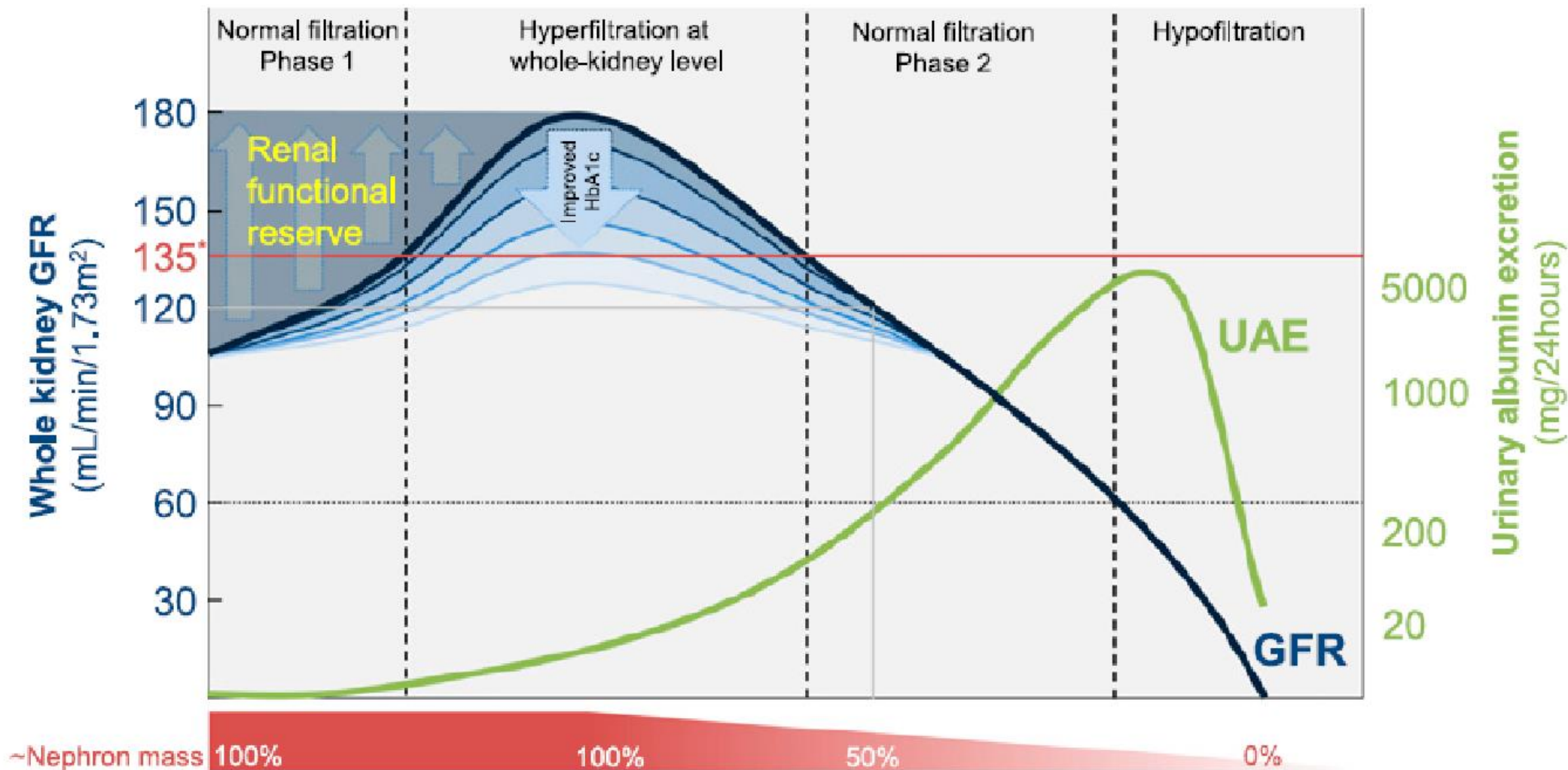
Schematic (net) effect of factors implicated in the pathogenesis of glomerular hyperfiltration in diabetes

| Factors causing a net reduction of afferent arteriolar resistance |
|---|
| Vascular factors |
| Nitric oxide bioavailability |
| COX-2 prostanoids |
| Kalikrein-kinins |
| Atrial natriuretic peptide |
| Angiotensin(1-7) |
| Hyperinsulinemia <i>per se</i> |
| Tubular signals |
| Inhibition of tubuloglomerular feedback (macula densa signals) |



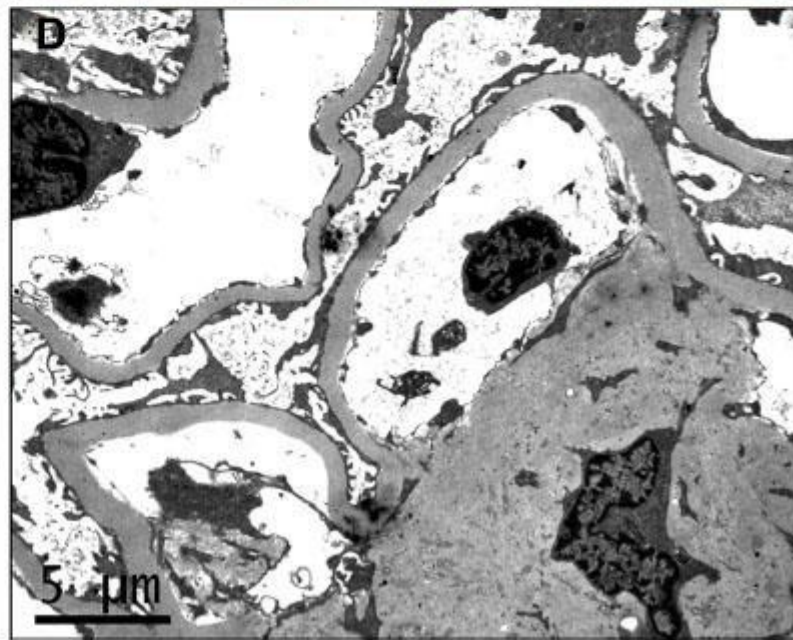
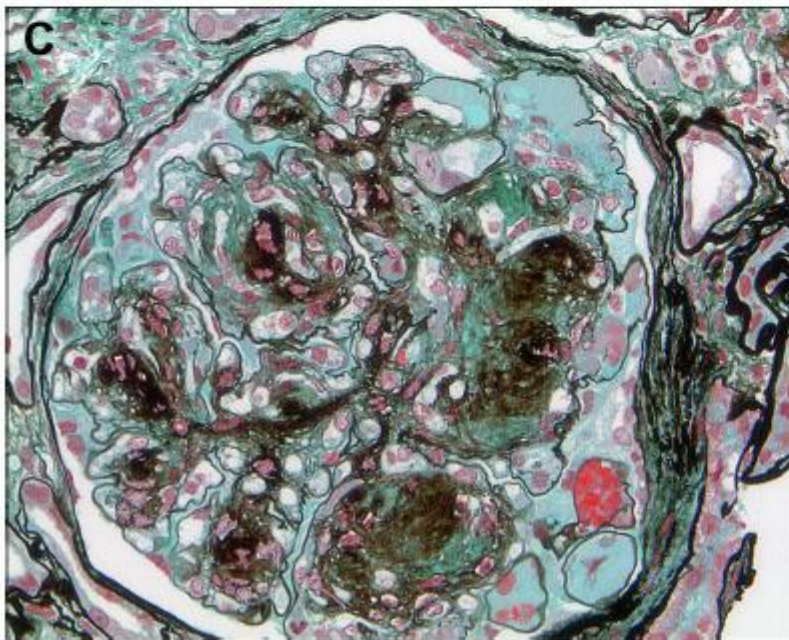
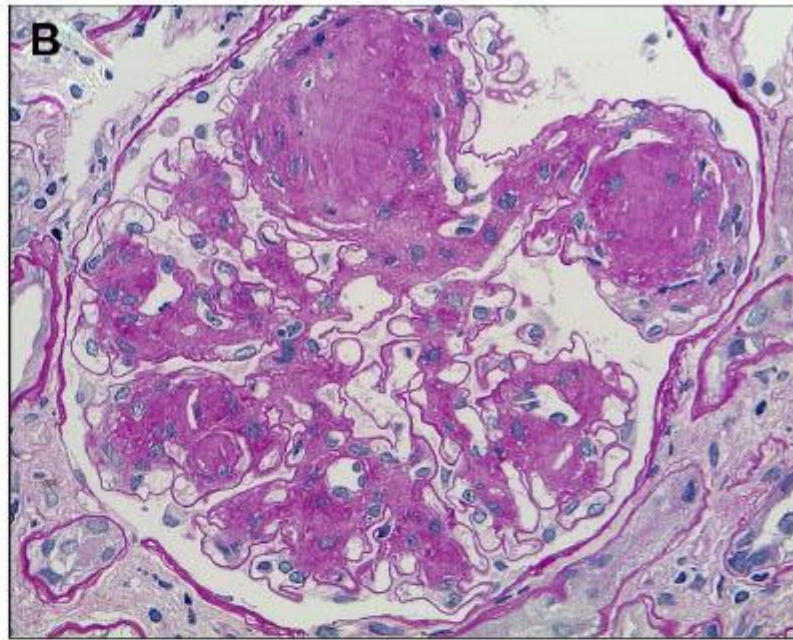
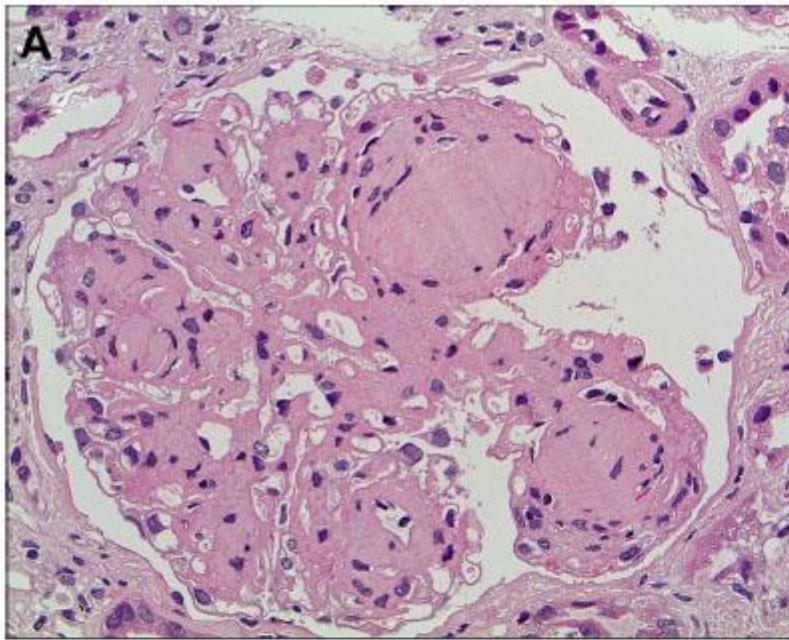
| Factors causing a net increase of efferent arteriolar resistance |
|--|
| Vascular factors |
| Angiotensin-II |
| Thromboxane A2 |
| Endothelin-1 (ETA receptor) |
| Reactive oxygen species |

Classic course of whole-kidney GFR and UAE according to the natural (proteinuric) pathway of DKD



Diagnosis of DKD: pathology

- glomerular lesions
 - nodular sclerosis,
 - diffuse mesangial sclerosis,
 - mesangial expansion,
 - basement membrane thickening
-
- arteriolar hyalinosis
 - micro aneurysms
 - exudative lesions



Risk factors for diabetic kidney disease

| Risk Factor | Susceptibility | Initiation | Progression |
|--|----------------|------------|-------------|
| Demographic | | | |
| Older age | + | | |
| Sex (men) | + | | |
| Race/ethnicity (black, American Indian, Hispanic, Asian/Pacific Islanders) | + | | + |
| Hereditary | | | |
| Family history of DKD | + | | |
| Genetic kidney disease | | + | |
| Systemic conditions | | | |
| Hyperglycemia | + | + | + |
| Obesity | + | + | + |
| Hypertension | + | | + |
| Kidney injuries | | | |
| AKI | | + | + |
| Toxins | | + | + |
| Smoking | + | | + |
| Dietary factors | + | | + |
| High protein intake | + | | + |

DKD, diabetic kidney disease.

Diagnosis of DKD: ultrasound ??

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View size: 2658 x 1495

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Definition of Diabetic Kidney Disease

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...what we should know

- Albuminuria is not a necessary diagnostic criterium for DKD diagnosis
- DKD can be present also in the absence of retinopathy
- Other Kidney Diseases can be present in diabetic patients

Other renal diseases in Diabetes



- Glomerulopathies other than DN

- UTI, Interstitial N

- Vascular disease

- Microvascular
- Macrovascular

Suspicion of NDKD: **glomerular diseases**

- Rapidly worsening renal function
- Rapidly increasing proteinuria or heavy proteinuria appeared after a short duration of DM
- Haematuria
- Active urine sediment
- No signs of other micro-vascular complications (retinopathy)
- Signs or symptoms of other systemic diseases

Other renal diseases in Diabetes

- Glomerulopathies other than DN



- UTI, Interstitial N

- Vascular disease

- Microvascular
- Macrovascular

Factors associated with higher risk of UTI

- **Complicated UTI**

- Urolithiasis
- Vesico-ureteral reflux
- Urological abnormalities

- **Diabetes**

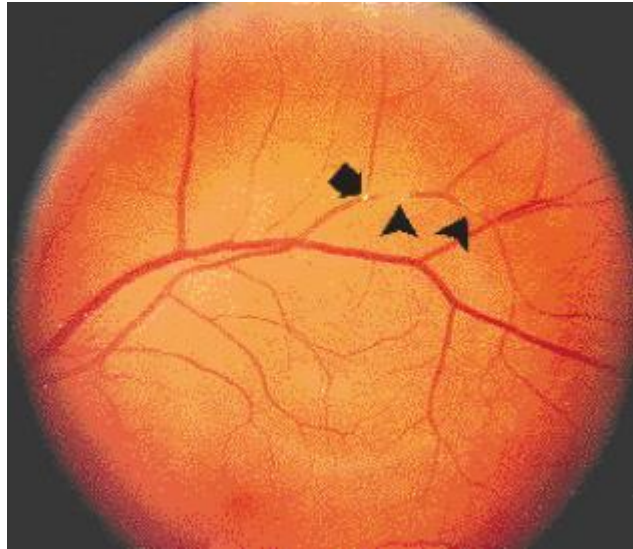
- Neurological diseases
- Catheter/stent/UT instrumentations
- Renal failure
- Immunesuppressive drugs

Other renal diseases in Diabetes

- Glomerulopathies other than DN
 - UTI, Interstitial N
 - Vascular disease
 - Microvascular
 - Macrovascular

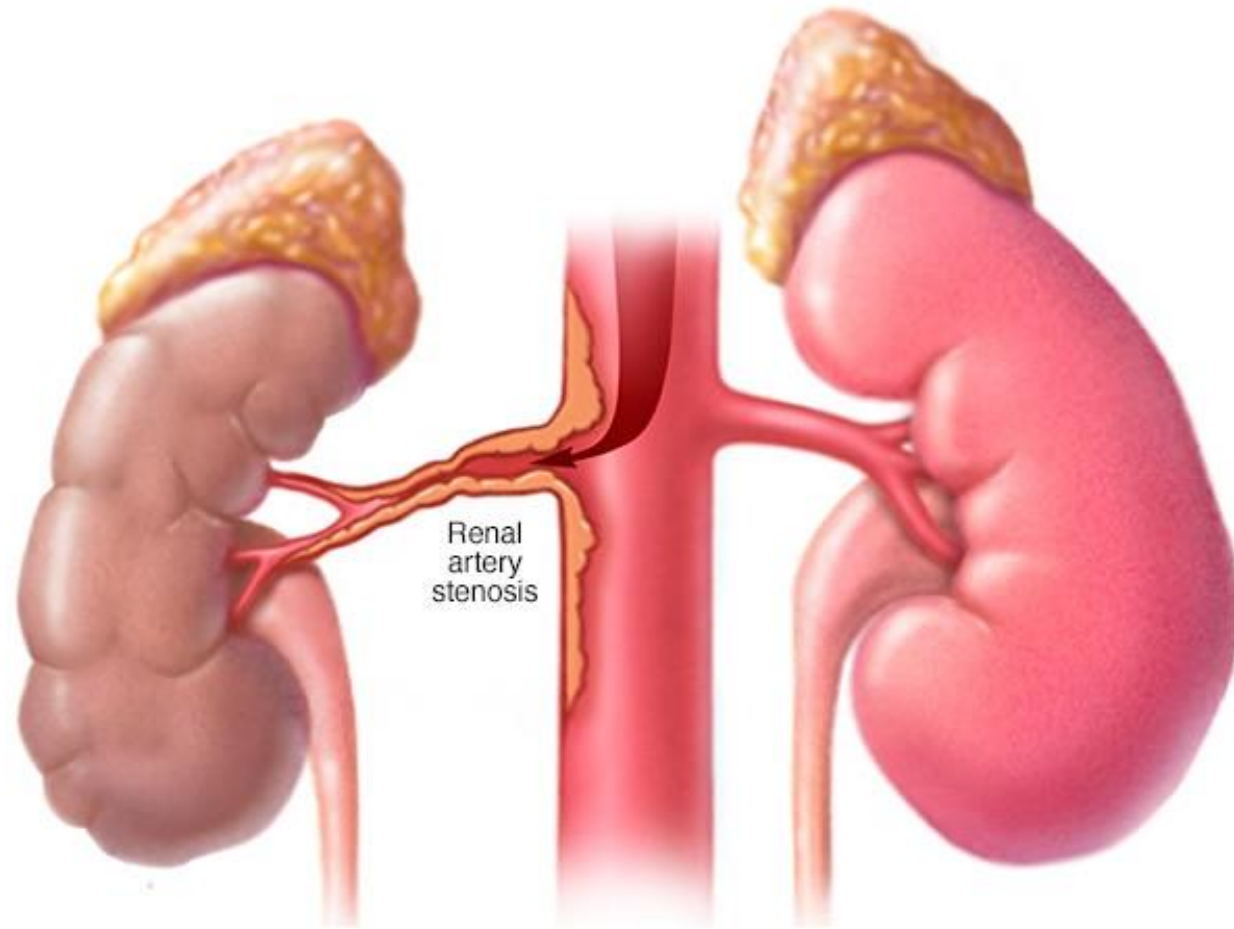
Atheroembolic disease: clinical signs

- Fast worsening of renal function
- Ischemic peripheral lesions
- Increased RAS activity → HT
- Altered vision
- Confusion
- Livedo reticularis



Atheroembolic disease: laboratory

- Eosinophilia
- Mild urinary alterations (microematuria, leucocyturia, albuminuria)
- Increased LDH
- Increased CRP, ESR
- Reduced C3



Renal artery atherosclerosis in diabetes

Suspicion of NDKD: **vascular disease**

- Rapidly worsening renal function, sometime occurring after initiation of RAAS blockade
- No or minimal proteinuria
- Negative urine sediment
- Refractory HT