

Fisiopatología y manifestaciones clínico-biológicas de la afectación renal en la asociación HTA-DM tipo 2.

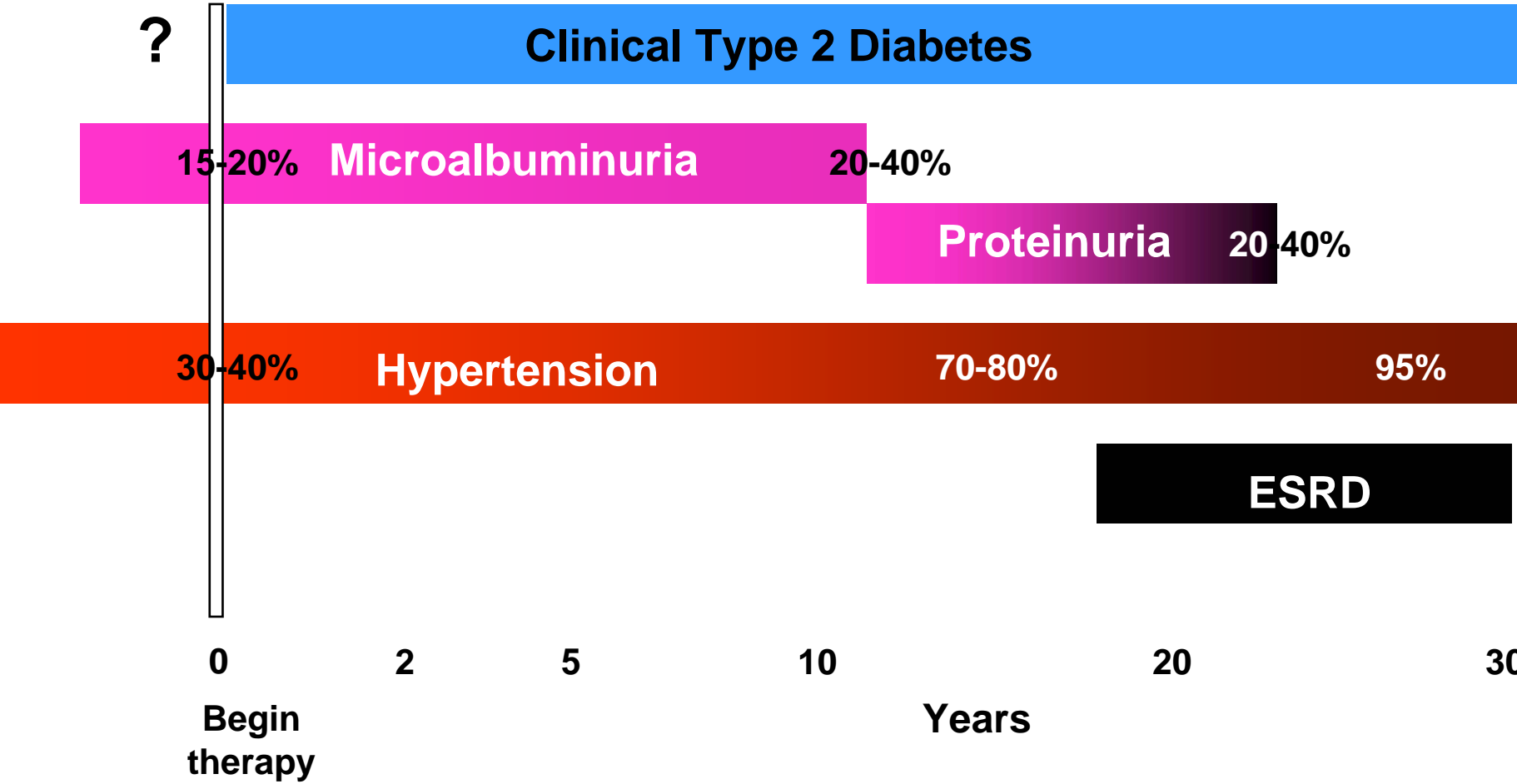
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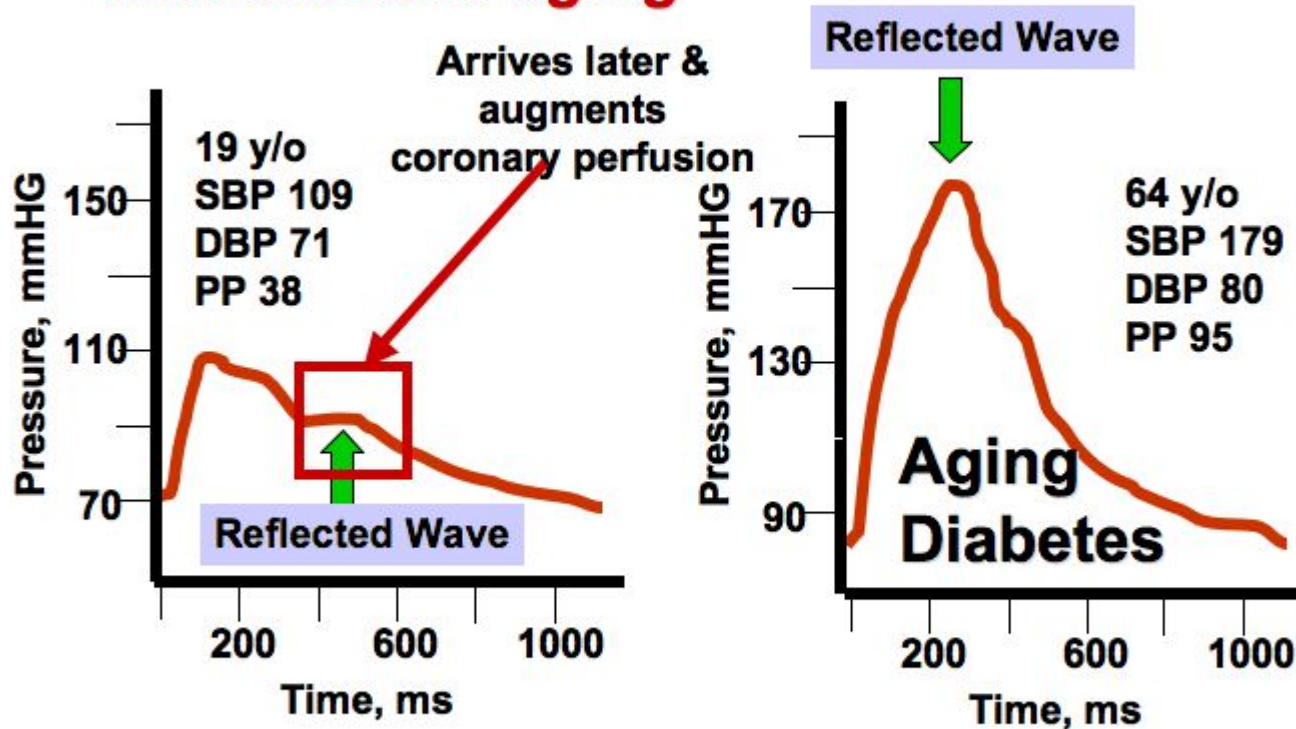
Continuum of Type 2 Diabetic Nephropathy



Factors related to renal damage of HTN in Type 2 diabetes

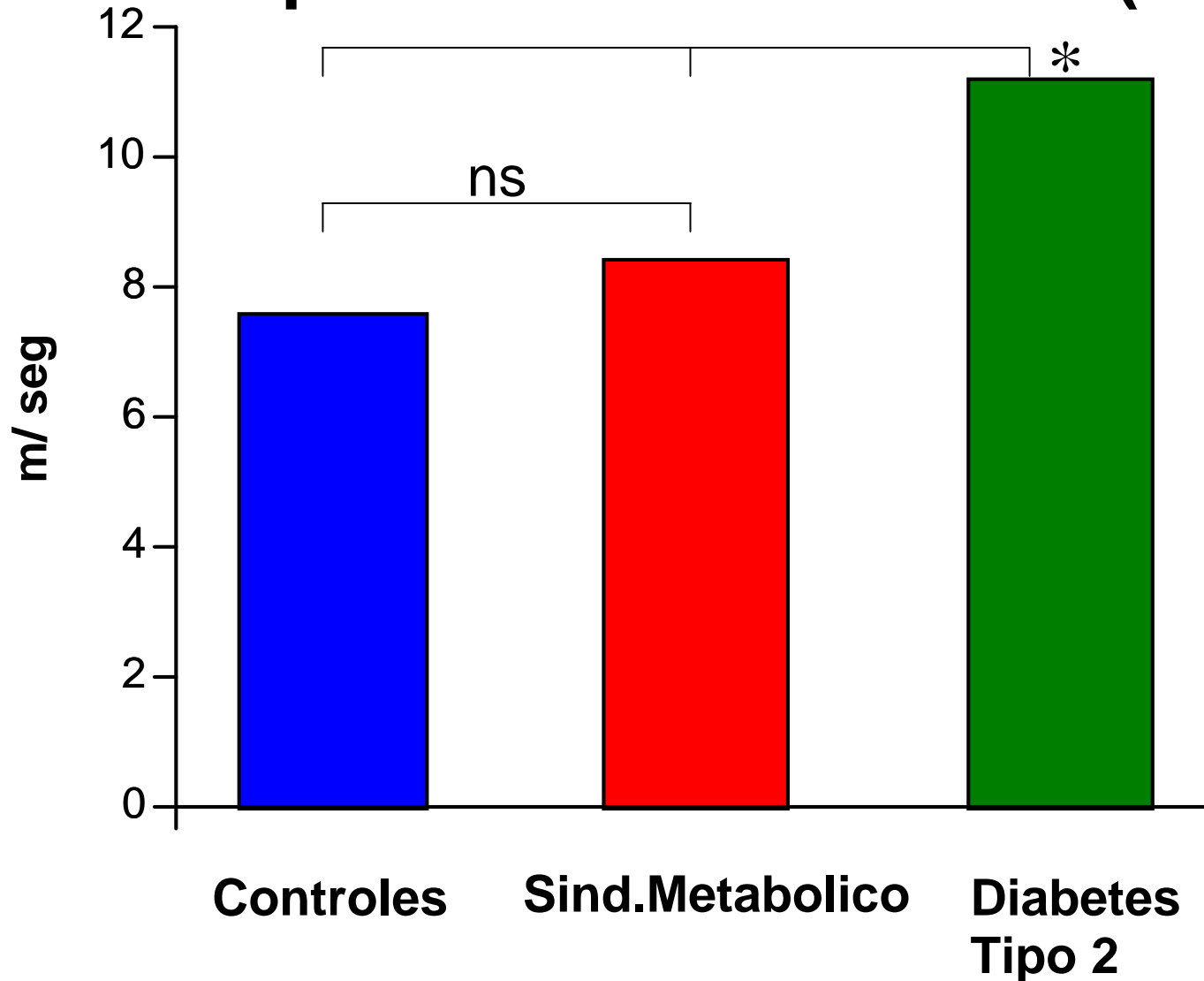
- **Large vessel stiffness**
- **BP pattern**
- **Microalbuminuria**

Augmentation of systolic BP in diabetes and aging

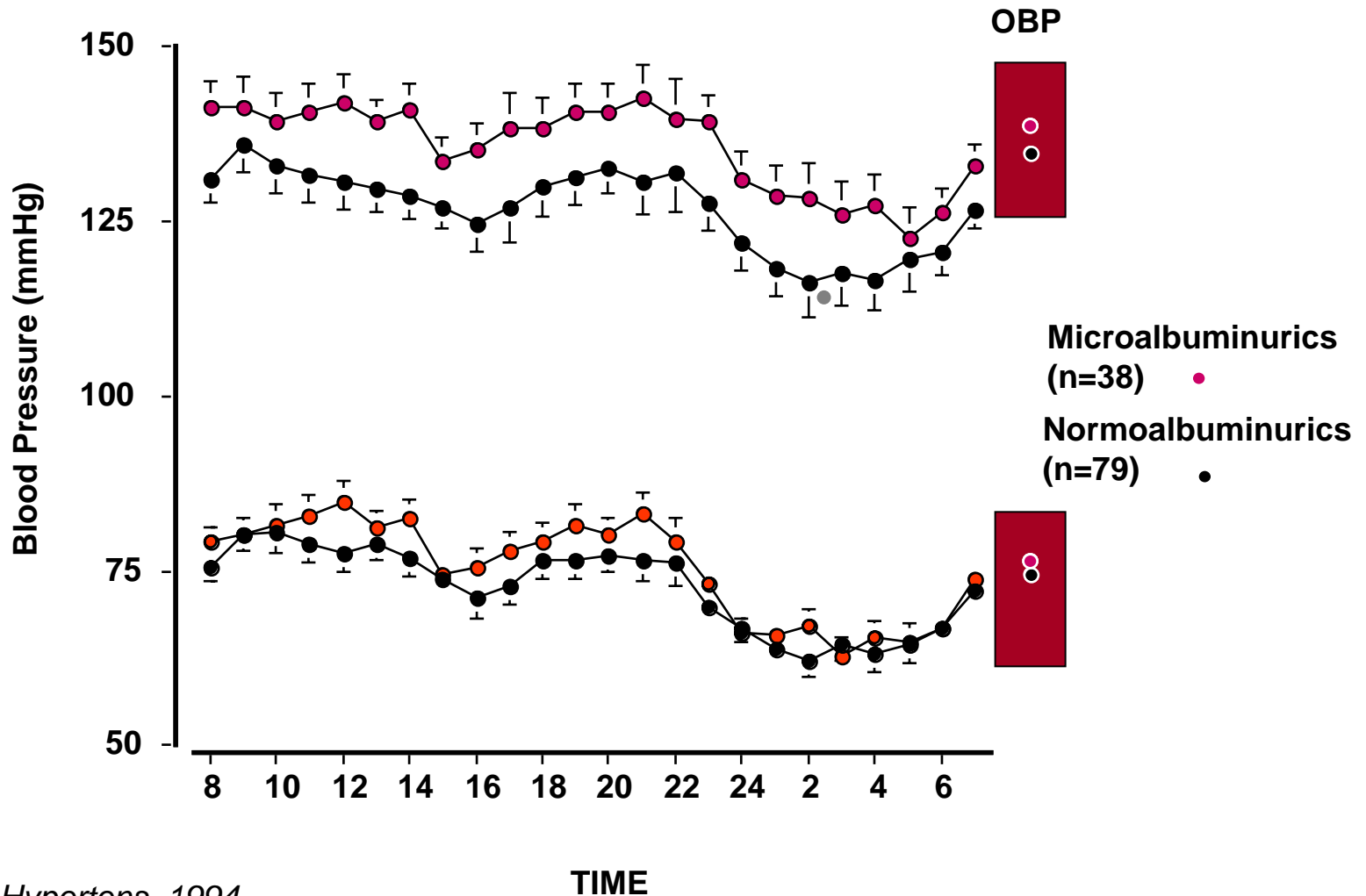


Increased pulse wave velocity due to stiff vessel walls causing early reflected wave

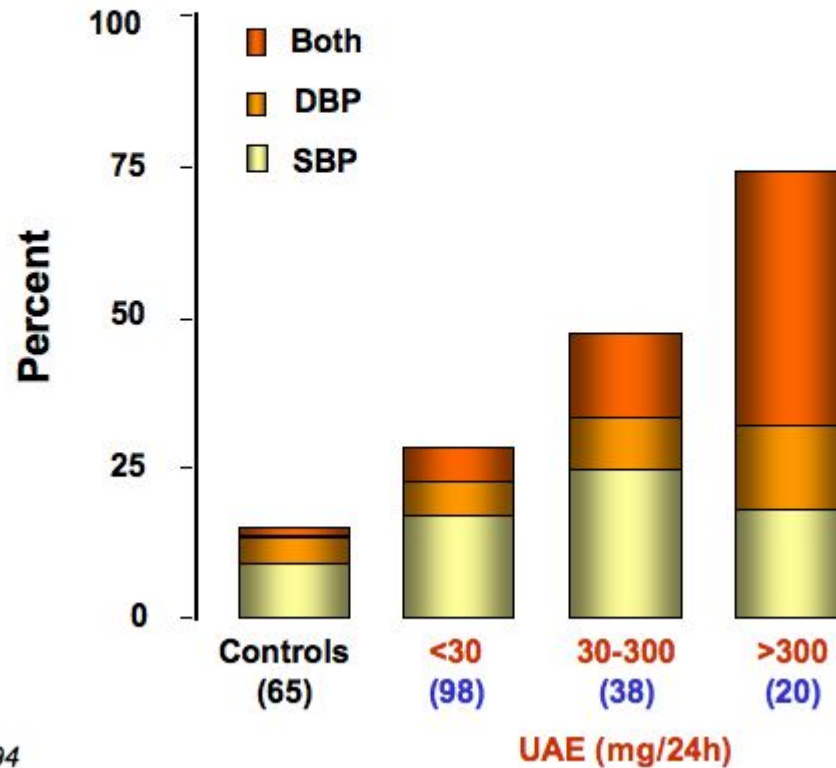
Velocidad de la Onda de pulso en hipertensos no tratados (n=182)



Ambulatory BP and UAE in type 2 diabetes



Circadian Variability Abnormalities in Type 2 Diabetes



Non-dipping BP Pattern

High nocturnal BP

What are the mechanisms?

**Autonomic
neuropathy**

**Supine volume
overload**

Baroreceptor dysfunction

Renal dysfunction

Genetics

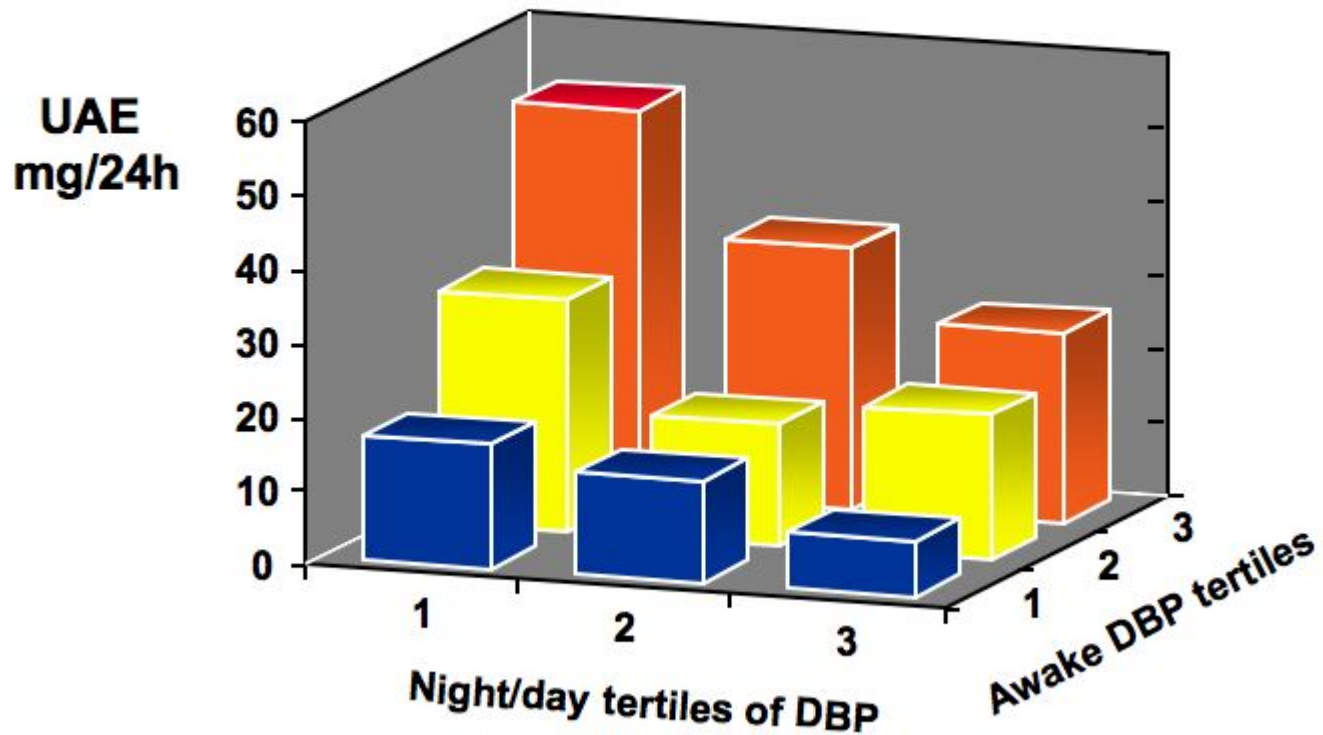
Characteristics of hypertension in type 2 diabetes

- **Systolic hypertension predominant**
- **Non-dipping pattern frequent**

Prevalence of microalbuminuria in several diseases

Disease	Prevalence (%)
Type 1 diabetes	22-25
Type 2 diabetes	22-31
Essential hypertension	8-26
Metabolic syndrome	11-15
Impaired fasting glucose	12
General population	4-6

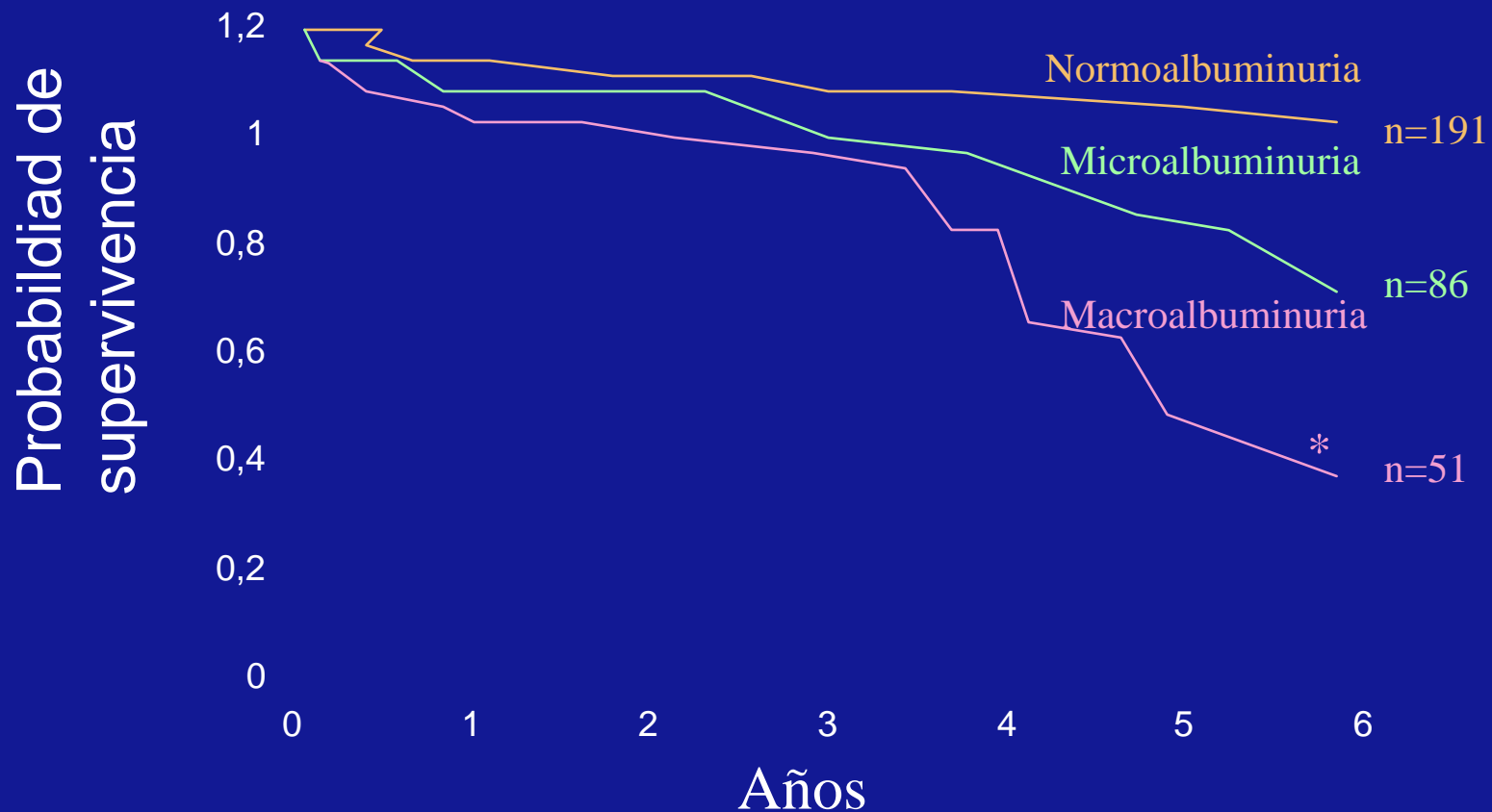
Blood pressure circadian variability and microalbuminuria in essential hypertension+diabetes



Redón et al, J Hypertens, 1994

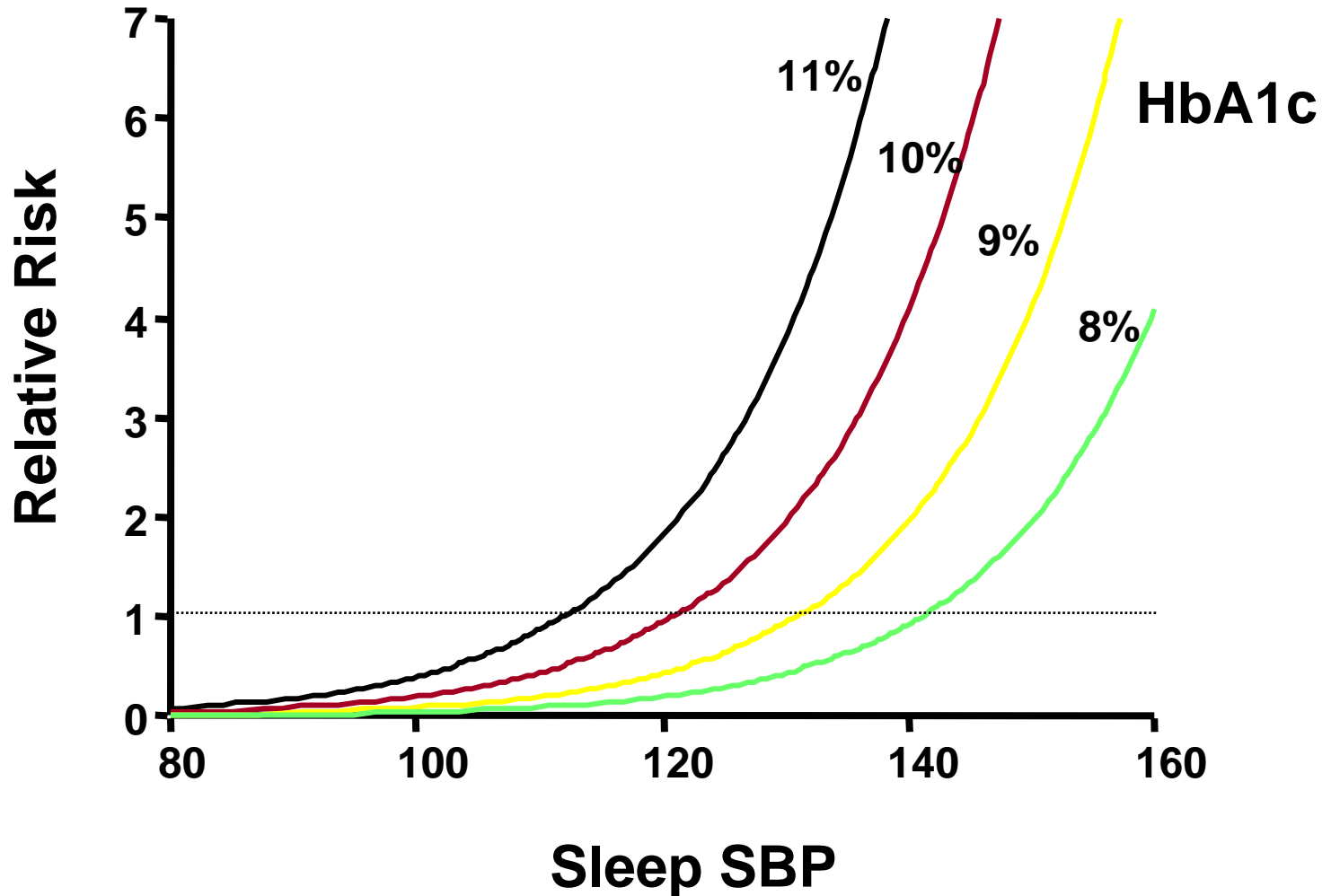
PROTEINURIA Y MORTALIDAD EN DIABETES TIPO 2

Clínica diabetes Parving-Steno



*p<0,05: normo. vs. micro. y macroalbuminuria

Sleep SBP, HbA1c and Relative Risk of Developing Microalbuminuria



Albuminuria and Vascular Damage — The Vicious Twins. Editorial.NEJM 2003

Hyperglycemia

Basement membrane

Endothelial cell

Glucose

Mitochondrion

ROS

Methylglyoxal

AGE

Receptor for AGE

Podocyte

Transcription of growth factors and cytokines

ROS

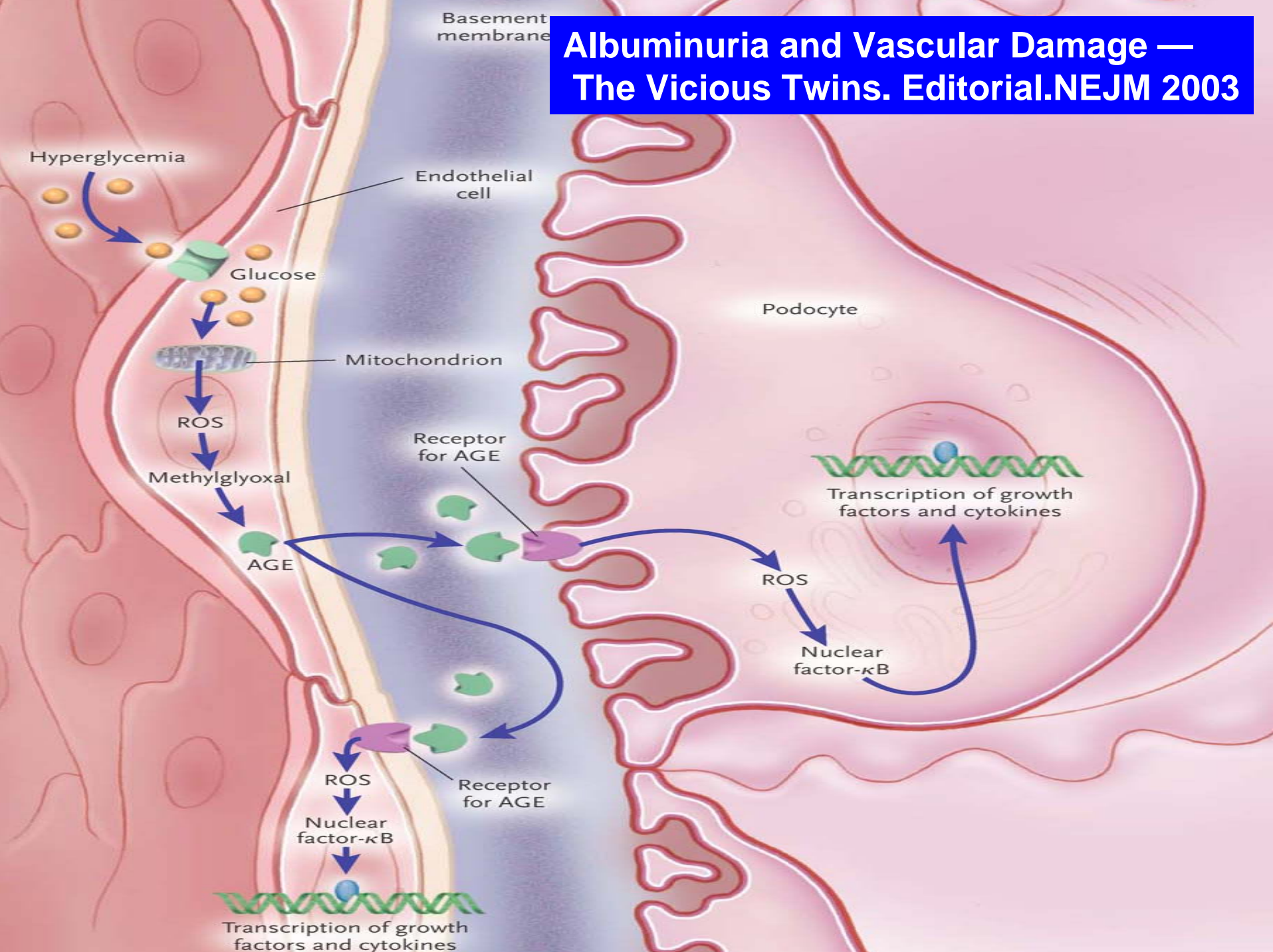
Nuclear factor- κ B

ROS

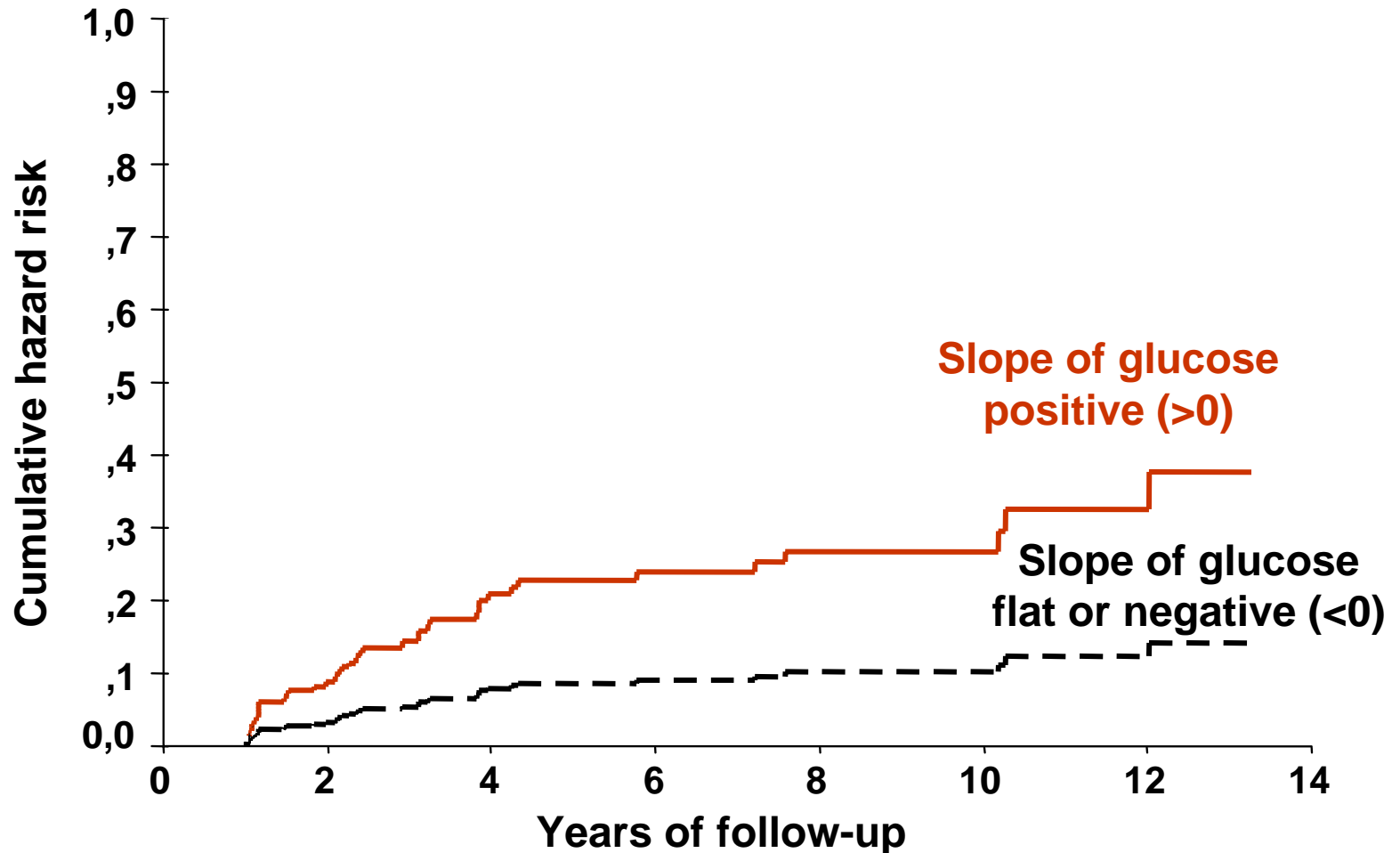
Nuclear factor- κ B

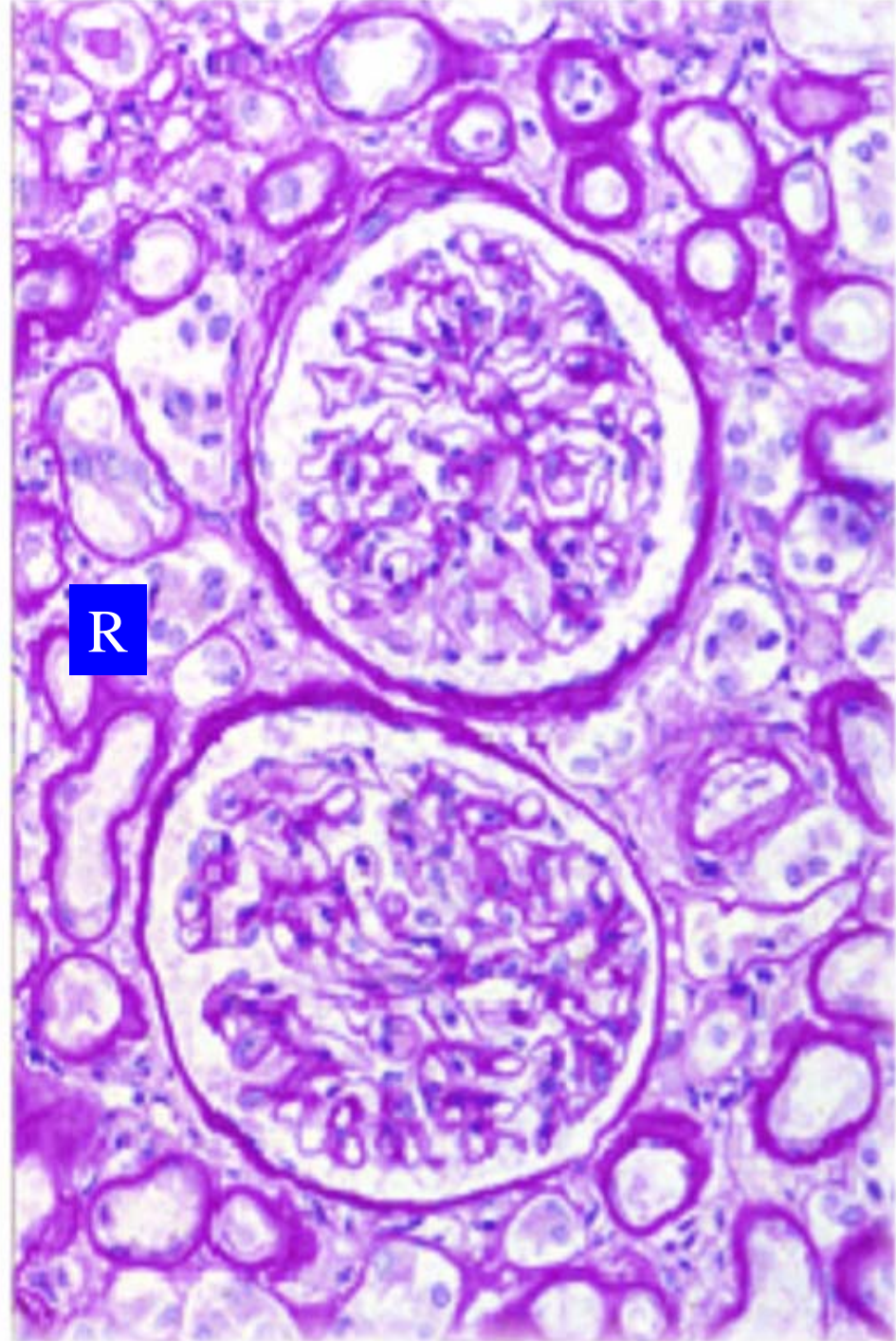
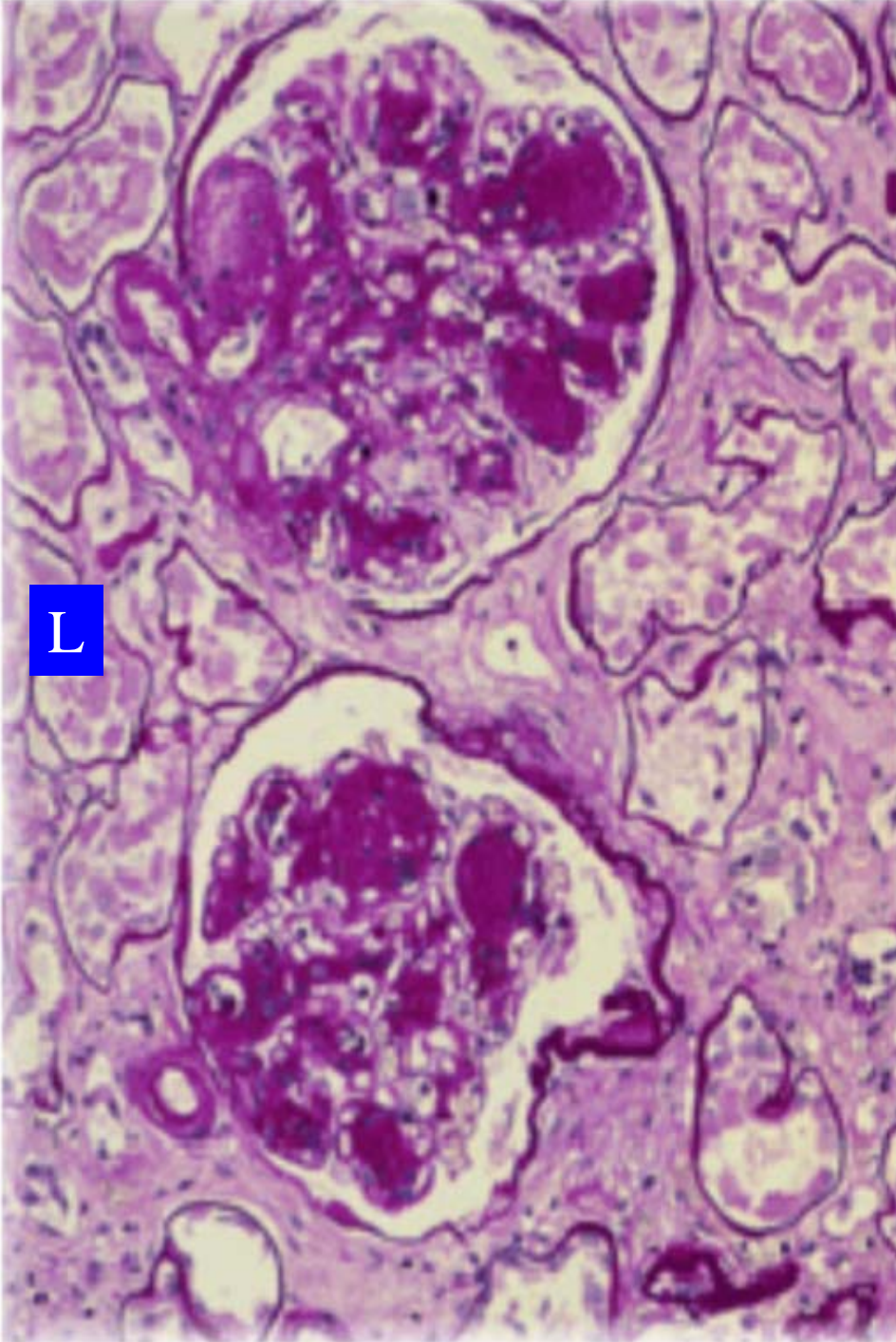
Receptor for AGE

Transcription of growth factors and cytokines



Cumulative hazard risk to develop microalbuminuria by glucose trend during follow-up in HTN





Natural history of microalbuminuria in hypertension+diabetes



Sumario:

El diagnóstico de diabetes es un estadio más de la evolución de la enfermedad vascular:

1. Importancia de la rigidez arterial.
2. Alteraciones del ritmo de la PA.
3. Microalbuminuria como marcador de daño vascular y renal.