MÁSTER EN HEPATOLOGÍA

UAM Universidad Autónoma de Madrid

Universidad de Alcalá

“Insuficiencia renal en la cirrosis. Insuficiencia renal en la cirrosis por MAFLD”

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Disclosure of interests

I disclose the following financial relationship(s) with a commercial interest:

Mallinckrodt, Novartis, Sequana Medical, Gilead,

Grifols, Martin Pharmaceuticals, Intercept, Echosens

OUTLINE

- Definition and prevalence of AKI in cirrhosis
- Staging and main etiologies of AKI
- Kidney biomarkers and AKI in cirrhosis
- Algorithm for diagnosis and management of AKI in cirrhosis
- CKD. Transition from AKI to CKD. Role of MAFLD.

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Acute Kidney injury (with or without CKD)

Chronic kidney disease (CKD), low GFR for > 3 months

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Acute kidney disease, persistence of AKI for up to 3 months

ACUTE KIDNEY INJURY IN CIRRHOSIS

International Club of Ascites (ICA-AKI) definition

Increase in sCr ≥0.3 mg/dL (≥26.5 µmol/L) within 48 h; or increase of >50% from baseline which is known, or presumed, to have occurred within the prior 7 days. Values up to the previous 3 months can be used as baseline

Examples:

Baseline	AKI	Diagnosis
0.7 mg/dL	2.6 mg/dL	AKI
0.9 mg/dL	1.2 mg/dL	AKI
1.8 mg/dL	3.2 mg/dL	AKI on CKD
------	2.5 mg/dL	AKI or CKD?

Angeli P et al , J Hepatol 2015

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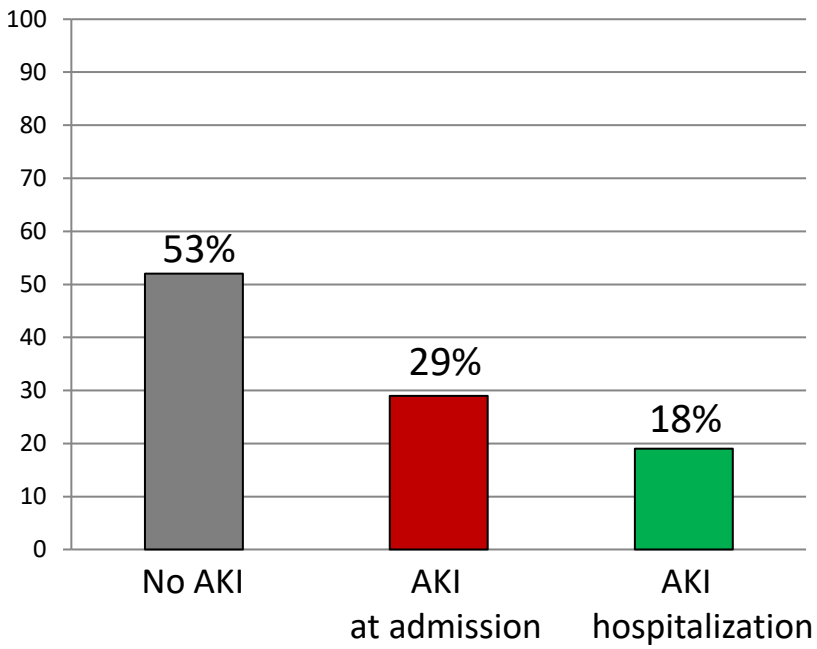
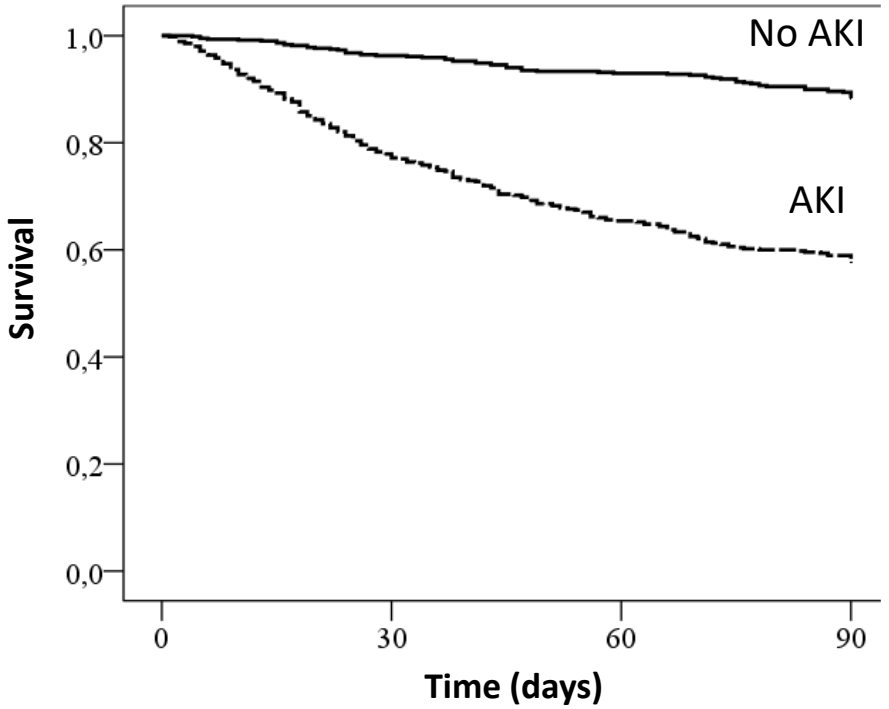
PREVALENCE OF AKI AND PROGNOSIS

Hospitalized patients with decompensated cirrhosis (n=1155)

Prevalence



Survival



Huelin P. et al, Clin Gastroenterol Hepatol 2017

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Staging of AKI

Stage AKI	CRITERIA
Stage 1 **68%**	increase in sCr ≥0.3 mg/dL (26.5 mmol/L) with an increase in sCr ≥1.5-fold to twofold from baseline **Stage 1A** sCr at diagnosis: < 1.5 mg/dL **20%** **Stage 1B** sCr at diagnosis: ≥ 1.5 mg/dL **48%**
Stage 2 **19%**	increase in sCr >two to threefold from baseline
Stage 3 **13%**	increase of sCr >threefold from baseline or sCr ≥4.0 mg/dL (353.6 mmol/L) with an acute increase ≥0.3 mg/dL (26.5 mmol/L) or initiation of renal replacement therapy

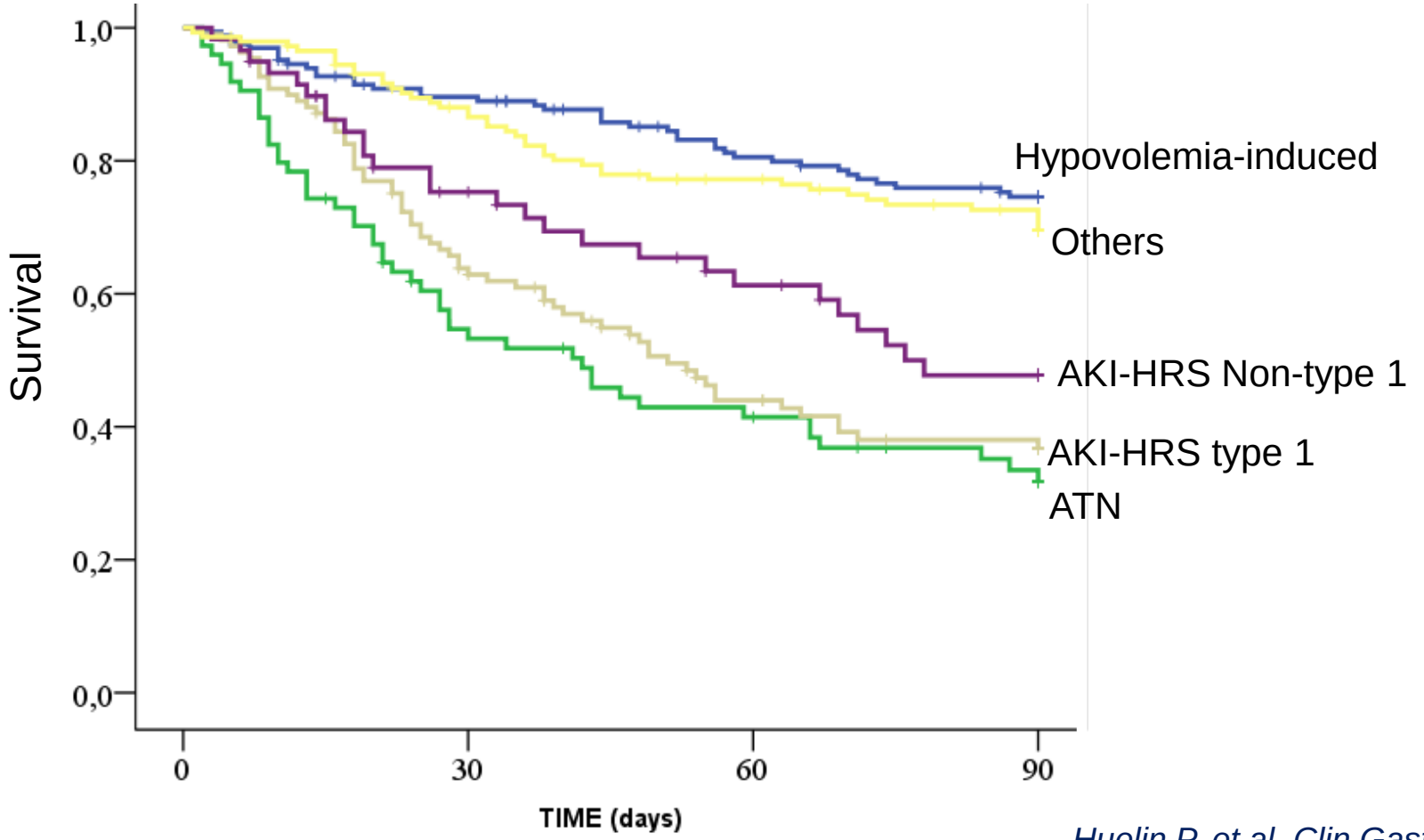
Angeli P et al , J Hepatol 2015

MAIN ETIOLOGIES OF AKI IN CIRRHOSIS

- **HYPOVOLEMIA-INDUCED** *(diuretics, GI bleeding, diarrhea)*.
- **HEPATORENAL SYNDROME**
- **ACUTE TUBULAR NECROSIS** *(shock, nephrotoxic drugs, other)*.
- **NON-STEROIDAL ANTIINFLAMMATORY DRUGS** *(NSAIDs)*
- **GLOMERULONEPHRITIS**
- **MISCELLANEOUS/UNKNOWN**

PROGNOSIS OF AKI IN CIRRHOSIS

Relevance of the etiology of AKI



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KIDNEY BIOMARKERS IN CIRRHOSIS

Potential usefulness

Help in differential diagnosis of AKI (ATN vs HRS)

Provide information on kidney outcomes

Provide prognostic information

Provide information on reversibility after transplantation

NGAL in urine is the best biomarker so far

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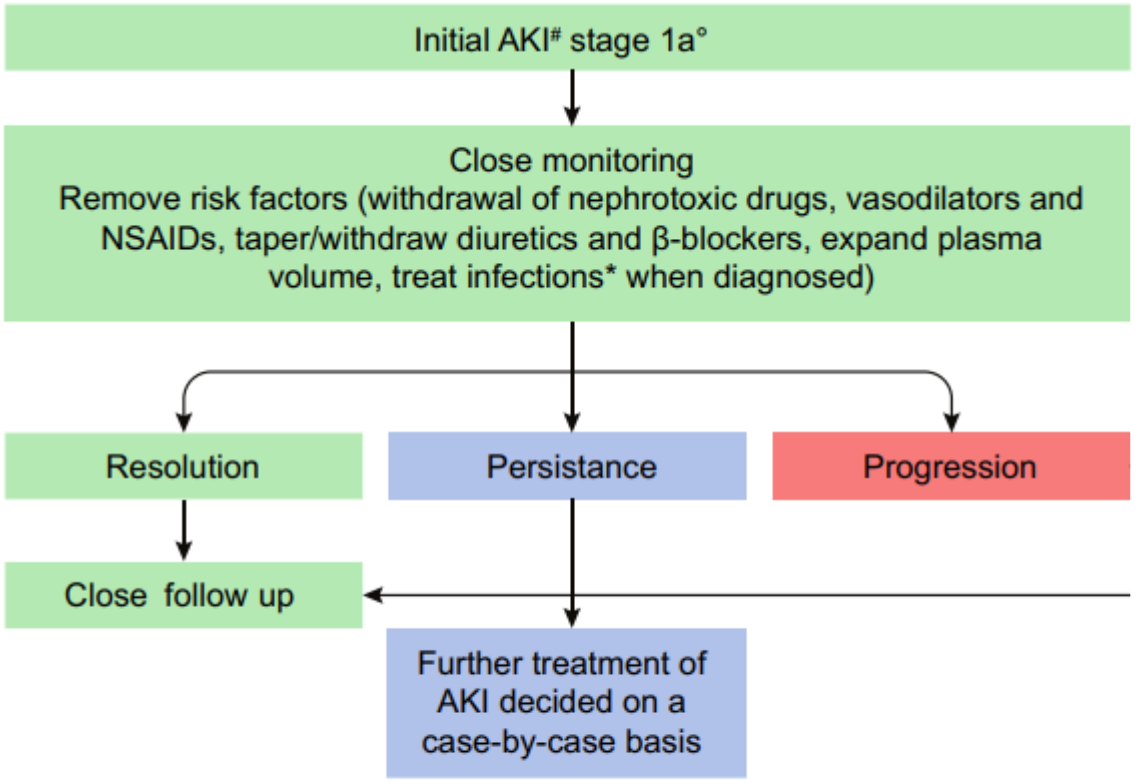
EASL GUIDELINES ALGORITHM FOR AKI DIAGNOSIS AND MANAGEMENT



#AKI at the first fulfilling of KDIGO criteria

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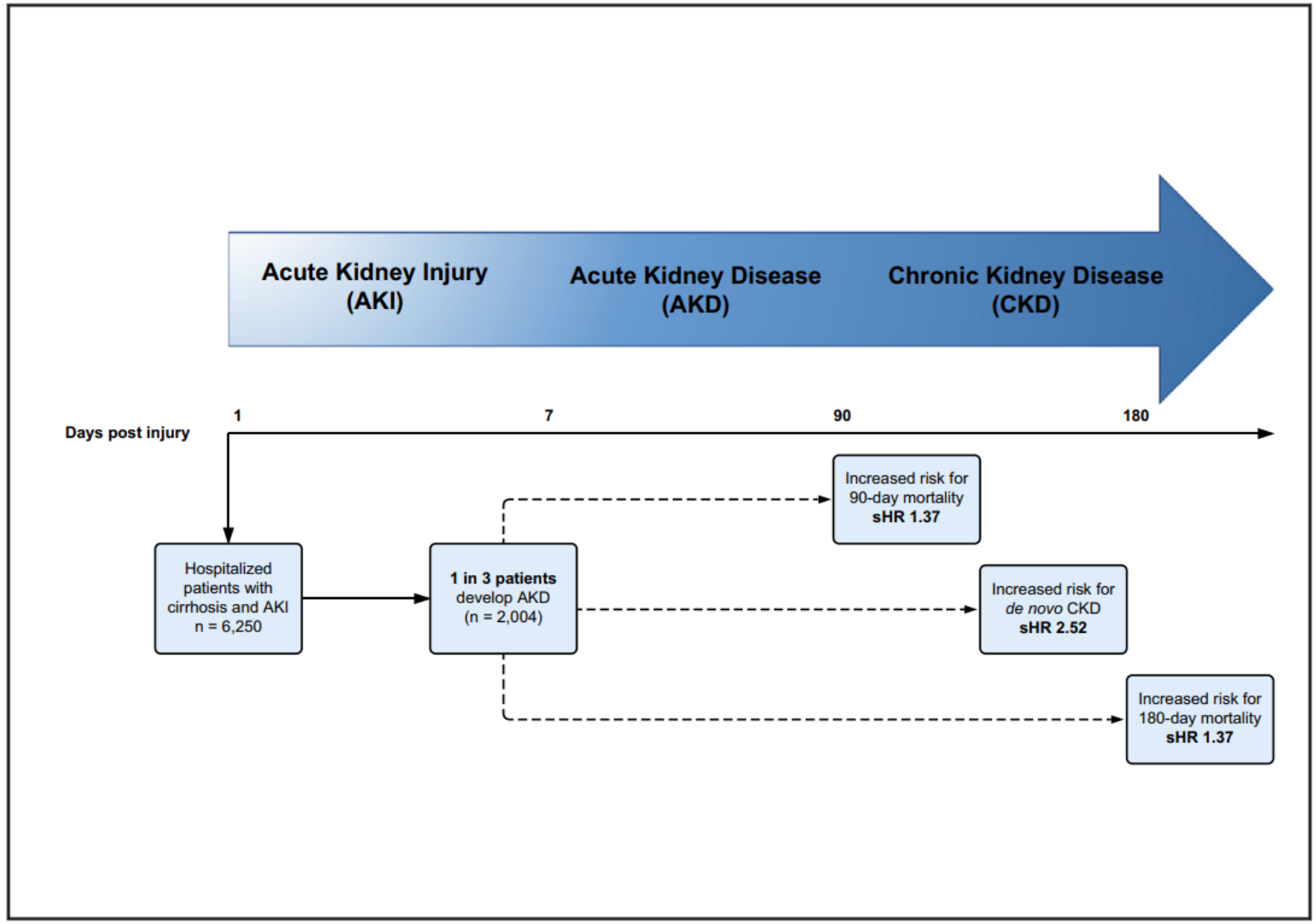
RELEVANCE OF ACUTE KIDNEY DISEASE IN CIRRHOSIS



Patidar et al., J Hepatol.2022

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CKD IN CIRRHOSIS

Definition: Estimated GFR < 60 ML/min for more than 3 months

Two main types of CKD in cirrhosis

- Functional: HRS-CKD (“type-2 HRS”)
- Structural: Transition from AKI to CKD

  MAFLD-associated (combination of factors)

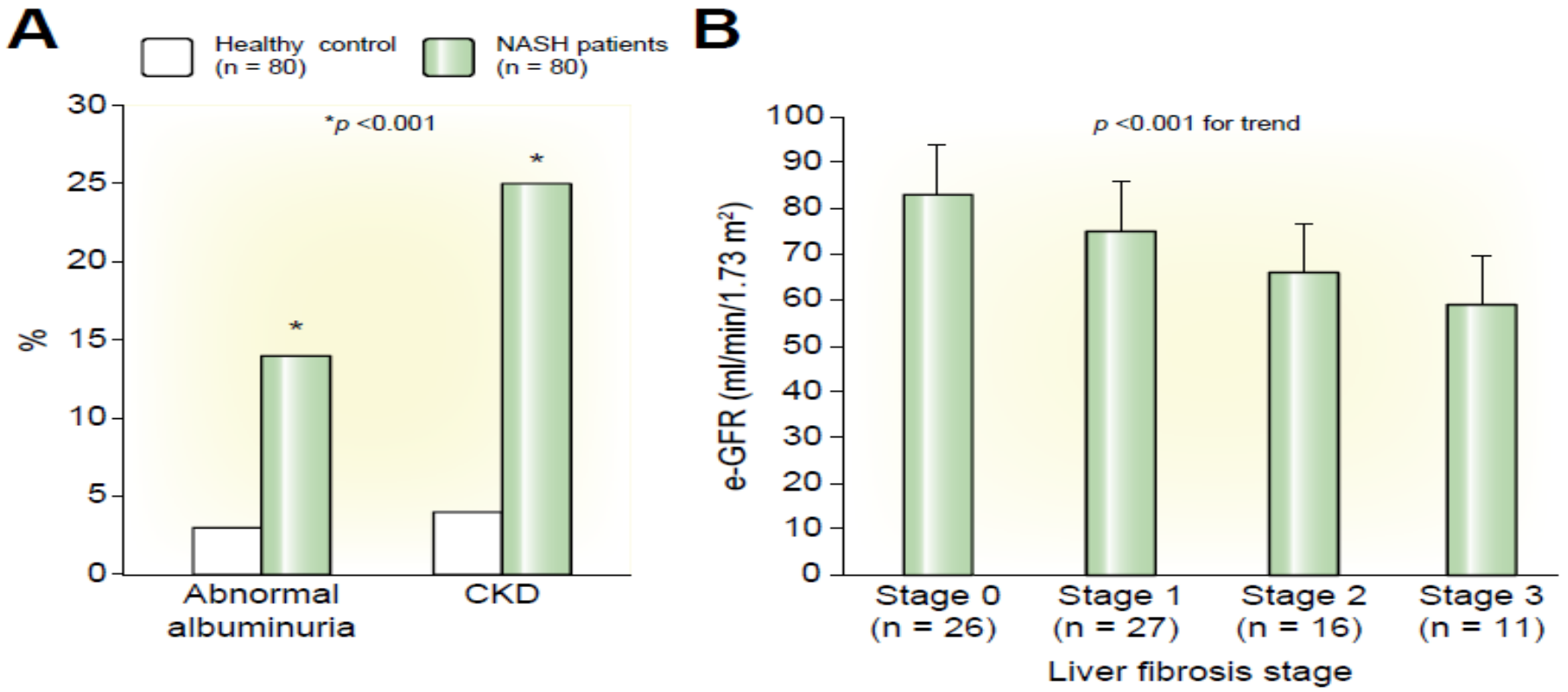
  Glomerulonephritis (i.e IgGA)

CKD IN CIRRHOSIS

Clinical consequences

- Poor response to diuretics; refractory ascites common
- Hyponatremia, HE, and AKI frequent with diuretic therapy
- Increased hospitalizations
- Increased risk of complications of cirrhosis (AKI, HE, infections)
- Poor outcome before transplantation
- Worse outcome after transplantation vs patients without CKD

CKD AND MAFLD
Relationship with fibrosis stage



Byrne.JHepatol.2020

TAKE-HOME MESSAGES (1)

- The diagnostic criteria of AKI are helpful for early detection of impairment in kidney function
- Categorization of patients with AKI stage 1 into 1A and 1B identifies subgroups with very different kidney and patient outcomes
- Etiology of AKI is an important determinant of prognosis, mortality being higher for hepatorenal syndrome and acute tubular necrosis vs hypovolemia-induced AKI
- The diagnosis of AKI should be done with the use of an algorithm that implies assessemnt of cause and severity of AKI, administration of albumin, and application of diagnostic criteria of Hepatorenal syndrome

TAKE-HOME MESSAGES (2)

- CKD is common in patients with cirrhosis and is defined by a persistent reduction in eGFR (<60 mL/min) for more than 3 months
- Development of CKD is associated with an increased risk of complications, particularly AKI, refractory ascites, and bacterial infections, and increased 3-month readmission rate
- CKD is common in patients with MAFLD and its frequency increases in parallel with progression of liver fibrosis
- CKD identifies a high-risk group of patients with cirrhosis

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