

# IMPACT OF RIFLE CLASSIFICATION IN LIVER TRANSPLANTATION

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## INTRODUCTION AND AIMS

Orthotopic liver transplant (OLT) is an established treatment for patients with advanced cirrhosis, acute fulminant hepatitis and a therapeutic option for some resectable malignancies or metabolic diseases<sup>1</sup>.

Acute renal failure (ARF) is a common complication of OLT and is associated with increased mortality<sup>2</sup>. True incidence is not known, depending on criteria used to define ARF after OLT.

Recently a group of experts developed a set of criteria for definition and classifying ARF, publishing The RIFLE classification system<sup>3</sup>.

The aim of this study was to evaluate the prognostic value of RIFLE classification in OLT receptors.

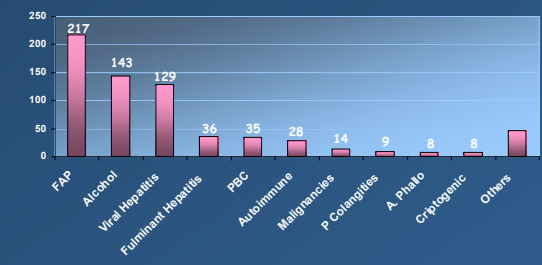
## PATIENTS AND METHODS

This was a retrospective, observational study of 626 receptors submitted to 708 OLT in our unit, between September 1992 and March 2007.

Clinical data included age at transplantation, gender, weight, aetiology for hepatic failure, presence of diabetes mellitus, hypertension, renal dysfunction pre transplantation (RD pre), hepatitis B (HBV) and C infection (HCV) and necessity for acute renal replacement therapy (RRT).

Laboratorial data considered was serum creatinine (Scr) and/or estimated glomerular filtration rate (eGFR) by Cockcroft-Gault equation at days 1, 7 and 21 post transplantation. At each time point, the patients were categorized in R, I or F according to the RIFLE criteria. The worst value for renal function of these 3 time points was selected.

## Etiology of hepatic failure



## During follow-up

## RESULTS

626 patients received 708 OLT:

- Predominance of male gender (64%); Mean age **44±12.6** years
- **Hypertension** in 117 receptors (18.8%); **diabetes** in 106 (17.1%)
- **Hepatitis B V** infection in 3.8% and **Hepatitis C V** infection in 19.9%
- Mean follow up time 3.5 years, 29% having more than 5 years of fup
- **Previous renal dysfunction** (eGFR < 60 ml/min/Pcr >1.5 mg/dl) in 133 receptors (21%)
- 152 patients died

## According to RIFLE criteria

**ARF n=235**

Risk factor for CKD development (p<0.01)

No correlation with mortality or retransplant necessity

16.8% R

8.5% I

7.9% F

**Dialysis required** → 73 (11.4%) receptors

R

6.8%

I

10.2%

F

62.3%

**CKD** →

stage 3 – 326 (50.2%) receptors

stage 4 – 60 (8.5%) receptors

stage 5d – 40 (5.6%) receptors

## Spearman Correlation

	F criteria	
	r	P
RD pre (n = 133)	0.1	0.03
RRT (n = 73)	0.48	<0.0001
CKD stage 3 (n = 326)	0.28	<0.001
CKD stage 4 (n = 60)	0.15	<0.001
CKD stage 5d (n = 40)	0.24	<0.001

## Linear Regression

	F criteria			
	β	CI 95%	p	R <sup>2</sup>
CKD stage 4	0.12	0.02 to 0.18	<0.001	0.19
RRT	0.58	0.41 to 0.58	<0.001	0.51
CKD stage 3	0.33	0.13 to 0.24	<0.001	0.51
CKD stage 5d	0.23	0.19 to 0.41	<0.001	0.51

## Mortality 23.5%

**Risk**

119 receptors

Mortality **11.6%**

**Injury**

60 receptors

Mortality **11.3%**

**Failure**

56 receptors

Mortality **35%**

Univariate analysis

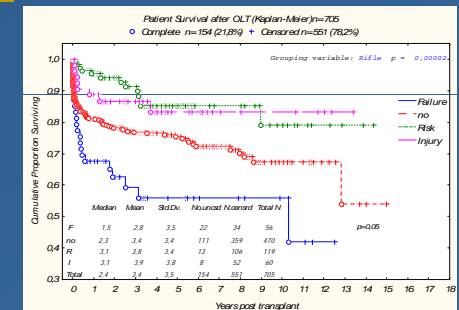
	Mortality	
	r	P
F criteria	0.12	0.001
R criteria	-0.12	0.002

Multivariate analysis - Linear Regression

	Mortality			
	β	CI 95%	p	R <sup>2</sup>
F criteria	0.11	0.06 to 0.28	0.003	0.16
R criteria	-0.10	-0.2 to -0.03	0.006	0.16

## CONCLUSIONS

ARF is a common complication in OLT and it has a severe prognostic influence in terms of patient survival. RIFLE classification is a simple and a useful tool to stratify the severity of ARF according to the risk of developing renal dysfunction and risk of death



References:

- 1- Pham PT, Pham PC, Wilkinson AH. Renal function outcomes following liver transplantation and combined liver-kidney transplantation *Nature* 9: 507-514, 2007
- 2- Cabezuelo JB, Ramirez P, Rios A, et al. Risk factors of acute renal failure after liver transplantation *Kidney Int* 69: 1073-1080, 2000
- 3- Mehta RL, Kellum JA, Shah SV et al, for the Acute Kidney Injury Network. for the Acute Kidney Injury Network: report of an initiative to improve outcomes in acute kidney injury *Crit Care*