CLASSIFICATION OF AKI USING THE p-RIFLE IN A PEDIATRIC INTENSIVE CARE UNIT (CALI, COLOMBIA)

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Background

- Acute Kidney Injury (AKI) is a very common complication in PICU and worsen mortality.
-There is an increased incidence due to the higher complexity of patients nowadays: liver, kidney, stem cell transplants, drug nephrotoxicity, etc.
-There have been different AKI definitions, from varying increases in serum creatinine to decrease in urine output. Since 2004, AKI was proposed instead of Acute Renal Failure (ARF), and new criteria constituted p-RIFLE classification.
-These new criteria are independent risk factors for length of stage and mortality.

	Pediatric RIFLE criteria[a]	
	Estimated CCl (eCCl)[b]	Urine output
Risk	eCCl decrease by 25%	<0.5 mL kg^{-1} h^{-1} for 8 h
Injury	eCCl decrease by 50%	<0.5 mL kg^{-1} h^{-1} for 16 h
Failure	eCCl decrease by 75% or eCCl <35 mL min^{-1} per 1.73 m^2	<0.3 mL kg^{-1} h^{-1} for 24 h or anuric for 12 h
Loss	Persistent failure >4 weeks	
End stage	End stage renal disease (persistent failure >3 months)	

a. Patients are classified with AKI having in mind either eCCl or urine output criteria.
b. Estimated creatinine clearance (mL min -1 per 1.73 m2) is calculated using the Schwartz formula: k x height in centimeters/SCr
Taken from (1)

Objectives

We used the p-RIFLE score to estimate the incidence of AKI in children of PICU in an high complexity Hospital in Cali (Colombia).

Methods

- Between September/2009 to December/2011, p-RIFLE classification was applied prospectively to assess kidney injury in hospitalized children in the PICU.
- Of the patients with AKI are described: causes, PRISM score, mortality, and renal replacement therapy (RRT) used.

Results

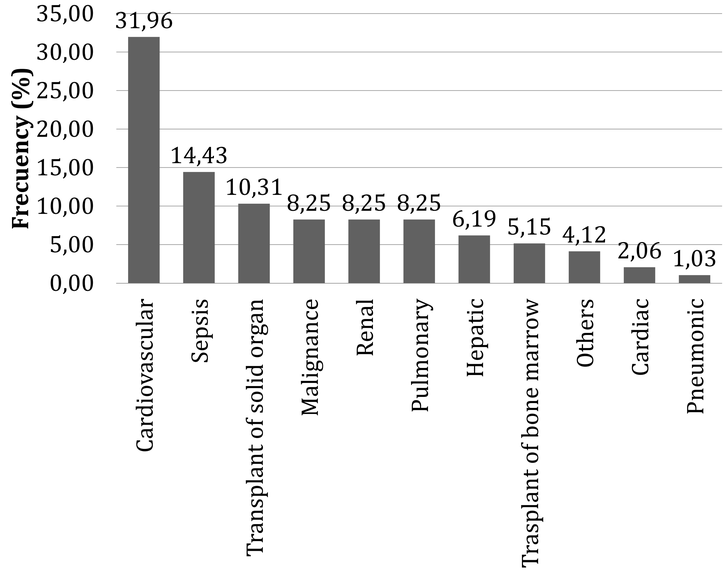
- Out of 2100 patients admitted to PICU, 98 patients were classified with AKI:
- Incidence: 4.7%.

Table 1. General characteristics

Characteristic	N=98 patients
Age (years), Median (IQR)*	2 (0.17-9)
Sex (Male) (n[%])	53 (54.6)
Height (cm)*	88 (57-122)
Weight (kg)*	10 (4.5-25.0)
PRISM*	25 (15.7-37.5)
PRISM at admission to TRR	26.5 (16.5-37.8)

* Median(Interquartilic range)

Figure 1. Causes of AKI



Discussion

AKI incidence increased from 2.1% in a previous study (1996- 2006) to 4.7% in this study, probably related to the introduction of the new p-RIFLE classification.,It was possible to identify patients earlier when they are at RISK. Moreover, overall mortality decreased form 53.6% (1996 – 2006) to 43.8%(2009-2011). In this population, a higher score of p-RIFLE has a significant correlation with 72 hours death.
This prospective protocol allowed to use the p-RIFLE classification as a strategy for early detection of renal injury and halt the progression of the AKI, decreasing mortality .

Figure 2. Distribution of P-RIFLE

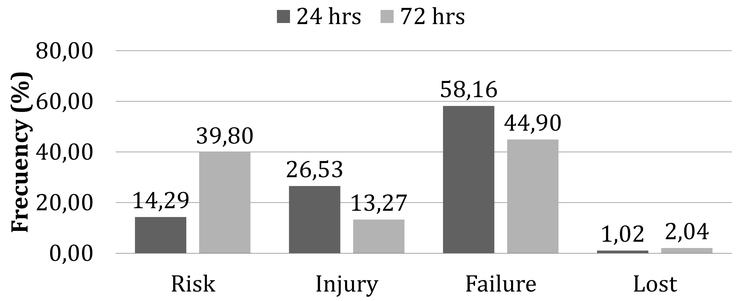
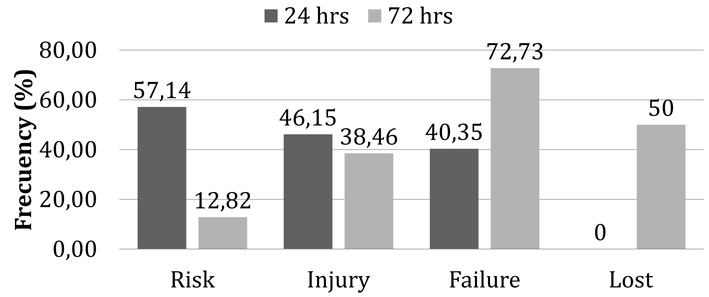


Figure 3. Mortality by P-RIFLE at 24 and 72 hrs



Conclusions

- p-RIFLE criteria is useful making early detection in patients with AKI , therefore predicting mortality.
- Cardiovascular post-surgery and sepsis are principal causes of AKI and mortality in our PICU.
-After AKI classification with p-RIFLE, on the first 24 hours the highest mortality was reported on RISK (R) and after 72 hours, the highest mortality was reported on FAILURE (F). **OR: 12.21 CI: 95% , 1.23-2.7 (p= 0.02).**
-The mortality and the need for RRT decreased from 53.6% and 67% in previous period(1996-2006) to 43.8% and 51% respectively in this prospective study.

References

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