Acute Kidney Injury in Pediatric Hematopoietic Stem Cell Transplant Patients Predicts Day 100 Mortality

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BACKGROUND

- Acute kidney injury (AKI) is an independent predictor of mortality in pediatric patients [1].
- Most AKI occurs within the first 3 days of PICU admission [2].
- Previous studies suggest that AKI is associated with chronic kidney disease and mortality in patients undergoing Hematopoietic Stem Cell Transplant (HSCT) [3,4,5].

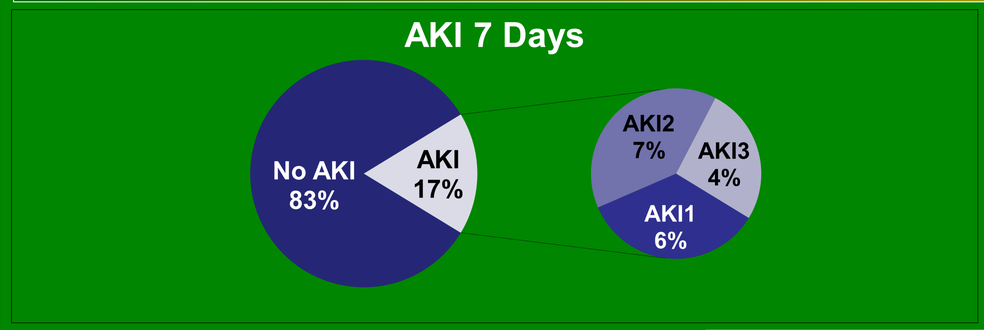
Objectives

1) Determine the incidence of AKI in pediatric patients during the first 7 and 30 days following HSCT
2) To examine the association between the presence of AKI and 100 day, 1 year survival.

METHODS

- We retrospectively reviewed data on 132 consecutive pediatric patients who received HSCT at The Children's of Alabama Hospital between 2004-2001.
- AKI was defined using AKIN criteria (SCr only). Baseline SCr values for all patients were obtained during the pre-transplant evaluation.
- Statistical analysis was done using T test and chi square test to compare difference between two groups.

RESULTS



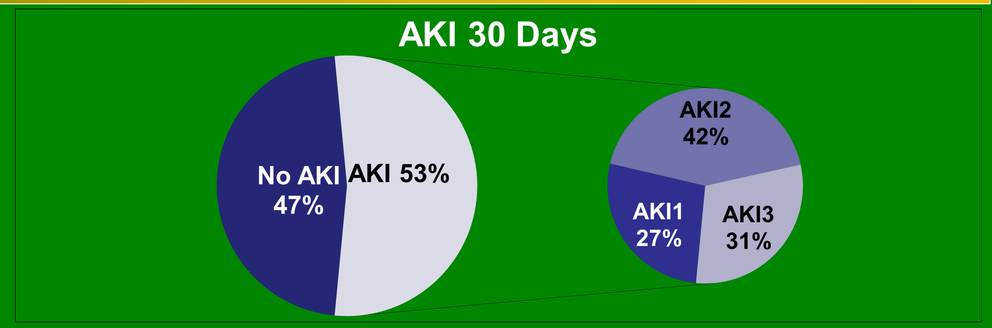


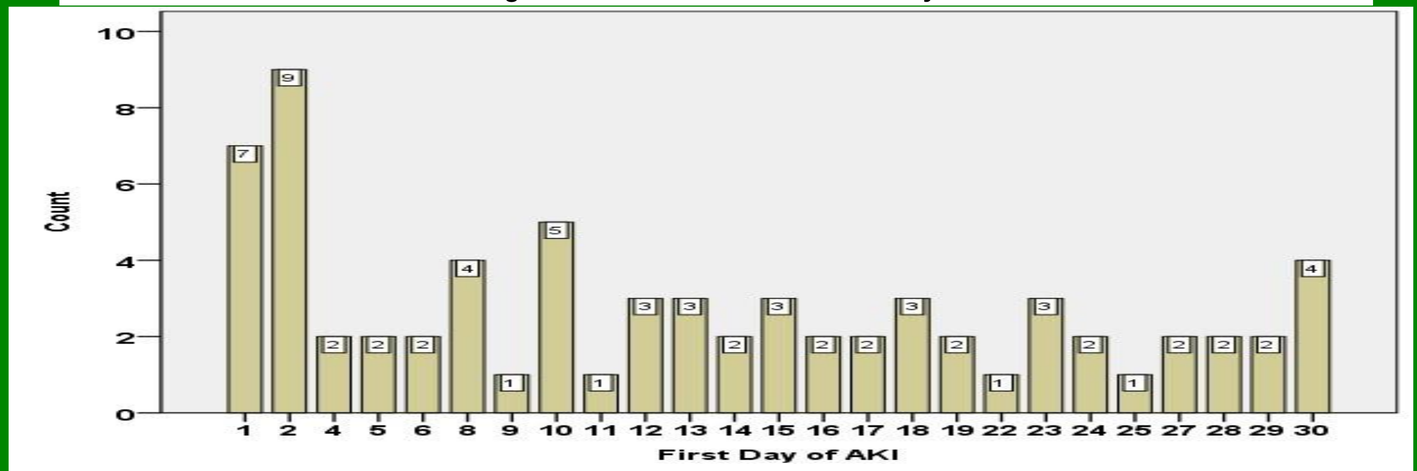
Table 1: Differences between survivors and non-survivors at 100 days

	Died (n=19)	Survived (n=113)	P value
AKI at 7 days	3 (16%)	20 (18%)	0.56
AKI at 30 day	14 (74%)	56(50%)	0.05
Race			0.92
Caucasian	11 (58%)	71 (63%)	
Black	7 (37%)	34 (30%)	
Hispanic	1 (5%)	7 (7%)	
Female	8 (42%)	53 (47%)	0.84
Donor Source			
AUTOLOGOUS	5 (26%)	40 (35%)	
ALLO UCB	3 (16%)	23 (21%)	0.82
ALLO MRD	4 (21%)	19 (17%)	
ALLO MUD	7(37%)	30 (27%)	
Stem Cell Source			
BM	10 (53%)	43 (38%)	
UCB	4 (21%)	29 (26%)	0.68
PBSC	5 (26%)	40 (36%)	

Table 2: Differences between survivors and non-survivors at 1 yr

	Died (n=43)	Survived (n=89)	P value
AKI at 7 days	5 (12%)	18 (20%)	0.16
AKI at 30 day	25 (58%)	45 (51%)	0.26
Race			0.24
Caucasian	22 (51%)	60 (68%)	
Black	18 (42%)	23 (26%)	
Hispanic	3 (8%)	5 (6%)	
Female	16 (37%)	45 (51%)	0.25
Donor Source			
AUTOLOGOUS	5 (26%)	40 (35%)	
ALLO UCB	3 (16%)	23 (21%)	0.64
ALLO MRD	4 (21%)	19 (17%)	
ALLO MUD	7(37%)	30 (27%)	
Stem Cell Source			
BM	20 (46%)	33 (38%)	
UCB	9 (21%)	24 (27%)	0.46
PBSC	14 (33%)	31 (35%)	

Fig 1: Incidence of AKI in first 30 days



CONCLUSIONS

- As opposed to critically ill pediatric ICU patients, in which 82% of AKI occurs in the first few days of ICU admission, incident AKI occurred throughout first 30 day post HSCT.
- AKI at 30 days post-HSCT was associated with increased mortality at 100 days post-transplant (p=0.05), but not 1-year mortality.
- We were not able to show a significant difference between AKI within 7 days of life and mortality.
- Improved understanding of the risks of AKI, and differences in early and late AKI after HSCT needs to be explored

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