FOLLOW-UP TO 3 YEARS AFTER AN EPISODE OF HOSPITAL ACQUIRED ACUTE KIDNEY INJURY

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INTRODUCTION: Hospital Acquired Acute kidney Injury (HAAKI) influences in morbidity, mortality, length of hospital stay and costs. AKI contributes about 1·7 million deaths every year and is a major contributor to poor patient outcomes. Its course of AKI varies with the setting in which it occurs, the severity and duration of AKI and affects outcomes (renal functional recovery, RRT and survival. Iatrogenic HAAKI may affect between 5-7% of hospitalized patients and its prevalence is regularly underestimated ranging between 6 and 35.3%

AIM: Follow up study to 3 years after an episode of HAAKI in a hospital with 200,000 reference population.

Analysis of renal function (RF) and survival according to epidemiological parameters and characteristics of AKI (recovery time of HAAKI, baseline degree of RF, at hospital discharge, and the association with iatrogenic).

MATERIAL AND METHODS: Prospective single-center study divided in two phases:

Phase 1: analysis of HAAKI detected during a period of 18 months.

* Inclusion criteria:

Increase in plasmatic creatinine > 177 µmol/L (2 mg/dL) in hospitalized patients with previously normal creatinine values

Or

Sudden increase of plasmatic creatinine ≥ 50% from baseline values in patients with CKD I,II,III

Exclusion criteria:

All patients with CKD IV - V were excluded, as well as those with renal atrophy in the ultrasound scan.

No pediatric, ICU or palliative patients were included

Phase 2: Analysis of renal function and survival at 3 years from the episode of HAAKI

Iatrogenic HAAKI: AKI-related to medical intervention (nephrotoxicity, delay in correcting hemodynamic instability and/or maintenance of improper treatment according to renal function (RF).

RESULTS

PHASE 1:

- 373 episodes of HAAKI
- Age: 76 ± 14 y
- 62.5:% ♂ y 37,5 % ♀
- 53,9 % baseline CKD-III

	Baseline renal function	Renal function at hospital discharge
Creat	109.06 ± 30.42 µmol/L	125.32 ± 57.37 µmol/L
FG:	56.34 ± 21.63 ml/min	46.82 ± 20.17 ml/min

- Iatrogenic in 40.2% of HAAKI.
- Length of hospital stay: 16 days (1-128)
- Renal function recovery time: 7 days (1-60)

Renal recovery time	%
Early (1-3 days)	29 %
Half (4-9 days)	42,9 %
Long (≥ 10 days)	20,6 %

- At hospital discharge we analyze 362 patients (8 deaths, 1 with con RRT and with no data in 2)
- At hospital discharge 19.33 % with GFR< 30 ml/min.

PHASE 2: AT 3 YEARS OF FOLLOW UP:

* 147 patients still alive (7 with RRT)
* 167 patients were exitus (1 with RRT)
* 59 patients lost

→ 39,4 % survivors after 3 years of follow-up
→ 44,8 % exitus over 3 years follow-up
→ **32.2 %** with GFR <30 ml/min
→ 2,74 % with RRT after 3 years follow-up

- **SURVIVORS AT 3 YEARS OF FOLLOW UP (147 P)**

* Age: 71 ± 13 y (23-96). Sex: 60.5% ♂ / 39.5.% ♀
* Average stay: 16 days
* 42,2 % iatrogenic
* 19,7 % FG < 30 ml/min (14,3 % at hospital discharge)

	Baseline renal function	Renal function at hospital discharge	Renal function at 3 years from HAAKI
Creatinine (*µmol/L*)	**108,2 (± 30,9)**	125,77 (± 47,1)	**130,79** (± 68,1)
GFR(*CKD-EPI ml/m*)	**57,47(± 21,6)**	49,97 (± 20,1)	**50,62** (± 25)

Renal function at 3 years of follow-up of surviving patients show statistically significant differences compared to baseline controls (before HAAKI) (p = 0.000).

However no statistically significant differences regarding renal function at hospital discharge.

SURVIVORS AND RECOVERY TIME

	Early (1-3 d)	Half (4-9 d)	Long(≥ 10 d)
% (n patients)	27,2 % (40 p)	46,3 % (68 p)	26,5 % (39 p)
GFR after 3 years	**55,54** ml/min	**50,88** ml/min	**45,37** ml/min

- At 3 years of follow-up lower GFR, but not statistically significant, is observed in patients who required a longer recovery time (p=0,230 n.s).

SURVIVORS AND IATROGENIC

At follow up	WITH IatrogeniC (62 patients)	NON iatrogenic (85 patients)	P
Creatinine (µmol/L)	**149** ± 86,9	**116,7** ± 44,75	0,009
GFR (CKD-EPI) ml/min	**48,9** ± 27,3	**53,5** ± 22,9	0,02

- **At follow up renal function was statistically lower in survivors with iatrogenic in the episode of HAAKI.**

- **EXITUS OVER 3 YEARS OF FOLLOW UP (167 P)**

* Age: 80 ± 11 y (36-98). Sex: 66,5% ♂ / 33,5.% ♀
* Average stay: 18 days * 42,5 % iatrogenic
* 50,9 % FG < 30 ml/min (29,4 % at hospital discharge)

	Baseline renal function	Renal function at hospital discharge	Renal function at 3 years from HAAKI
Creatinine (*µmol/L*)	**112,3 (± 28,6)**	152,65 (± 85,5)	**182,2** (± 88,6)
GFR(*CKD-EPI ml/m*)	**52,3(± 17,7)**	40,2 (± 17,5)	**35,6** (± 20)

The last renal function control available previous exitus was significantly lower than baseline (p=0,000) and at hospital discharge (p=0,005).

EXITUS AND RECOVERY TIME

	Early (1-3 d)	Half (4-9 d)	Long(≥ 10 d)
% (n patients)	33,3 % (56 p)	43,5 % (72 p)	23,1 % (39 p)
GFR after 3 years	35,97 ml/min	37,6 ml/min	37,9 ml/min

- At 3 years of follow-up lower GFR, but not statistically significant, is observed in patients who with a longer recovery time (p=0,883 n.s).

EXITUS AND IATROGENIC

At follow up	WITH Iatrogenic (71 patients)	NON iatrogenic (95 patients)	P
Creatinine (µmol/L)	185,2 ± 90,2	178,8 ± 85,4	0,701
GFR (CKD-EPI) ml/min	**35,1** ± 20,9	**35,6** ± 18,6	0,556

- **There were no significant differences in renal function between patients with or without iatrogenic in HAAKI in exitus group.**

CONCLUSIONS: In our study:

- **Deaths were associated with elderly patients and lower baseline GFR and at hospital discharge.**
- **A no significant trend to further deterioration of the RF episodes is observed after a longer recovery time.**
- **The presence of iatrogenic is associated to worsening GFR in survivors at 3 years of follow up.**

CST: CONSORCI SANITARI DE TERRASSA

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