

NEPHROLOGY INTERVENTION IN PATIENTS AWAITING CARDIAC SURGERY: A RANDOMISED CONTROLLED TRIAL

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INTRODUCTION and OBJECTIVES:

- Acute kidney injury (AKI) is a frequent complication after cardiac surgery. Its incidence ranges from 19 to 44% depending on the study and which definition is used.
- There are some well-known risk factors associated with AKI, including baseline patient characteristics (age and comorbidities), need of perioperative blood transfusion or presence of previous chronic kidney disease.
- We wanted to evaluate if a nephrologist management and control of potential risk factors of renal disease can be used to prevent AKI, thereby minimizing the risk of need RRT, reducing costs and improving survival in these patients. It will be the first study focused on this intervention.
- The aim of this study is to assess if a nephrology intervention before cardiac surgery can reduce the postoperative incidence of AKI.

METHODS:

- Unicentric prospective randomized controlled trial of 113 participants.
- INCLUSION CRITERIA:** patients undergoing scheduled cardiac surgery of > 18 years old.
- EXCLUSION CRITERIA:** current outpatient management by a nephrologist, CKD stage 3B-4-5 (eGFR < 45 mL/min/1.73m² estimated by CKD-EPI equation) or a requirement for renal replacement therapy before surgery.
- Clinical Research Ethics Committee of Bellvitge have approved the study before initiation. All patients have given written informed consent.
- We have done an intention-to-treat analysis, continuous variables have been compared between groups using Student's *t* test and categorical variables have been compared using *X*².

RESULTS:

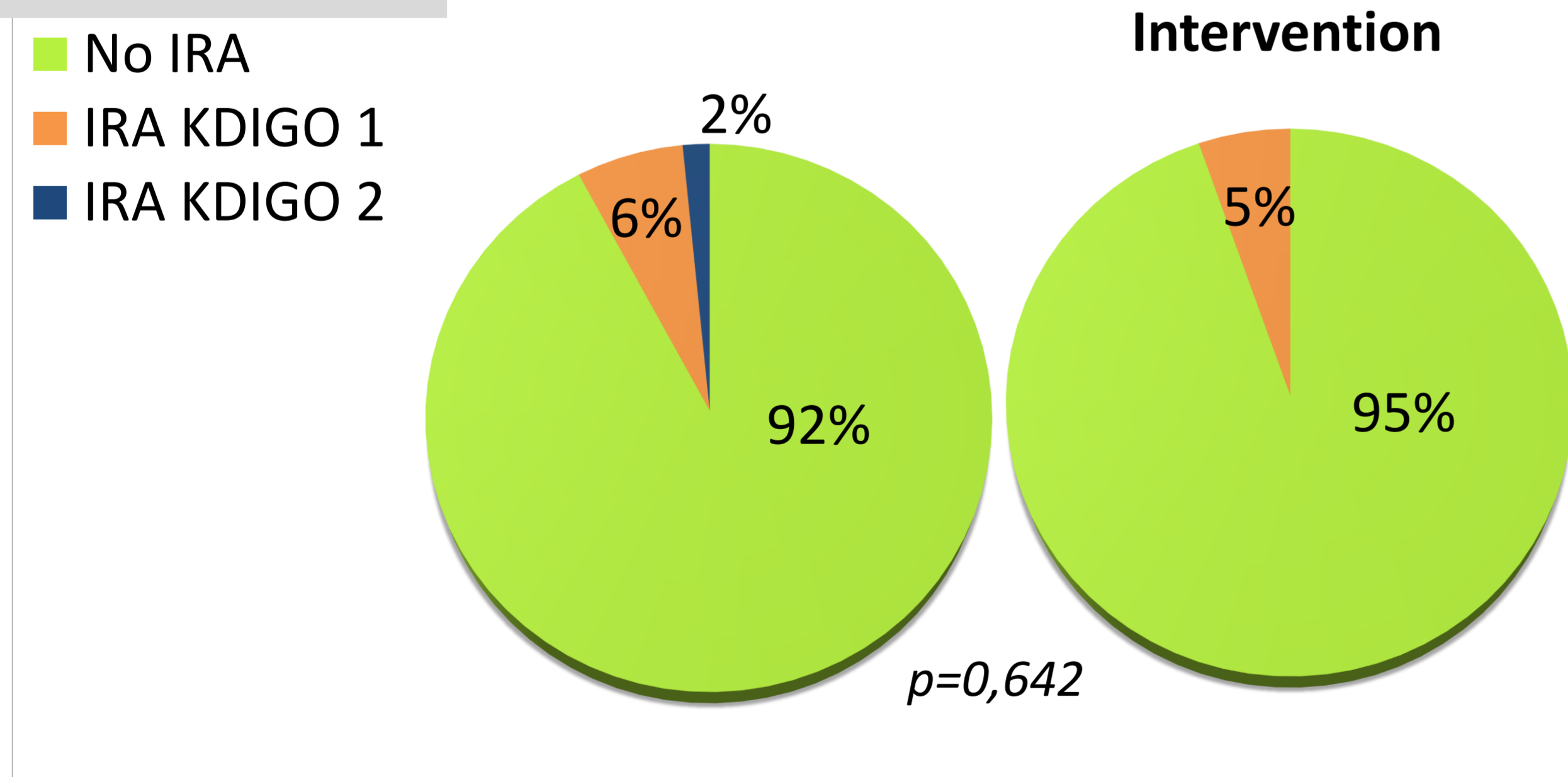
- INCLUDED:** 113 participants undergoing scheduled cardiac surgery
- Lost of 14 cases:** emergency surgery (2/113), impossibility of performing nephrology intervention because of premature surgery (2/113), screening failure (1/113), death before nephrology intervention (1/113) or transfer to another Hospital (1/113).

BASAL CHARACTERISTICS:	Nephrology Intervention n=49	Control n=64
Age	65±11.07	66.27±12.43
Sex (M/F)	32/17	41/23
Hypertension	73.5%	70.3%
Type 2 Diabetes	28.6%	29.7%
Cerebrovascular accident	6.1%	6.3%
Chronic Pulmonary Obstructive Disease	16.3%	20.3%
Chronic Kidney Disease	26.5%	7.8%
Type of surgery:		
▪ Aneurism	0	1.7%
▪ Coronary bypass	32.6%	18.6%
▪ Heart valve repair or replacement	44.7%	52.6%
▪ Combined	14.3%	22%
▪ Other	8.2%	5.1%

NEPHROLOGY INTERVENTION:	Pre-surgery indication	Achievement		
		Admission n=49	4 months n=23	1 year n=19
Obesity control (%)	32.7	74	73.9	73.7
Reduce salt intake(%)	4.1	100	100	100
Stop smoking (%)	8.2	92.6	91.3	88.8
Glycaemic control optimization (%)	12.2	100	100	100
NSAIDs* withdrawal (%)	23,2	100	100	100
Anaemia treatment with iron (%)	28.6	92.9	86.9	78.9
Changes in hypertension treatment: drug withdrawal, drug addition (%)	14.3; 10.2	97.9	95.6	88.9
Initiation of hypolipemiant treatment, hypouricemic drugs (%)	24.5; 8.2	100; 96.3	100; 95.6	94.7; 94.7
ACE inhibitor/ARB modification: initiate, increase, reduce, withdraw	2; 4.1; 4.1; 0	100	95.6	94.7

*NSAIDs: nonsteroidal antiinflammatory drugs
No patient required control of acidosis or phosphorus control

ACUTE KIDNEY INJURY INCIDENCE:



SECONDARY OUTCOMES:

	4 months (mean±SD)			1 year (mean±SD)		
	Intervention n=37	Control n=41	p	Intervention n=20	Control n=28	p
Mortality	1/37 (2.7%)	1/41 (2.4%)	0.8	1/20 (5%)	1/28 (3.5%)	0.6
Creatinine (µmol/L)	57.81±31.96	64.36±26.68	0.3	59.25±29.96	59.21±27.64	0.9
A/C ratio (mg/mmol)	33.33±21.5	22.2±13.77	0.4	14.11±12.6	21.24±22.31	0.07
HbA1c (%)	5.78±0.73	5.61±0.69	0.45	-	-	

* Albumin/creatinine ratio in spot urine

CONCLUSIONS:

- We did **not find any difference in acute kidney injury and death** when a nephrology intervention is done to cardiac surgery patients before operation.
- The results **at 1 year** follow-up showed **no kidney disease** in these patients.
- It would be necessary to increase the sample size to make conclusions. We will maintain the recruitment until a larger sample size is obtained.