IMPACT OF CONTRAST-INDUCED ACUTE KIDNEY INJURY (CI-AKI) ON LONG TERM OUTCOMES OF PATIENTS UNDERGOING ARTERIAL PROCEDURES

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INTRODUCTION AND OBJECTIVES: CI-AKI is an important cause of hospital-acquired AKI in large registry studies. Renal dysfunction in CI-AKI, even transient, was associated with long term morbidity and mortality. Our objective was to assess the all-cause mortality of patients with CI-AKI at two years in our institution compared to a control group from the same series.

METHODS: from January 2013 to December 2014, 1567 intra-arterial procedures were performed in our Hospital. 502 cases(32,03%) has been excluded for not returning lab results post-exam or present CKD stage 5. 1065 cases (67,96%) completed the protocol and were included. All patients were submitted to a risk-stratified protocol for prevention of CI-AKI, low-medium risk patients (0-10 score) receiving hydration with normal saline(NS) 6 hours before the vascular exam to 6 hours post-exam; high-risk patients(score>10) received a protocol of forced diuresis with furosemide and matched saline infusion, derived from Marenzi. The risk scores for CI-AKI were derived from Mehran score. Serum creatinine was measured in all patients before and 48 hours after the procedure. The diagnosis of CI-AKI was made if 48 hours creatinine was >25% superior to creatinine pre-exam. The patients were followed for two years after the procedure. A control group from the same series was randomly selected to compare survival at 6,12,18, and 24 months after the procedure. The control group was matched to the same type of procedures, the same period of time, the same age group, and the same Mehran scores. The demographic data are summarized in table 1. A comparison of survival between the CI-AKI and control group was made based on Kaplan Meier analysis. The statistical analysis was performed by SPSS software 22.0 .

RESULTS:51(4,78%) cases developed CI-AKI in our global series of 1065 cases. After a follow-up of two years, 98% of the controls had survived, against 84% of the CI-AKI group. The control group (N=44) had a comparable average age (59,4 years) and Mehran score (2,63), and had the same type of procedures of the CI-AKI patients (average 59 years and 3,0 Mehran score). The survival of the CI-AKI patients was statistically different of the control group patients at two years (84% versus 98%) (Mantel-Cox test - log rank, p=0,033).
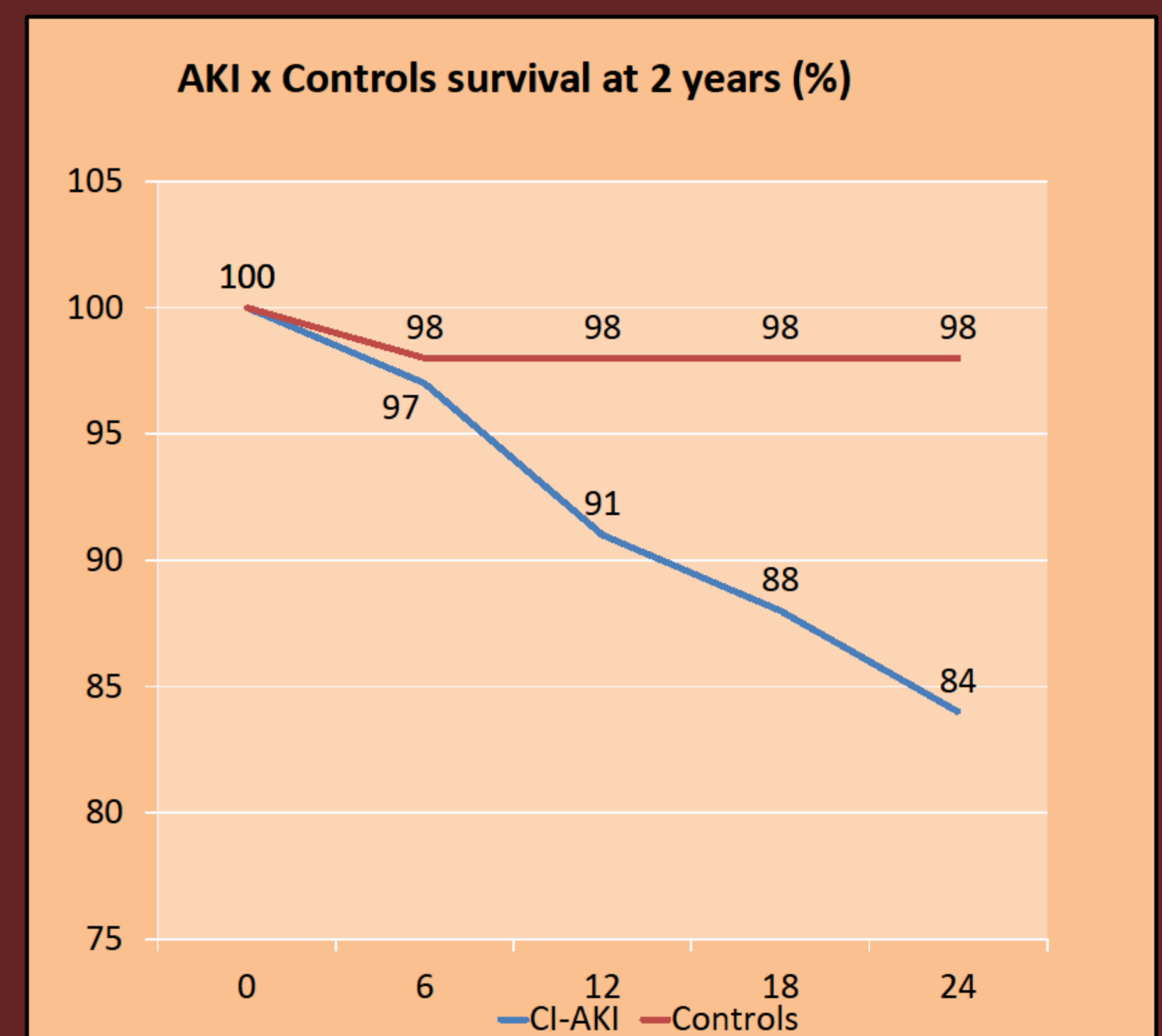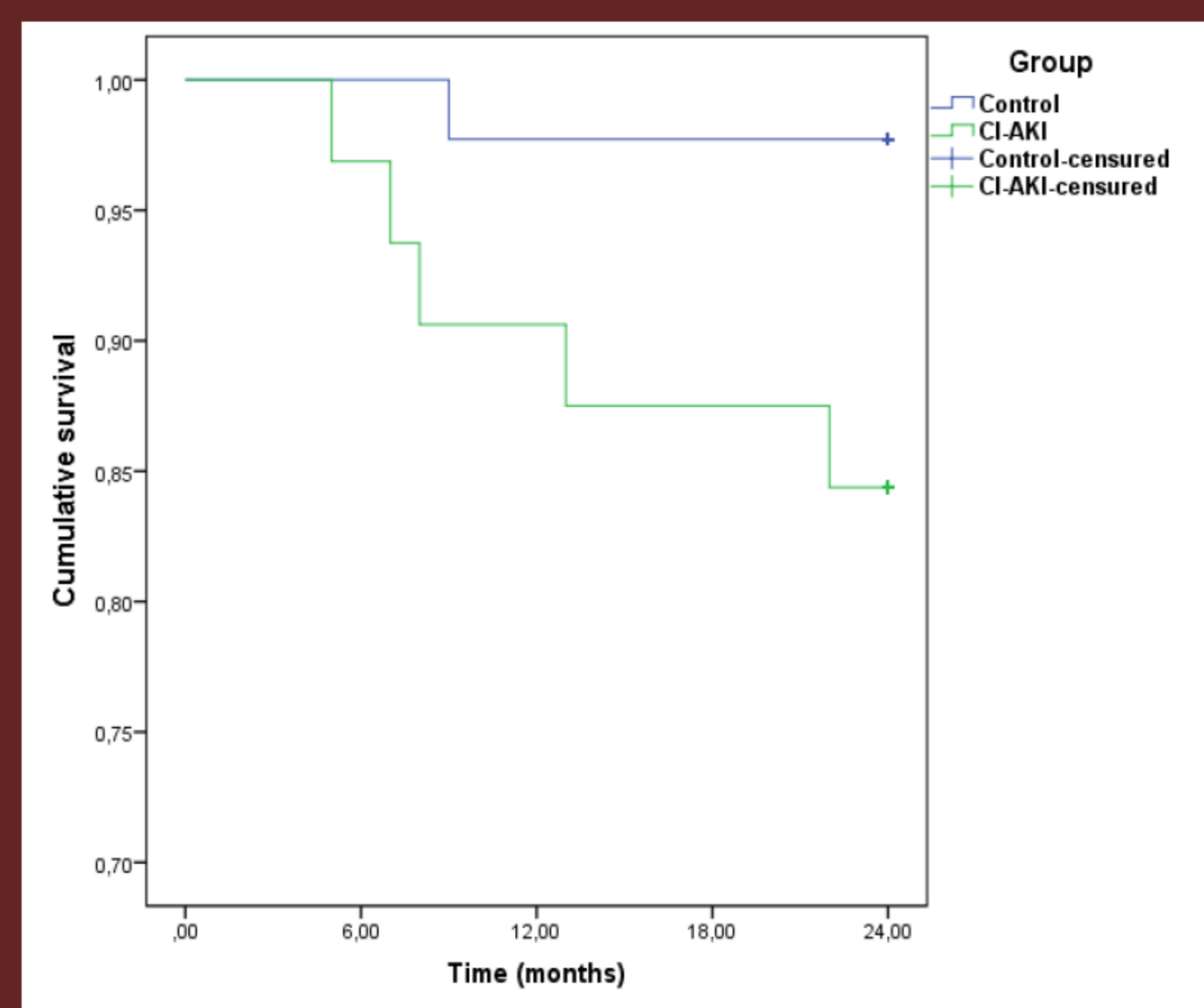The patients that died were older (77,8 years average) ; they had more CKD <60ml/min (60%) than the control group (14 %). One patient in each group is in chronic dialysis.

CONCLUSIONS: Radiological arterial procedures are increasing in all countries. Reported incidence of CI-AKI varies between 13-57%, CI-AKI being the third most important cause of hospital-acquired AKI. The global incidence of CI-AKI in our Hospital in the period 2013-2014 was 4,78% . AKI has an well-known impact on long-term mortality and morbidity.
The possible long- term impact of CI-AKI is an important issue that deservs more attention. In a paper published on 2011, in a series of 1041 patients from South Korea, Wi showed that CI-AKI had an significant impact on long-term survival of these patients. We found a comparable impact in our series. We believe that use of CI-AKI prevention measures must be provided to all patients. It is our belief that this approach has a good cost-benefit profile and may save many lives.

Table 1

	CI-AKI	Control
Sex:		
Male	18(56%)	1(2%)
Female	14(44%)	43(98%)
Age, years(medium)	59,4	59,4
Age (>75 years)	3(9%)	1(2%)
Mehran score(medium)	3	2,63
Diabete mellitus	13(41%)	14(32%)
CKD (< 60 ml/min)	9(28%)	6(14%)
Procedures		
Catheterism	15(47%)	22(50%)
Angioplasthy	6(19%)	7(16%)
Other	11(34%)	15(34%)

Kaplan Meier cumulative survival curve. Group: Control, CI-AKI, Control-censured, CI-AKI-censured.

AKI x Controls survival at 2 years (%)

CI-AKI: 100, 97, 91, 88, 84 at 0, 6, 12, 18, 24
Controls: 100, 98, 98, 98, 98 at 0, 6, 12, 18, 24

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