Renal Dysfunction and Outcome
In Patients Undergoing ICD and CRT Implantation-
Data from the Israeli ICD Registry

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Background:
Implantable cardioverter defibrillators (ICDs) and cardiac resynchronization therapy (CRT) reduce mortality in patients with heart failure and left ventricular dysfunction. However, there are only limited data of their efficacy in patients with chronic kidney disease.

Aim:
We aimed to examine the association between renal function and clinical outcomes in patients undergoing ICD and CRTD implantation and to examine the change in renal function following implantation.

Methods:
Data were collected from the Israeli ICD registry. Glomerular filtration rate (GFR) was estimated by the MDRD formula. Primary outcome was all cause mortality. Secondary outcomes included hospitalizations due to heart failure, arrhythmias and re-interventions and 1st appropriate and inappropriate ICD therapy.

Results:
There were 704 patients who underwent ICD implantation and 444 patients that had CRTD implantation in 22 medical centers in Israel with a median follow up of 323 days. Patients with GFR<30 min/ml were older, had more diabetes, hypertension and ischemic heart disease. Mortality was inversely related to GFR in the entire population (Figure 1a). This was mainly driven by patients that underwent ICD implantation with highest mortality in patients with GFR<30 (Figure 1b). In contrast, among patients that underwent CRTD implantation mortality was not related to baseline GFR (Figure 1c). GFR during follow-up decreased in 54.9% (Mean GFR decrease –8.1 ml/min) of ICD patients and in 59.7% (Mean GFR decrease –1.8 ml/min) of CRTD patients (p=0.3).

Conclusion:
Renal dysfunction is associated with increased mortality after ICD implantation. However, among patients that underwent CRTD implantation, low GFR was not associated with increased mortality risk. The beneficial effect of CRTD on mortality was the same regardless of renal function or the change in GFR.
a. LETHAL OUTCOME BY GFR GROUPS

b. LETHAL OUTCOME BY GFR GROUPS IN ICD PATIENTS

c. LETHAL OUTCOME BY GFR GROUPS IN CRTD PATIENTS