

IONIZING RADIATION EXPOSURE FROM MEDICAL IMAGING IN DIALYZED PATIENTS UNDERGOING RENAL PRETRANSPLANT EVALUATION

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INTRODUCTION

The medical use of radiological procedures (RP) has risen over the past decade. It represents the largest source of ionizing radiation (IR) exposure, accounting for 3.0 mSv against an estimated 2.4 mSv from natural background.

The evidence of an association between IR and cancer risk is:

"Strong" for doses >100 mSv
"Good" for doses 50-100 mSv
"Reasonable" for doses 10-50 mSv.

Hemodialyzed patients (HDP) receive high doses of IR because of several comorbidities and HDP who will undergo kidney transplantation receive additional imaging during the pretransplant evaluation.

AIMS

The aims of our study is to assess the cumulative effective doses (CED) among HDP undergoing renal pre-transplant evaluation and to estimate the cancer risk.

PATIENTS AND METHODS

ENROLMENT:

- 30.06.2007 to 30.12.2012
- 70 prevalent and incident HDP were evaluated
- 16 were excluded: 5 for cardiac comorbidity; 4 for death, 3 for neoplasia, 4 for other causes

The number and type of radiological procedures were collected through the Radiology Information System of our Institution.

CED is expressed as a sum over the study period (total CED [mSv]) and as annual CED (mSv/pts/year)

RESULTS

Mean (median) annual CED: 35 (120) mSv/pts/year;
7 (14%) RTP received a total CED >100 mSv.

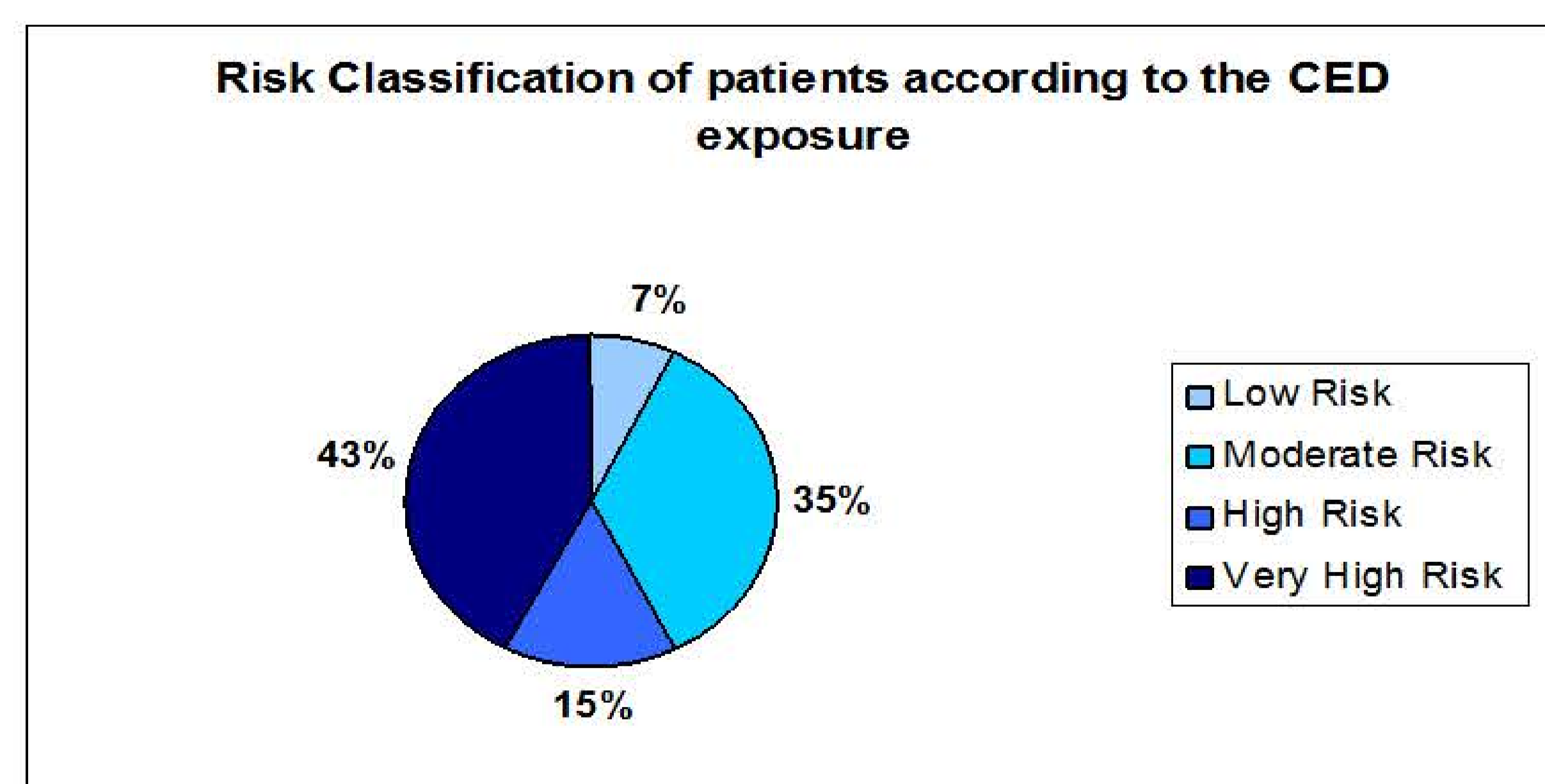
Mean (median) total CED: 72(139) mSv/pts.

37 HDP were active waiting listed and received 47(10) mSv during the evaluation phase and 36(5) mSv to maintain the active status

Patient characteristics	N=54
Mean annual CED (median) (mSv/pts/y)	35±120 (7)
Totale mean CED (median) (mSv/pts/)	72±139 (32)
Age (years±sd)	46±12
Male (%)	36 (66.6%)
Second transplantation	6 (11%)
Diabetes mellitus	11(20)%
Cardiac ischemic disease	7 (13%)
Neoplasia	7 (13%)

Procedures	Number N (%)	CED mSv (%)
All	744 (100%)	3869 (100%)
Conventional Radiology	581 (78%)	280 (8%)
Computed Tomography	103 (14%)	3165 (83%)
Nuclear Medicine	60 (8%)	301 (9%)

Patient characteristics	All 54 (100%)	Total CED (mSv/pts) (mean±sd)		p
		YES	NO	
Age >50 anni	23 (43%)	90±178	46±48	NS
Second transplantation	6 (11%)	102±145	74±98	NS
Diabete Mellitus	11 (20%)	95±130	66±142	NS
Cardiac ischemic disease	7 (13%)	160±326	58±84	NS
Neoplasia	7 (13%)	46±43	75±148	NS



CONCLUSIONS

Our study demonstrates that, during the pretransplant evaluation, HDP receive high IR, putting them at an increased risk of cancer.

Considering that kidney transplanted patients have high incidence of cancer due to multifactorial aetiology, it is mandatory to reduce the IR exposure during the dialysis pretransplant evaluation.

