DIALYSIS EPIDEMIOLOGY

SO045 **A NATIONWIDE SURVEY ON RADIATION RISK OF CANCER FROM MEDICAL IMAGING IN END STAGE KIDNEY DISEASE AND IN TRANSPLANT PATIENTS**

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Introduction and Aims: Patients with chronic diseases are exposed to the risk of ionizing radiation during repeated imaging studies and this is true also for End Stage Kidney Disease (ESKD) patients where such a risk may be significant particularly in the younger age-strata (NDT 29:680; 2014). However the issue is still sparsely investigated and the variability in diagnostic imaging policies and the accompanying risk across various Renal Units are still unknown. We studied the variability of application of medical imaging with ionising radiation at centre level and quantified the associated risks at patient level. We estimated the organ doses (H_T) involved and applied the organ specific cancer mortality data [Risk of exposure-induced cancer death (%) (REID)].

Methods: Fourteen Italian nephrology departments enrolled 739 ESKD patients on haemodialysis and 486 kidney transplant patients and recorded the details of the radiological procedures performed in these patients over one year. For conventional diagnostic radiology procedures H_T estimates were derived for each specific procedure using a Montecarlo based simulation software (PCXMC v1.5). For cardiac interventional radiology procedures radiation exposure were measured in each centre by the dose x area product and the H_T were derived using conversion factor H_T/DAP. H_T for Computed Tomography were estimated using the individual dose reports and a computational software (ImPACT CT patient dose calculator v1.02). For the different types of nuclear medicine procedures, the individual administered activity of a specific radiopharmaceutical was recorded. Standard coefficients relating H_T to administered activity (ICRP 80, 1998) were applied to calculate doses.

Results: In the combined population the average REID was 0.047±0.12 % and the corresponding 5-years cancer risk attributable to ionizing radiation exposure was 1 every 424 patients. The median REID was 0.009% and the 3rd quartile was 0.03%. The average REID was significantly higher in HD than in transplant patients (0.06±0.13 i.e. 1:333 patients for 5-years vs 0.03±0.09 i.e. 1:666 patients for 5-years; p<0.001), respectively. The variation of average REID among participating centres was highly significant (F=3.23; p<0.001) ranging from a minimum of 0.009% to a maximum of 0.09% denoting substantially different imaging policies among participating centres.

Conclusions: The excess cancer risk attributable to medical exposure to ionizing radiation is not negligible and is highly variable among different centers (a tenfold variation), suggesting that protocols of individual patient's follow up with medical imaging using ionising radiation are far from being standardized. On average, transplant patients have a lower exposure than HD patients (a twofold reduction), suggesting that kidney transplantation reduces the application imaging studies and the ensuing risk of exposure to ionizing radiation.