RADIATION EXPOSURE OF CARDIOLOGISTS’ EYE LENSES DURING INTERVENTIONAL PROCEDURES

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Recently published studies have indicated a lower threshold of eye lens doses for developing cataracts than previously used. These studies have shown that the latency period responsible for cataract development depends on the absorbed eye lens dose. The recommendations of the ICRP, the new BSS of IAEA and the 2013/59/EURATOM Directive revise the old occupational limit of equivalent dose (150 mSv) to the new lower value of 20 mSv per year. Probably this value will be exceeded mainly during specific interventional procedures. The main aim of the present study was to investigate the received eye lens doses by monitoring and assessment of radiation load of cardiologists in the particular Cardiologic Healthcare Facility in Slovakia. The measurements were realized by using TLD located on the both sides of the protective lead glasses of five cardiologists during CA/PTCA procedures, performed in the period of 1 month. Evaluation of the dosimeters was performed by HARSHAW TLD 3500. Collected parameters of each individual examination were expressed in the quantity personal dose equivalent Hp(0,07). The whole body doses during the CA/PTCA procedures were controlled by RaySafe i2 dosimetry system, allowing the collection of real time radiation exposure of medical staff. Values of personal dose equivalent Hp(0,07) on the left eye lens (where we observed higher dose values), were extrapolated to annual doses and compared with the new eye lens limit. The comparison of the results (calculating the average annual dose from the gathered annual workload of each cardiologist) indicates that the new proposed limit for eye lens doses (20 mSv/year) should be exceeded. Important information comes from the results of RaySafe measurements, which refer to the fact, that although the whole-body annual doses obtained by the followed cardiologists doses not exceed the annual limit of effective dose, the equivalent doses to the lens of the eye obtained from TLD, reached the overflow value. Further specification of other interventional procedures, where monitoring of eye lens doses is necessary should be provided in the near future.