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TOPICAL SESSIONS
Reports of Co-Chairmen for Highlight Sessions

T-23: Radiation Protection for Interventional Radiology

Thursday, 18 May 2000

Chair and Keynote: H. Nakamura Co-Chair: S. Koga

Interventional radiology(IVR) has several advantageous characters, and only problem is the radiation exposure to both for patients and for personnel. Factors increasing exposure during IVR are, (1) increase in the number of patients because of development of new techniques and expansion of the indication of IVR, (2) increase of duration of the fluoroscopic time required for recent more sophisticated and complex techniques.

Increased exposure sometimes causes deterministic effects in the skin of the patients. Presented case was taken from website of FDA was the radiation skin injury attributable to multiple coronary angioplasty and repeated angiography. In the next case shown by Dr.Oritz skin erythema was observed following radiofrequency ablation cardiac interventional procedures using mainly one set of projection directions on the system designed specifically for cardiac applications. Focus-skin distance used was less than that recommended by ICRP Publication 34.

Increased patients exposure during fluoroscopy often results increased scattered radiation to the personnel standing by the couch side. The combination of high-dose rates, together with a large interventional workload and prolonged fluoroscopic time, may result in the interventionalist receiving a high eye dose if protective equipment is not used. This is aggravated for certain types of equipment such as over-couch/under-couch image-intensifier unit. The case again presented by Dr.Oritz showed deterministic effects in the eyes of the staff had been observed resulting from doses accumulated over 4 years.

Dr.Yu and her colleagues from China reported the results of laboratory tests and clinical symptoms in 82 interventional radiologists in Shandong Province, China. Their study indicated that surface dose rates of operators were 1.5-16 times greater than dose limit, and poor healthy conditions of radiologists were indicated. Very serious problem exists.

Dr.Lima and his colleagues from Brazil carried out the measurement of dose to the 6 radiologists during interventional cardiac procedures using thermoluminescent dosimeters(TLD).The results of this study indicated that the lenses of the eyes received the highest dose as a result of cardiac catheterization examinations.

Dr. Nakamura from Japan, keynote speaker, summarized how to reduce exposure in IVR. (1) Interventionalists should keep enough knowledge concerning the

radiological protection and should always be aware of the fact that the patient, co-medical staff, as well as an interventionalist are exposed during IVR procedure. (2)X-ray devices used radiation exposure for IVR need to be improved to minimize radiation exposure and display the x-ray dose during IVR procedure on a real time basis. (3)The radiotechnologist should adjust x-ray device to obtain necessary fluoroscopic images with minimally reducing x-ray dose, and should inform interventionalist of amount of time and x-ray dose during procedure whenever it is necessary.

Dr.Oritz also summarized radiation protection in interventional radiology in short sentences. They were, education and training, specialized equipment and quality assurance problem.

Finally, Dr.Ban and his colleagues from Japan demonstrated real-time extremity dose monitor for personnel in IVR.