Ocular radiation hazard of medical practitioners involving radiation exposure

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INTRODUCTION

Radiotherapy is a common treatment modality for malignant neoplasms.1 Coronary angiography, coronary angioplasty and stenting are major interventions conducted by cardiologists.2-3 Modern neuroimaging techniques, both diagnostic and therapeutic, also involve radiation hazard.4 Interventionists appeared to have higher risk in cataract development.5 This study aimed at evaluating the ocular status of different practitioners (including cardiologists, radiologists, and radiographers) involving radiation exposure.

METHODS

Based on the registry of relevant governing boards, over 1500 letters were sent to the above mentioned practitioners for gathering information such as number of years of service, type and frequency of radiation being exposed, and types of protective measures. Respondents were invited for comprehensive eye examination with particular attention being drawn to the assessment of crystalline lens transmission and dry eye. Crystalline lens transmission was measured using an Anterior Eye Segment analysis system, EAS-1000 (Nidek Co., Ltd., Aichi, Japan). Conventional tests for dry eye syndrome were carried out, including McMonnies dry eye questionnaire, Schirmer test without topical anesthesia, Phenol red test, and fluorescein tears tear-up time.6-7

RESULTS

There were 363 replies received and 199 practitioners went through the eye examination. Over 70% of the respondents had post-qualifled working experience within 20 years. Most of them spent 30% of their time doing radiation related work (Figure 1). The two most commonly performed procedures for radiographers were intravenous urography and fluoroscopic examinations, and ultrasound and fluoroscopic examinations for radiologists.

DISCUSSION

This is the first study evaluating ocular radiation hazard of practitioners with frequent radiation exposure. Their risk of cataract and dry eye syndrome are not particular high as suggested by Haskal.5 There are recommendations for patients to have fewer radiation exposures undergoing invasive procedures.9 Radiologists, on the other hand, may not even know the difference on radiation dose between one computed tomography scan and one chest X-ray.10 Practitioners under regular radiation exposures should therefore maintain a record of radiation exposures.11 Although we did not find any significant radiation-related ocular problems among these practitioners, the use of lead goggles should be encouraged.

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REFERENCES