Pengaruh paparan radiasi pengion terhadap risiko katarak pada pekerja radiasi bidang Kardiologi Intervensi di Indonesia = Effects of Ionizing Radiation Exposure on Cataract among Radiation Workers of Interventional Cardiology in Indonesia

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Abstrak

Tujuan: menilai prevalensi katarak terinduksi radiasi, serta menghubungkannya dengan dosis paparan radiasi dan penggunaan perlengkapan proteksi radiasi.
Metode: Studi potong lintang dan studi kasus-kontrol. Seratus delapan puluh subyek berpartisipasi dalam penelitian. Prevalensi katarak terinduksi radiasi dinilai menggunakan analisis Scheimpflug pada alat Pentacam®-Oculus. Dosis paparan radiasi kumulatif dan penggunaan perlengkapan proteksi radiasi pada subyek diidentifikasi melalui kuesioner dan personal dosimeter.
Hasil: Prevalensi katarak terinduksi radiasi sebanyak 16.7%. Median dosis radiasi kumulatif berdasarkan kuesioner menunjukkan median 0,8 (0.1- 35.6) Gy. Hubungan korelasi positif didapatkan antara dosis radiasi kumulatif dengan densitas lensa (R Spearman= 0.64). Sebanyak 83.9% subyek menggunakan tabir pada 71-100% masa kerjanya, tetapi mayoritas subyek penelitian (40.6%), tidak menggunakan kacamata pelindung. Peningkatan risiko katarak terinduksi radiasi meningkat secara bermakna seiring dengan kepatuhan penggunaan proteksi radiasi yang kurang. Subyek dengan proteksi tabir radiasi 31-50% dari masa kerjanya meningkatkan risiko katarak 10.80 kali lipat (IK 95% 1.05-111.49, p=0.044). Sementara itu, kelompok proteksi tabir radiasi 51-70% meningkatkan risiko katarak 8.64 kali lipat (p=0.001). Subyek yang tidak memakai kacamata pelindung memiliki OR 164.3 (IK 95% 19.81-1363) dibandingkan dengan kelompok pengguna kacamata pelindung.
Kesimpulan: Katarak terinduksi radiasi pada pekerja radiasi bidang kardiologi intervensi tergantung pada dosis paparan radiasi dan penggunaan proteksi radiasi. Oleh karena itu, kepatuhan pekerja radiasi perlu ditingkatkan sesuai ketentuan proteksi radiasi.
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Objectives: to determine the prevalence of radiation-induced cataract and correlate with radiation exposure dose and radiation protection use among radiation workers of interventional cardiology.
Methods: A cross-sectional and retrospective case-control study. One hundred and eighty subjects were included. Prevalence of radiation-induced cataract was assessed using Scheimpflug analysis on the Pentacam®-Oculus. Individual cumulative radiation exposure dose and radiation protection use of subjects were identified from questionnaire and personal dosimeter.
Results: The prevalence of radiation-induced cataract was 16.7%. Median cumulative

radiation dose was 0.8 (0.1-35.6) Gy. A positive correlation was found between cumulative radiation dose and lens density (RSpearman=0.64). This study showed that 83.9% of subjects used ceiling-suspended shield in 71-100% of their working period, however the majority of subjects (40.6%) did not wear protective eyewear. Statistically significant increasing risk of cataract was found along with unresponsive use of radiation protection. The subjects using ceiling-suspended shield in 31-50% of their working period were increasing their cataract risk by 10.80 times (95% CI 1.05-111.49, p=0.044). Meanwhile, the subjects using protective eyewear in 51-70% of their working period were increasing their cataract risk by 8.64 times (p=0.001). Subjects who did not wear protective eyewear had an OR 164.3 (95% CI 19.81-1363) compared to those who wore protective eyewear.
Conclusion: Radiation-induced cataract among radiation workers of interventional cardiology was depend on radiation exposure dose and radiation protection. Therefore, the compliance of radiation safety recommendation should be improved.