

Do We Need an Eye-Shield in Our Cath-Labs?

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Posterior sub-capsular cataract is emerging as a late adverse effect of radiation exposure in cardiac invasive laboratories and with the expansion of percutaneous cinefluoroscopy-guided treatment modalities in the near-future it would continue to be a potential source of professional hazard for cath-lab staff. The importance of posterior sub-capsular cataracts could be viewed from two aspects; first, this form of lens involvement tends to be associated with higher degree of vision impairment as it affects parts of the lens located on the visual axis (1). Secondly, radiation-related cataracts implies higher accumulative X-ray exposure and possibly a higher chance of cancer according to linear-no threshold model. Although studies have shown that lead glasses with side-shield or roof-suspended plastic shields dramatically reduce the cumulative absorbed dose of the eyes, there is no firm evidence that use of eye protection has a significant reduction in the rate of cataracts in long-term. There are some points in the recently published study by Rajabi et al. (2) that should be discussed in more detail:

1) In the mentioned study, the incidence of cataracts in staff was 79%, which is considerably higher than previous reported rates of around 50% (3).

2) In those personnel working in electrophysiology laboratory, the received dose was four to five times higher than the average dose of other laboratories. This implies the need for better shielding and optimization of fluoroscopic time by staff.

3) Only 30% of personnel reported routine use of lead eye glasses in this study. Although it was not proved that eye protection would reduce long-term risk of cataracts, considering very high rate of lens involvement in invasive laboratory staff and the ease of use and high efficacy of lead glasses to reduce the absorbed lens dose, it is reasonable to consider eye protection in our local guidelines or policy procedures.

Finally, designing a clinical trial to study long-term biologic effects of radiation is very difficult, since it needs very large sample size and takes a long time to observe the effects in question (4). On the other hand, measures to optimize the radiation exposure to staff are simple and relatively cheap. Therefore, until there would be enough evidence about the true impact of eye protection in cath-lab, it is better to remain on the safe side and wear eye glasses.

References

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