EVALUATION OF THE RADIATION DOSE RECEIVED BY THE MEDICAL TEAM DURING TRANSCATHETER AORTIC VALVE IMPLANTATION

ACC Poster Contributions
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Background: Transcatheter aortic valve implantation (TAVI) is a growing cardiac intervention, using ionising radiation with deterministic and stochastic effects for the patient as well as for the medical heart team. Operator radiation depends on numerous factors, such as distance to the source, fluoroscopy time, and X ray tube angulation. Lead protection is routinely used for coronary angiography, but is less suitable for use during TAVI, and areas such as the hands and eyes are not systematically protected. We aimed to quantify the radiation dose received by the heart team members during TAVI and evaluate the role of the position of each member.

Methods: Operator radiation was evaluated by means of small dosimeters located on the outside of the lead protection at shoulder, knee and hip. We also measured radiation at the level of the eyes and hands, using small dosimeters that could be mounted on glasses and rings. The whole team was equipped (3 surgeons, 2 interventional cardiologists, 1 nurse and 1 echocardiographer).

Results: 12 TAVI were performed between February and May 2010 (4 apical and 8 femoral access). The most exposed area was the knee for all members of the team. The most exposed member was the surgeon standing closest to the X-ray tube, who received a significantly higher dose than all other team members, and for all areas measured. During a difficult implantation procedure, we observed an alarmingly high dose at the level of the hand (2 000 μSv) and the eyes (499 μSv) for this surgeon, who does not have protective glasses and gloves adapted for this procedure at his disposition.

Conclusion: A higher radiation dose was received by the surgeon closest to the X-ray tube during TAVI. Further to this study, we modified our procedure to reduce the radiation dose as much as possible for the medical team, with systematic use of lead protection and glasses, and identification of the fluoroscopy period.