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The impact of angiographic projection and patient body mass index on X-ray exposure during cardiovascular interventions

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THEME: Coronary Interventions

TOPIC(S): Other Coronary Interventions

AIMS

The number of interventional cardiology procedures is increasing and more complex procedures, requiring longer X-ray exposure are performed on a daily basis. The aim of this study was to evaluate the X-ray exposure in different angiography projections and to identify the safest projections to minimize the patient's and physician's exposure.

METHODS AND RESULTS

Between January 2017 and August 2018 interventional cardiology procedures from one angiography x-ray unit were investigated. The Data of 2600 patients/procedures and over 130000 series (scans) were evaluated. Dedicated monitoring software was implemented for data collection. To investigate the difference of the X-ray exposure between different projections (angulations), projections were grouped in certain intervals with 15 degrees step: from 0 degrees angulation anterior-posterior (AP) to 60 degrees left anterior oblique (LAO) and right anterior oblique (RAO) and 60 degrees cranial (CRA) and caudal (CAU). The lowest dose projection was AP, with average dose 30 - 40 (Gy x cm)/ms, the highest dose projection was LAO45_CRA15 with average doses of 160 - 260 (Gy x cm)/ms, depending on the type of interventional procedure. From the commonly used projections in coronary interventions, LAO45_CAU0 and LAO0_CAU45 were associated with the relatively low X-ray dose {90 - 110 (Gy x cm)/ms and 90 - 160 (Gy x cm)/ms respectively}. Projections with low degree of angulation (LAO0_CRA15 and LAO0_CAU15) were also found to give less X-ray exposure {110 - 150 (Gy x cm)/ms and 70 - 100 (Gy x cm)/ms respectively}. The data concerning the X-ray dose correlation with patient's weight and angiographic projection will be ready to present at the Congress.

CONCLUSIONS

The safest angiography projections in terms of X-ray exposure are AP, LAO45_CAU0 and low degree angle projections, such as LAO0_CRA15 and LAO0_CAU15.