

**Effective Radiation Dosages in 3D Rotational Angiography in Children.**

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Background. Three-dimensional rotational angiography (3DRA) is a relatively new but promising imaging technique in the pediatric catheterization laboratory. However, data on effective dose (ED) of this technique in children are lacking. The purpose of this study is to provide ED of 3DRA and to correlate this to parameters readily available in daily practice. Furthermore the effect of dose reducing techniques is evaluated.

Methods and Results. Effective doses were calculated with Monte Carlo PCXMC 2.0 in 14 patients who underwent a total of 17 3DRA's at our pediatric catheterization laboratory. Median age was 5.7 years (range 1 day – 16.6 years). Median ED was 1.6 milliSievert (mSv) (range 0.7 – 4.9). ED did not correlate to age and Body Surface Area (BSA) but did correlate to Dose Area Product (DAP) and milliGray (mGy) with a r-square of 0,75 and 0,83 respectively. Reduction of the total amount of frames from 248 to 133 per rotation resulted in further dose reduction of over 50% with preserved image quality.

Conclusion. The median ED of 3DRA in children is 1.6mSv and seems to be age and BSA independent. ED correlated to DAP and mGy in our population. By applying frame reduction a further 50% ED reduction can be achieved without loss of image quality.