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DOSE OPTIMIZATION IN PEDIATRIC UROLOGICAL PROCEDURES

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BACKGROUND-AIM

The aim of this work was to report preliminary study in sequential renal scintigraphy procedure optimization

METHODS

Sequential renal scintigraphy was performed by the intravenous injection of ^{99m}Tc- mercaptoacetyltriglycine (^{99m}Tc-MAG3) and the acquisition of SPECT imaging to evaluate kidneys functionality. The imaging was characterized by two dynamic phases: first one of two minutes duration with frame of two seconds, and second one of twenty eight minutes duration with frame of twenty seconds.

The activity to be injected was chosen on the basis of pediatric patient's mass and compared to activity by dosage card EAMN.

Three phantom (bags of saline partially emptied on the basis of CT kidneys dimensions) were created to simulate pediatric kidneys for patient's mass of 5, 12, 21 kg. PMMA phantom was used to simulate patient's body.

Through an injector, activities were injected through these phantoms.

Acquisitions were performed varying frame duration in first dynamic phase, from 2 to 4 seconds

RESULTS

The analyses on reconstructed images resulted in a maximum difference through the three masses of 11%, without changing in kidneys functionality

CONCLUSION

Activities to be injected (averaged on mass range 3-60 kg), compared with dosage card EAMN ones, resulted in a difference of 60%

The results of this study evidenced the possibility to optimize sequential renal scintigraphy, acting on activity injected and acquisition protocol