Accepted Manuscript

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PII: S0720-048X(18)30210-9
DOI: https://doi.org/10.1016/j.ejrad.2018.06.005
Reference: EURR 8215

To appear in: *European Journal of Radiology*

Received date: 3-11-2017
Revised date: 3-5-2018
Accepted date: 10-6-2018

Please cite this article as: Neverauskiene A, Maciusovic M, Burkanas M, Griciene B, Petkevicius L, Zaleckas L, Tamosiunas A, Venius J, Image based simulation of the low dose computed tomography images suggests 13 mAs 120 kV suitability for non-syndromic craniosynostosis diagnosis without iterative reconstruction algorithms, *European Journal of Radiology* (2018), https://doi.org/10.1016/j.ejrad.2018.06.005

Image based simulation of the low dose computed tomography images suggests 13 mAs 120 kV suitability for non-syndromic craniosynostosis diagnosis without iterative reconstruction algorithms

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ABSTRACT

Objectives: The aim of this study was to simulate low dose paediatric head CT images with different noise levels corresponding to various tube current time product values and assess simulated image suitability in non-syndromic craniosynostosis diagnostics.

Method: 29 paediatric patients who underwent head CT examinations for cranial deformity were enrolled in the study. The low dose CT images, corresponding to 120 kV and 120 mAs, 100 mAs, 80 mAs, 50 mAs and 13 mAs settings, were synthesised by adding noise to original data. Three researchers evaluated suitability for diagnostics of original and simulated images by using questionnaire assessing image suitability.