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Non-invasive methods in pediatric radiology - a focus on neuroradiology

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B/A:Non-invasive procedures in radiology include sonography, native cross-sectional imaging as well as preceding clinical and physical examinations. Focusing on pediatric neuoradiology a special meaning lies in MRI. MRI itself is a safe procedure if contraindications for implants is obeyed, but additional injection of intravenous contrastmedia, taking blood samples or the use of anaesthesia represent invasive procedures. The aim of this study is to validate the comparability of non-invasive methods to those invasive examinations in current use. M/R:In a retrospective study design, archived data of pediatric MRI images are analyzed to compare validity of scans based on conventional acquisition to a faster image assessment using the software SyMRI NEURO which was acquired by the department of pediatric radiology, Medical University Hospital Graz, in 2021 and has been in use since then. This method is fast, which helps to be less invasive, and rich in results. The software obtains within a few minutes not only "usual" weighted sequences but also gives a qualitative and quantitive analysis of certain intracranial tissues, in particular brain parenchyma and its myelination and also cerebrospinal fluid. The further advantage of this primarily non-invasive method is the output of comparison to standard values in the patient's age group. Comparison of conventional to synthetic MRI and evaluation of the software output is the result of the first acquired data. C:The use of MRI in fields of neuroradiology is currently gold standard. Due to long acquisition times and additional invasive procedures, the call for non-invasive and short acquisition timed methods is getting louder, especially in pediatric radiology as long-term effects of invasive methods are not yet fully explored. A future goal is to achieve the practical applicability of renunciation of invasive MRI examinations so that their short and long term physical effects and possible complications can be prevented.