



**Providing Choice & Value**  
Generic CT and MRI Contrast Agents



CONTACT REP

**AJNR**

## **On Behalf of Serial Imaging in Preterm Infants**

J. Saraiva and J.P. Soares-Fernandes

*AJNR Am J Neuroradiol* published online 23 May 2024  
<http://www.ajnr.org/content/early/2024/05/23/ajnr.A8223>

This information is current as  
of July 24, 2025.

## On Behalf of Serial Imaging in Preterm Infants

We read with great interest the article by Roychaudhuri et al.<sup>1</sup> Having gathered a cohort of 30 preterm infants born at <33 weeks' gestational age, the authors found a strong correlation between the white matter injury (WMI) severity, as scored on brain MR imaging, at 2 time points: early (30–34 weeks' post-menstrual age) and term-equivalent age (TEA). Specifically, approximately 80% of infants remained in the same WMI category from early to TEA assessments. Building on these results, the authors suggest performing early-brain MR imaging within 2 weeks after preterm birth. Despite acknowledging the potential prognostic value of an early-brain MR imaging, we are concerned about its applicability and propose a perhaps better-suited approach for less-resourced imaging centers.

TEA-brain MR imaging is reliable at predicting motor outcome in infants with hypoxic-ischemic encephalopathy. The call for an early-brain MR imaging in premature infants is based on 2 premises: 1) We are not good at predicting nonmotor outcomes, and 2) MR imaging is superior to cranial ultrasound (CUS) at depicting noncystic WMI, notably diffuse periventricular leukomalacia (PVL) and punctate white matter lesions (PWMLs), which may be inconspicuous on TEA-brain MR imaging, yet still suspected to impair cognition.

PWMLs have been reported to be the most frequent lesion type (41%) in premature infants, most of whom had other brain abnormalities.<sup>2</sup> We speculate that some of these additional lesions would be highly specific for abnormal cognitive outcomes (eg, hemorrhagic parenchymal infarction, cerebellar hemorrhage >5 mm<sup>2</sup>) and are easily outlined on CUS.

Given the presumable ischemic pathophysiology of diffuse PVL, we were intrigued by the low prevalence (<7%) of diffusion-restricted lesions on the initial MR imaging, even though a sizable portion of infants (10 of 30) had a moderate/severe WMI on the later MR imaging; this issue seems to disclose the limited

added value, grounded on a brief DWI abnormality and fast ADC pseudonormalization, of performing a complex grading system on a somewhat arbitrarily defined—and dependent on the preterm infant's clinical stability—early-brain MR imaging compared with sequential CUSs.

Most interesting, early confluent DWI hyperintensities—but not focal ones—have been shown to precede cystic degeneration.<sup>3</sup> We believe that optimizing diffusion sequences for portable MR imaging systems<sup>4</sup> may be a “game changer” by enabling serial monitoring for confluent diffusion-restricted lesions, efficiently forecasting cystic WMI in at-risk premature infants.

Disclosure forms provided by the authors are available with the full text and PDF of this article at [www.ajnr.org](http://www.ajnr.org).

### REFERENCES

1. Roychaudhuri S, Côté-Corriveau G, Erdei C, et al. **White matter injury on early versus-term-equivalent age brain MRI in infants born preterm.** *AJNR Am J Neuroradiol* 2024;45:224–28 [CrossRef Medline](#)
2. Arulkumaran S, Tusor N, Chew A, et al. **MRI findings at term-corrected age and neurodevelopmental outcomes in a large cohort of very preterm infants.** *AJNR Am J Neuroradiol* 2020;41:1509–16 [CrossRef Medline](#)
3. Martinez-Biarge M, Groenendaal F, Kersbergen KJ, et al. **MRI based preterm white matter injury classification: the importance of sequential imaging in determining severity of injury.** *PLoS One* 2016;11:e0156245 [CrossRef Medline](#)
4. Cawley P, Padormo F, Cromb D, et al; UNITY Consortium. **Development of neonatal-specific sequences for portable ultralow field magnetic resonance brain imaging: a prospective, single-centre, cohort study.** *EClinicalMedicine* 2023;65:102253 [CrossRef Medline](#)

 J. Saraiva

J.P. Soares-Fernandes  
Hospital de Braga  
Braga, Portugal

<http://dx.doi.org/10.3174/ajnr.A8223>