

Indian Academy of Pediatrics (IAP)



nRICH

Newer Research and recommendations In Child Health

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UNDER THE AUSPICES OF THE IAP ACTION PLAN 2023

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Dear fellow IAPans,

nRICH

Newer Research and recommendations In Child Health-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialties of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology, vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

*Upendra Kinjawadekar
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Evaluation of a Cranial Ultrasound Screening Protocol for Very Preterm Infants

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BASED ON ARTICLE

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ABSTRACT

Objectives: Cranial ultrasound (cUS) screening is recommended for preterm neonates born before 32 weeks' gestational age (GA). The primary aim of this study was to determine if both a day 3 and day 8 cUS screening examination is necessary for all neonates.

Methods: A retrospective observational study was performed at a tertiary-level Australian hospital. Frequencies of cranial ultrasound abnormality (CUA) were compared between routine screening performed at postnatal days 3, 8, and 42. Univariate and multivariate analyses of risk factors for intraventricular haemorrhage (IVH) was performed using logistic regression.

Results: cUS examinations on 712 neonates born before 32 weeks' GA were included. Neonates were divided into 2 groups: 99 neonates in the 23–25 weeks 6 days GA (group A) and 613 neonates in the 26–31 weeks 6 days GA (group B). All CUA occurred more frequently in group A neonates and in the subset of group B neonates who had defined risk factors. Low-risk group B neonates had lower incidence of CUAs demonstrated on day 8 cUS than high-risk group B neonates, with no significant differences between day 3 and day 8.

Logistic regression analysis identified a number of risk factors (vaginal delivery, small for GA, Apgar score <7 at 5 minutes, intubation, patent ductus arteriosus and infection) that were associated with increased frequency of IVH on day 8. In neonates born between 30 and 31 weeks 6 days GA, 35% had a CUA identified.

Conclusions: Low-risk preterm neonates born between 26 and 31 weeks 6 days GA, without complications, could be screened with a single early cUS examination around day 8 without missing substantial abnormality.

Discussion

Cranial ultrasound is routinely performed in preterm neonates born before 32 weeks' gestational age as they are susceptible to a number of brain injuries. There is no general agreement in the literature on a single protocol for the time points at which cranial ultrasound is to be performed. The aim of this study was to determine if two early cranial ultrasound examinations (on days 3 and 8) are required for all

preterm neonates.

This study divided preterm neonates into two groups as Group A – those born at 23 wks to 25+6 wks GA and Group B – those born at 26 wks to 31+6 wks GA. Group B was further divided into a high-risk subgroup and a low-risk subgroup depending on the presence or absence of risk factors for brain injury in the perinatal period. The authors identified these risk factors as small-for-gestational age, vaginal rather than caesarean delivery, PDA requiring treatment, outborn babies, Apgar<7 at 5 minutes, intubation in the first week and perinatal infection.

The cranial ultrasound was evaluated for the following abnormalities- intraventricular haemorrhage, increased periventricular echogenicity, periventricular leukomalacia, cerebellar haemorrhage, superior sagittal sinus thrombosis and signs of white matter loss as indicated by ventriculomegaly with increased subarachnoid space.

A higher incidence of abnormalities on cranial ultrasound was seen in Group A neonates (extremely premature) and the high-risk subset of group B neonates.

Low-risk Group B neonates overall had a lower incidence of abnormalities on cranial ultrasound, with no significant difference between the day 3 and day 8 scans.

RECOMMENDATIONS:

1. In resource constrained settings it is beneficial to reduce the number of ultrasounds. Preterm neonates born after 26 wks gestational age without any recognised complications or risk factors can have a single early cranial ultrasound between postnatal day 7 and day 10.
2. When restricting to a single early cranial ultrasound (instead of two studies on day 3 and on day 8) the handling of already vulnerable preterm babies is kept to a minimum.
3. In babies with perinatal risk factors an increased number of cranial ultrasounds is justified.
4. If there is clinical deterioration then additional cranial ultrasound examinations may be performed.
5. Cranial ultrasound at 4-6 wks postnatal age is important to detect evolving white matter injury.
6. Additionally cranial ultrasound at term-equivalent age can further delineate any brain injury. MRI may be considered at this time point in appropriate clinical instances, as it is better at detecting white matter injury compared to cranial ultrasound.