Safe and Snug without Sedation: MRI Imaging of Neonates and Young Infants with the Use of an Immobilizer

Lorie Reilly MSN, CRNP; Mary Ann Gibbons BSN, RN; Elicia Parave MSN, CPNP, CEN; Ryan Devera RN
Department of Sedation/Radiology/Vascular Access Nursing
The Children's Hospital of Philadelphia

INTRODUCTION

Magnetic resonance imaging (MRI) can be used to obtain detailed, high-resolution images, providing key clinical and diagnostic information. Patient immobility is mandatory, as movement during the scan will distort the images. Neonates and young infants often require sedation in order to achieve the immobility necessary for the scan. An immobilizer device is being used at The Children's Hospital of Philadelphia (CHOP) to reduce the use of sedation in neonates & young infants – a vulnerable population at risk for sedation complications.

OBJECTIVES

Identify:
- Criteria used for patient selection
- Nursing implications/responsibilities
- Advantages of immobilizer versus sedation
- Future plans/research

CRITERIA FOR IMMOBILIZER USE

- Infants up to 90 days of age
- Infants who weigh at least 2 kg but no more than 6 kg
- Sedation Service has determined patient is medically appropriate for the immobilizer (ie: No umbilical lines/ no arterial lines, infant able to be calmed, etc.)
- MRI scan time may not exceed 60 min
- Radiologist has determined study is appropriate for immobilizer use (predetermined list of studies or by individual consultation)
- Study is scheduled during sedation service hours

NURSING IMPLICATIONS/RESPONSIBILITIES

- Clean equipment before each use and inspect for broken or missing parts. (Replacement straps are available)
- Attach monitoring equipment to infant prior to wrapping in the immobilizer. (Replacement straps are available)
- Verify that scanner speaker volume is sufficient for easy recognition of infant crying
- Do not permit infant to cry for a prolonged period of time. Stop scan and take infant out of the immobilizer if unable to calm and settle to sleep
- Monitor vitals for any signs of distress.

ADVANTAGES OF IMMOBILIZER VERSUS SEDATION

- Reduce risks/side effects associated with sedation (hyperventilation/apnea, oxygen desaturation, bradycardia)
- Infant may be fed versus NPO for sedation
- Eliminate the 23 hour admission required for post-sedation monitoring of full term infants < 28 days of age or ex-premies who are < 60 weeks post conceptual age (CHOP protocol)
- Decreased costs: medications, nursing & recovery time
- No sedation = less stress for parents

FUTURE PLANS/RESEARCH

- Ongoing data collection in the following areas:
  - Parent satisfaction
  - Nursing staff satisfaction & ease of use
  - Radiologist satisfaction with diagnostic quality of images
  - Neurovascular satisfaction with diagnostic quality of images

CONCLUSION

The immobilizer offers a safe and effective option to successfully obtain MRI imaging in the neonate/young infant population without the need for sedation. Nursing staff have primary responsibility for proper use of the immobilizer and ensuring the safety and comfort of the infant.