Introduction

- Extubation Rates in NICU are high
- Hershey’s NICU frequently uses Fentanyl and Versed PRN, whereas neuromuscular blocking agents are used in other units of the hospital (PICU) for sedation
- Hard to figure out a balance between harm of too much sedation and leaving a patient in discomfort and pain

Methods

- A literature search was conducted using the following search words:
  - Neuromuscular Blocking Agents
  - Intubated Neonates
  - Long-term effects
  - Vecuronium
  - Rocuronium
  - Neuromuscular Blockers in Children
  - Neonatal Intensive Care
- The following databases were searches:
  - PubMed
  - CINAHL
  - DynaMed
  - A total of eight research articles were analyzed

Results

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| “Consensus Guidelines for Sustained Neuromuscular Blockade in Critically III Children” (2007) | o Prolonged immobility may result in muscle atrophy, joint contractures, pressure sores, pulmonary atelectasis with associated pneumonia and corneal drying with potentially permanent corneal damage  
  o Critical Illness Polyneuropathy and Myopathy  
  o Stop sedation every 24 hours for accurate assessment |
| “Neuromuscular Blocking Agents in Critically III Children” (2002)      | o Most widely reported complications associated are prolonged muscle weakness or frank paralysis which leads to prolonged period of mechanical ventilation.  
  o Prolonged immobility can result in muscle atrophy and joint contractures, pressure sores, pulmonary atelectasis and associated pneumonia and corneal drying with the potential for permanent corneal damage  
  o Accurate assessments are difficult to obtain due to the severity of sedation. May be desirable to discontinue sedation.  
  o Use should be restricted to situation where the benefits clearly outweigh the possible risks |
| “Vecuronium Infusion Requirements in Paediatric Patients in Intensive Care Units: the use of acceleromyography” (1996) | o Risk factors for prolonged weakness include hypocalcaemia, renal failure, metabolic acidosis and hypermagnesaemia  
  o Muscle weakness was not present in study |
  o Prior studies in preterm infants have documented decreased pneumothoraces, a shorter duration of oxygen supplementation and reduced risk of intraventricular hemorrhage during muscle relaxation with pancuronium |
| “Continuous-Infusion Neuromuscular Blocking Agents in Critically III Neonates and Children” (2011) | o Joint contractures, specifically in the hips and knees, are prevalent in premature infants but did not appear to persist after discontinuation of drug. |

Limitations

- No known experimental studies were found during research
- Majority of studies’ populations were children and not specifically neonates

Conclusions

- The research shows there are some acute but no long-term effects found.
- Further research is needed to determine the long term effects on neonates
- Only use neuromuscular blocking agents when the benefits clearly outweigh the negative affects

References


