

Pain and Sedation

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Introduction

Pain and sedation are controversial topics in the world of neonatology. Despite significant clinical trial data, there is still no definitive evidence regarding the best method for assessment or management of pain and sedation needs in critically ill infants.

Principles of Sedation

Neonates lack the ability to communicate pain and discomfort; therefore, the healthcare team is responsible for identifying the need for adequate sedation and providing it. Previous research examining

preterm births have determined that, at the time of birth, neonates are undergoing critical nervous system development. Disruption or prolonged exposure to noxious stimuli may lead to neurologic remodeling.¹ The American Academy of Pediatrics (AAP) strongly recommends the use of protocols for the management of sedation in the neonatal population; however, the AAP acknowledges the need for further studies before it can establish treatment guidelines.²⁻⁴

Assessment

Sedation of neonates can be a deleterious task. It is imperative to find a balance by ensuring the infant is appropriately sedated while monitoring for over-sedation. The N-PASS—Neonatal Pain, Agitation, and Sedation Scale—may be utilized for this purpose. N-PASS is a reliable tool for assessing neonatal pain and sedation. Patients are assessed based on crying irritability, behavior state, facial expression, extremities tone, and vital signs; they are scored on a scale of -2, meaning well-sedated to +2, in which the neonate is experiencing pain and agitation. This scale may be utilized in neonates receiving all types of sedatives.⁵

In neonates receiving neuromuscular blocking agents (NMBA), health-care professionals may utilize train-of-four (TOF) in monitoring effectiveness. TOF monitoring consists of peripheral nerve stimulation that produces four stimuli over 2 seconds. Patients display zero to four twitches. Paralysis is indicated by a decrease in the number of twitches. Although this tool is highly utilized in the adult and some pediatric populations, it is generally not used in neonatal patients. Due to the size of the electrodes and fragility of the neonates, it is possible to stimulate the muscle itself, leading to movement, regardless of whether the neuromuscular junction is blocked. Thus, clinical monitoring—observation of visual and tactile stimulation on muscle movement and breathing patterns—is often utilized.⁶

Nonpharmacologic Modalities

Although there is not much research available on nonpharmacologic sedation methods, limiting environmental light and noise may aid in decreasing agitation. Neonates may potentially have a reduced need for sedative medications by limiting their exposure to interruptions and stimuli.⁷