Pediatric Pain Management

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• Ultrasound and pediatric

Regional anesthesia has become an integral part of adult anesthesia. Although regional anesthesia is not routinely used in children because of the need for general anesthesia that is necessary to keep the patients from moving and cooperating with the operator, it has been gaining immense popularity in the last decade. Adjuvant pain medications, including opioids and nonsteroidal analgesics, have been used for managing pain postoperatively. In addition, there is always the fear of damaging nerves when regional anesthesia is performed in a child who is asleep and not able to physically respond to the needle placed intraneurally. Although there is not much objective evidence, both large prospective databases and expert opinion have demonstrated the ability to continue to perform regional anesthesia in the asleep child safely because major neural damage has not been reported in children.[1,2] A large database is currently maintained in North America (Pediatric Regional Anesthesia Network) that may shed light into the benefits, adverse effects, and feasibility of regional anesthesia in children (Santhanam Suresh, MD, personal communication, 2011). The use of ultrasonography and its introduction to the practice of regional anesthesia in children has markedly improved the application of regional anesthesia to routine pediatric anesthesia care. Methodical detailed systematic reviews of ultrasound-guided regional techniques are available for practitioners to apply to their routine practice.[3,4] The use of regional anesthesia and its application to every day practice has spawned because of data available to demonstrate decreased morbidity in children and better outcomes.[5] Teaching and providing hands-on dedicated pediatric regional anesthesia workshops at national meetings, including the American Society of Anesthesiology, the American Society for Regional Anesthesia and Pain

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Medicine (ASRA), and the Society for Pediatric Anesthesia (SPA), and the International Anesthesia Research Society (IARS) have provided platforms for gaining knowledge and dialogue amongst practitioners to increase their application of regional anesthesia in neonates, infants, children, and adolescents. This review discusses a comprehensive approach to acute pain management in infants, children, and adolescents.

ASSESSMENT OF PAIN

Infants, toddlers, and younger children are unable or unwilling to verbalize or quantify pain like adults. Because of these cognitive or maturational differences, several developmentally appropriate pain assessment scales have been designed for use in either infants or children. These scales can be subdivided into validated self-report, behavioral, and/or physiologic measures. Children at approximately 8 to 10 years of age may be able to use the standard adult numeric rating or visual analog scale to self-report their pain. Specialized self-reporting scales such as the Bieri FACES scale[6] are available for children and can be used in patients as young as 3 to 4 years. Behavioral or physiologic measures are available for younger ages and for developmentally disabled children (**Table 1**). The FLACC (Face, Legs, Activity, Cry, Consolability) scale is one such behavioral scale that is widely used, easy to use, and validated.[7] The scale has also subsequently been revised (FLACC-R) for use in children with cognitive impairment.[8]

THE ACUTE PAIN SERVICE

Hospital-based acute pain services have been established to coordinate and provide pain management in children and have become increasingly common over the past 2 decades. Although the structure of such services varies, in the United States these are largely organized and run by anesthesiology departments, often staffed by pediatric anesthesiologists, anesthesia fellows and residents, and/or pain nurse practitioners. With the success and proliferation of such services, they have expanded to cover painful nonsurgical conditions such as sickle cell disease and pediatric malignancies.

Table 1
FLACC behavioral pain scale

Categories	Scoring 0	Scoring 1	Scoring 2
Face	No expression or smile	Occasional grimace or frown, withdrawn and disinterested	Frequent constant frown, clenched jaw, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, and tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, being talked to, distractible	Difficult to console or comfort

Data from Merkel S, Voepel-Lewis T, Malviya S. Pain assessment in infants and young children: the FLACC scale. Am J Nurs 2002;102(10):55–8.