Multimodal Approach to Pain Management for Sclerotherapy in Young Teenage Patient

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INTRODUCTION

Venous malformations are the most common vascular anomalies. 1,2 They are typically solitary with preference to the cutaneous area, extremities, and trunk. They can also be found in airway, joints, extracranial, and cranial structures. A multimodal approach to pain management involving anesthetic intervention is necessary to provide optimal procedural condition with airway management, post-procedural comfort and ease of recovery. The psychological impact of post procedural complications, particularly pain, can be detrimental for the child’s future motivation to seek medical treatment.

We present a case report of a young teenage patient who underwent multiple sclerotherapies for facial venous malformation over a period of time. After the two initial interventions, she developed pre-procedural anxiety, with mask phobia and aversion to anesthetic odor. However, with multimodal approach to pain management including regional anesthesia and psychological coaching using hypnotherapeutic suggestions and parental presence for induction, she became more eager to walk into the operating room without medical intervention, and became an active participant with the anesthetic inductions and her own care.

CASE REPORT

Patient is a thirteen-year-old female with venous malformation at the right side of her face and mouth. She underwent resection of the lesions when she was three years of age, followed by percutaneous sclerotherapy for recurrent lesions three years later which were performed under general anesthesia. During her third treatment, she was terrified and very anxious to go to the operating room because she developed a mask phobia with aversion to the smell of the anesthetic secondary to her negative experience with induction and postoperative pain. To help her cope with the procedure, relaxing techniques were employed. She was taught breathing techniques and was suggested to think of a comfortable place while focusing on her breathing. The concept of reframing was used to replace the idea of anesthetic odors with a relaxing smell of her choice. Since she loved mashed potatoes, this was used to divert her attention to a pleasurable and comforting sensation with emphasis on sensory and textural experiences of food, while performing an intraluminal induction. Sleep was induced while talking about food of her liking, with ego strengthening reinforcement and suggestions of well being and positive, comfortable future awakenings from her anesthesia. These techniques make for a pleasant induction of anesthesia, during which the parents were also present.

Following induction of anesthesia, she received regional anesthesia with a mandibular, mental and infraorbital blocks covering the dermatomes of intervention. In addition, she received a dose of ketorolac, IV acetaminophen, and dexamethasone to reduce inflammatory response. Ketamine was also used at subanesthetic dose of 0.5mg/kg in order to avoid opioid-induced nausea. Narcotics were left to be used in the recovery area on an as-needed basis. On emergence, she woke up comfortably. Pleasantly surprised of her experience, she was encouraged of future outcomes. Her time spent in recovery was shorter, and as she was discharged home she was thinking of having mashed potatoes for dinner!

During her subsequent procedures, she was more eager to come into the operating room with much less anxiety. Her parents were always allowed to be present during induction. The same theme of empowering conversations focused on positive experiences was used to help with induction. These relaxing techniques along with a multimodal pain therapy for analgesia make a comfortable recovery with satisfaction from both the patient and her parents.

CASE REPORTS cont’d

INFRAORBITAL NERVE BLOCK

MENTAL NERVE BLOCK

DISCUSSION

Post-procedural pain encompasses the unpleasant physical sensation and the emotional distress, impacting one’s well-being and function. The treatment of post-procedural pain calls for a comprehensive or multimodal approach, aiming not only at treating the physical aspect of pain, but also at restoring overall function, promoting recovery of health, and preventing the development of debilitating chronic pain syndromes. The multimodal approach of pain management should not be limited to only chemical intervention, but it should include psychological interventions to address the emotional agony and suffering that complicates chronic pain and illness.

The emotional distress may be contextual, which may begin before the procedure, or may be part of the psychological make up of the child and his developmental age. Evidence shows that pre-operative pain score are worse in patient with heightened anxiety. It is therefore imperative to address the psychological distress as well as the physical one to avoid the development of chronic illness. This can be done through use of talk and play therapy with child life specialist, through time spent on building rapport, through empathic listening skills and teaching stress management techniques, and/or through use of analgesics in extreme cases.

The physical aspect of the pain experience should be addressed as well through the use of analgesics and interventional techniques to minimize the psychological stress response, to optimize patient recovery, and to reduce hospital length of stay. The judicious use of two or more medications and/ or interventional techniques is the regimen of multimodal pain management. The synergistic effects between different drug classes can enhance the analgesic effects of each drug. In addition, the use of different agents allows for reduced doses of each medication and subsequently reduced side effects. The main components of multimodal pain management include the use of NSAIDs, acetaminophen, central analgesics, anticonvulsants, NMDA antagonists, opioids, and local anesthetics. NSAIDs are prostaglandin inhibitors, a major player in the neuroinflammatory pain response. Alpha-2 agonists, like dexmedetomidine and clonidine, reduce the sympathetic stress response and autonomic component of pain. Anticonvulsants work to decrease the hyperalgesic response from CNS. NMDA-receptor inactivation ketamine is an analgesic that has an added benefit of counter-acting spinal sensation or wind-up phenomena experienced with chronic pain. Opioids block the pain signal by binding to opioid receptors sites in the central nervous system and spinal cord level. Local anesthetics block sodium channels used for the activation of the peripheral pain pathway. Steroids have analgesic effect and reduce inflammation. With this approach, we were able to ease the patient’s pain preoperatively and to make her experience pleasant. She was more eager to come in for her procedures in hope that the lesion would be cured and the pain would go away.

REFERENCES