KJA
Korean Journal of Anesthesiology

Letter to the Editor
pISSN 2005-6419 • eISSN 2005-7563

Anesthesia for the deaf and mute

Anju Romina Bhalotra and Bhavna Kakkar

Department of Anesthesiology, Maulana Azad Medical College and Associated Lok Nayak Hospital, New Delhi, India

When patients who are both deaf and mute present for surgical procedures, they require special preparation and care. There is surprisingly little literature describing the problems with and considerations for the anesthetic management of the deaf and mute patient. Hearing loss is a significant cause of disability, and most anesthesiologists will encounter such patients at one time or another.

Hearing loss may be present at or acquired soon after birth. It may be due to hereditary or non-hereditary factors, or complications of pregnancy and childbirth. More than 50% of cases of congenital hearing loss are due to genetic factors. Among patients with congenital deafness, about 20% are associated with syndromes such as Alport, Crouzon, Usher, Down, Treacher Collins, Jervell and Lange-Nielsen, Pendred, and Stickler syndromes [1], while about 80% are non-syndromic. Acquired causes can lead to hearing loss at any age and include infections, drugs, injury, noise, and aging.

During the preoperative visit, it is necessary to determine whether a patient's deafness is part of a syndrome complex. Eliciting a detailed history is often difficult, and appropriately targeted investigations (e.g., a patient's facial features or cardiovascular examination) may be required. During this time, it is imperative to assess and evaluate the patient's ability to express and communicate using gestures or facial expressions, and his or her educational background and ability to cooperate. In some cases, an educated relative/partner/parent may serve as an interpreter. However, if communication does not seem feasible, it may be prudent to involve a sign language/communication specialist. While patients and their relatives in the United States are often well versed in the use of American Sign Language, this is unusual in many other countries. A language specialist can help to elicit an optimum history, assist with the preoperative evaluation, explain the importance of and techniques associated with postoperative interventions (e.g., the use of deep breathing exercises and lung expansion maneuvers by incentive spirometry), and train the patient to quantify postoperative pain by explaining simple pain scoring systems like the visual analog scale [2].

If general anesthesia is planned, adequate postoperative analgesia must be ensured. Several consequences of uncontrolled postoperative pain may be especially detrimental in these patients. Apart from the obvious ill effects of patient discomfort, anxiety, sleep disturbances, irritability, aggression, and unwanted stress and suffering, poorly controlled pain leads to activation of the sympathetic nervous system. This can cause increases in heart rate and blood pressure; delayed gastric emptying leading to nausea, vomiting, and paralytic ileus; and hyperglycemia with delayed wound healing. Failure to cough and take deep breaths predisposes to the development of chest infections, while movement restriction and hypercoagulability predispose to deep vein thrombosis. These factors further result in delayed mobilization and prolonged hospitalization, and have financial implications. Pain and separation from family members may precipitate confusion, fear, and postoperative psychosis. The use of sedatives and analgesics also requires a high degree of vigilance and caution. The bispectral index monitor is used to titrate the depth of anesthesia and may be useful in the recovery of patients with communication challenges [3]. Multimodal analgesia may be combined with a regional nerve block for extended postoperative analgesia using a local anesthetic (LA) with a lesser degree of motor blockade.

If neuraxial anesthesia is planned, the anesthetic plan may be explained using the help of a communication specialist or videos or flash cards of the planned procedure. A gradual onset of neuraxial anesthesia using a combined spinal-epidural technique with a smaller dose of a spinal drug and further extension using epidural volume expansion or epidural supplementation

Corresponding author: Anju Romina Bhalotra, M.D.
Department of Anesthesiology, Maulana Azad Medical College and Associated Lok Nayak Hospital, A-1/59 Safdarjang Enclave, New Delhi 110029, India
Tel: 91-01126183684, Fax: 91-01126183684
Email: drakgk@yahoo.co.in
ORCID: https://orcid.org/0000-0003-0700-2941

Received: April 3, 2017.
Accepted: April 6, 2017.

Korean J Anesthesiol 2017 December 70(6): 654-655
https://doi.org/10.4097/kjae.2017.70.6.654

will be more comfortable and acceptable for such patients. The LA dose should be titrated carefully and the injection preceded by careful aspiration, as early signs of LA toxicity are likely to be missed. Similarly, a high spinal block with extensive sympathetic blockade and deafferentation of the chest wall should be avoided, as the patient is unable to complain of discomfort, lightheadedness, or nausea. Frequent blood pressure measurement is necessary for the early and timely detection of hypotension related to neuraxial anesthesia. Analgesia can be extended into the postoperative period with a low concentration of LA with an adjuvant to minimize motor blockade. This has an opioid-sparing effect and results in an awake, pain-free patient with less disorientation.

Medical professionals have a moral, ethical, and professional obligation towards the individuals in their care, especially those who are vulnerable and unable to speak for themselves. As with other patients, these special populations require consistent, ongoing assessment, appropriate treatment, and evaluation of interventions to ensure the best possible pain relief. With continued advances and new developments in strategies and tools for assessing pain in these populations, clinicians are encouraged to stay current through regular review of new research and practice recommendations [4].

The management of a deaf and mute patient requiring surgery necessitates proper planning; careful consideration of the recommendations summarized above may ensure a smooth perioperative course and a content patient.

ORCID

Anju Romina Bhalotra, https://orcid.org/0000-0003-0700-2941
Bhavna Kakkar, https://orcid.org/0000-0002-3108-0408

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