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Case Report Open Access

Music is Medicine: Exploring the Use of Melody as an Adjuvant to Regional Anesthesia in Obstetrics

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Abstract

Music has been employed in anesthesiology to alleviate anxiety in patients before, during and after surgery to minimizes or eliminates the need for sedatives. Obstetric anesthesiology utilizes mainly regional techniques and can present a special challenge to the anesthesiologist because the patient is awake and exposed to multiple anxiety provoking auditory and visual stimuli. In majority of cases, pharmacotherapy is used for anxiolysis. Music can be employed in obstetric anesthesiology as it is inexpensive, easily administered and free of adverse effects and can serve as a complementary method of treating perioperative stress. The case discussed highlights the possibility of employing the anxiolytic properties of music particularly in the latter trimester where various intrauterine techniques can be performed. The obstetrician anesthesiologist has the significant role of relieving pain and anxiety during pregnancy and labor; they can consider the use of modern and readily available technology instead of pharmaceuticals to complement regional anesthesia when possible.

Keywords Music; Analgesia; Anxiolytics; Cesarean delivery; Intrauterine interventions

Introduction

The anxiolytic effects of music on the mind and body has been anecdotally acknowledged for centuries in various cultures [1]. In many generations, music and healing have co-existed and complimented each other. For instance, in the Chinese language the character for medicine includes the symbol for music. In ancient Greece, music has long been recognized for its ability to ease stress, promote sleep and soothe pain. In Western medicine, as the art of medicine gave way to the science of medicine, the symbiotic relationship between music and medicine became more distant. However, physicians and particularly researchers are beginning to re-explore the holistic properties of music in areas such as neurology [2] and cardiology [3].

Various studies in anesthesiology have described the use of music to alleviate anxiety in patients before, during and after surgery which minimizes or eliminates the need for sedatives. A study by Bringman and colleagues also noted that relaxing music decreased the level of anxiety in a perioperative setting to a greater extent in comparison to orally administered midazolam [4]. Similarly, a study of ophthalmology patients showed that the group that had relaxing music had lower anxiety scores when compared to the cohort that received sedatives [5]. Even when employed during cesarean delivery under epidural anesthesia, lower anxiety was evident in the patient group that listened to music [6].

Obstetric anesthesiology utilizes mainly regional techniques and can present a special challenge to the anesthesiologist because the patient is awake and exposed to multiple anxiety provoking auditory and visual stimuli. Consequently, anxiolytics are sometimes used in treating perioperative stress and facilitating an ideal environment for both the patient and obstetrician. Certain procedures are performed on the parturient during the early trimesters and anxiolytics are sometimes used but these drugs could be avoided with proper patient counseling. It is proposed that the anesthesiologist can use music as a complement to adequate regional anesthesia when delivery of the fetus is not imminent and intrauterine procedures have to be carried out.

Music has long been recognized as a mild anxiolytic which is mainly effective when the pain stimulus is minimal or absent. The advantage of music in obstetric anesthesiology is that it is inexpensive, easily administered, free of adverse effects and patients can choose the musical genre that has a calming effect on them; thus music can serve as a complementary method of treating perioperative stress.

Minimally invasive fetal surgery	Indications
Intrauterine transfusion	Fetal anemia
Laser ablation of vessels	Twin to twin transfusion syndrome
Radiofrequency ablation	Twin reversed arterial perfusion
Fetoscopic closure of malformation	Spina bifida
Fetoscopic endoluminal tracheal occlusion	Congenital diaphragmatic hernia
Arterial septotomy	Congenital heart disease
Valvuloplasty	Aortic or pulmonary stenosis
Shunt insertion and valve ablation	Obstructive uropathy

Table 1: Minimally invasive fetal procedures and their indications in the fetus were music can facilitate anxiolysis and complement regional anesthesia performed to the parturient.

The case discussed below illustrates the role of music for interventions in the peri-partum period performed under regional anesthesia. Some of the procedures where music can be employed

include minimally invasive endoscopic, percutaneous and image guided procedures on the fetus, placenta or membranes that can be diagnostic or therapeutic in nature (Table 1), cerclage removal, external cephalic version, the rare instances when EXIT procedures are performed under regional anesthesia.

Case Report

A 43 year old G5P3 parturient at 30 week gestation with a history of chronic hypertension but did not require any anti-hypertensives during pregnancy, her medical history was also significant for borderline diabetes mellitus and she had undergone 3 prior Cesarean deliveries. During her antepartum care she was noted to be positive for anti- kell antibody and her gravid uterus demonstrated progressive polyhydramnios. On sonographic examination of the fetus it was evident that the middle cerebral artery peak systolic velocity was elevated and also she had worsening polyhydramnios. Following extensive counselling of the patient, the decision was made to perform intrauterine transfusion at 30 week gestational age. She had a perioperative visit with the anesthesia team and we offered her the option of using music as an anxiolytic after placing an epidural. For her intraoperative course she received a combined spinal epidural, and the spinal component comprised of 20 mcg fentanyl and 10 mg bupivacaine. The patient was asked of her preferred music genre and earphones were placed for the duration of the procedure. Three attempts were made by the obstetrician to transfuse the fetus, however sonographic observation of significant hemorrhage became apparent and the decision was made to abort the transfusion and progress to an emergent cesarean section. The patient was informed of the course of events and she opted to have the music playing till the baby was delivered. The baby was delivered within 3 minutes with apgars of 4/5/7 and was admitted to the NICU for 3 weeks whilst the mother was discharged on POD 3, both mother and baby had good outcomes. The patient appreciated the use of music as she was aware of the urgent nature of the delivery, but she was not anxious as she was unable to pick up on the auditory cues in the room during the emergency cesarean section.

Discussion

As obstetric anesthesiologists, we are involved in procedures other than labor analgesia or anesthesia for cesarean delivery. Some of these include third trimester procedures such as Minimally Invasive Intrauterine Fetal Procedures, External Cephalic Version (ECV) and cerclage removal. Some of these anxiety provoking situations may appear to require anxiolytics; however with in-depth counselling of patients and appropriate patient selection, some patients can tolerate these procedures with a non-pharmacological anxiolytic such as music.

The use of anxiolytics in the parturient sometimes raises anxiety for the physician. There is no evidence of teratogenicity due to anesthetic agents when used in clinical concentrations for pregnant women undergoing surgery [7]; however, some studies have been controversial by the suggestion that the use of diazepam in the first trimester can result in the increased incidence of cleft lip palate [8]. The current consensus is that benzodiazepines are safe for clinical use during pregnancy [9]. Of note, the use of anxiolytics at later trimesters can affect the responsiveness of the fetus upon delivery. So for practitioners who may choose to limit the use of anxiolytics, the case discussed highlights the possibility of employing the anxiolytic properties of music particularly in the latter trimester where various intrauterine techniques can be performed. However, it is important to emphasize that the patient has to be pain-free for music to be effective in reliving anxiety. The type of music is also significant as the genres which are assumed to have a calming effect such as classical, instrumental music, may not have that effect on every patient. The effect of music is subjective and the mother should be allowed to choose what type of music would be effective for her. The obstetrician anesthesiologist has the significant role of relieving pain and anxiety during pregnancy and labor; they could consider the use of modern and readily available technology instead of pharmacotherapy when possible.

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